Bharati Vidyapeeth

(Deemed to be University), Pune, India.

ORDER

Hon'ble Vice Chancellor is pleased to reconstitute the **Board of Studies in Para-Clinical under Faculty of Medical Sciences** as per the Article 10.11.4 of the UGC (Institution Deemed to be Universities) Regulations 2019 with the following -

Name of faculty

1.	Dr. R. P. Limaye, Professor in Pharmacology, Medical College, Sangli	- Chairman
2.	Dr. Ms. Meera Modak, Professor in Microbiology, Medical College, Pune	- Member
3.	Dr. Ms. M. N. Karandikar, Professor in Pathology, Medical College, Pune	- Member
4.	Dr. Ms. Shilpa Shah, Professor in Microbiology, Medical College, Sangli	- Member
5.	Dr. Ms. P. P. Dhande, Professor in Pharmacology, Medical College, Pune	- Member
6.	Dr. Mallikarjun Ballur, Associate Professor in FMT, Medical College, Pune	- Member
7.	Dr. Ms. Amruta Patil, Associate Professor in Pathology, Medical College, Sangli	- Member
8.	Dr. Ms. Pallavi Khatavkar, Assistant Professor in Pharmacology, Medical College, Pune	- Member
9.	Dr. Anand Patil, Assistant Professor in FMT, Medical College, Sangli	- Member

The Board of Studies may co-opt. two experts at the first meeting under Article 10.11.4 (v).

The term of the members of the Board of Studies will be two years from the date of the first meeting held after their nomination.

Ref. No. BVDU/A15/5542/2019-20
Date : 27/05/2020

G. Rayakumar
Registrar

To : The Chairman & All Members as above.

Copy to :

1. The Dean of the Faculty of Medical ~~Studies~~ Science
2. Principal of Medical College, Pune.
3. Dean of Medical College & Hospital, Sangli.
4. The Controller of Examinations.
5. The Accounts & Finance Officer.

Skill Deve.

Prof. Dr. Shivajirao Kadam M.Sc., Ph.D.
Chancellor

Prof. Dr. M. M. Salunkhe M.Sc., Ph.D., F.R.S.C.
Vice Chancellor

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.
Founder Chancellor : Dr. Patangrao Kadam

★ Accredited with 'A+' Grade (2017) by NAAC ★
★ Category-I University Status by UGC ★
★ NIRF Ranking - 66 ★

"Social Transformation Through Dynamic Education"

Estd. 1964 Celebrating 50 and Beyond BHARATI VIDYAPEETH

Dr. Vishwajeet Kadam B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor

G. Jayakumar M.Com., Dip.Pub.Admn.
Registrar

NOTIFICATION NO. 1034

It is hereby notified for the information of all concerned that the Academic Council, at its 60th meeting held on 20-1-2020 resolved to start the following B.Sc. / PG Diploma / Certificate courses at Medical College, Pune from the academic year 2020-21.

It was further resolved to authorize the Hon'ble Vice Chancellor to approve the course structure, syllabus and the rules of the examinations for all the proposed Degree, Diploma and certificate programmes,

1)	Name of the Course	:	B.Sc. (Cardiovascular Technology)
	Duration	:	3 yrs. + 1 yr. internship
	Eligibility Criteria	:	1)Age- Completed 17 yrs at the time of admission. 2)Candidates who has successfully passed the Higher Secondary Examinations (10+2 Sci.) Course with Physics, Chemistry, Biology and English with minimum 50% marks from recognized Board.
	Intake	:	10
	Course Fee	:	Rs. 1,00,000/- per year
2)	Name of the Course	:	B.Sc. (Neuro Electrophysiology Technology)
	Duration	:	3 yrs. + 1 yr. internship
	Eligibility Criteria	:	1)Age- Completed 17 yrs at the time of admission. 2)Candidates who has successfully passed the Higher Secondary Examinations (10+2 Sci.) Course with Physics, Chemistry, Biology and English with minimum 50% marks from recognized Board.
	Intake	:	10
	Course Fee	:	Rs. 1,00,000/- per year
3)	Name of the Course	:	B.Sc. (Anaesthesia and OT Technology)
	Duration	:	3 yrs. + 1 yr. internship
	Eligibility Criteria	:	1)Age- Completed 17 yrs at the time of admission. 2)Candidates who has successfully passed the Higher Secondary Examinations (10+2 Sci.) Course with Physics, Chemistry, Biology and English with minimum 50% marks from recognized Board.
	Intake	:	10
	Course Fee	:	Rs. 1,00,000/- per year

G. Jayakumar

..2..

4)	Name of the Course	:	PG Diploma in Clinical Nutrition
	Duration	:	1 yr.
	Eligibility Criteria	:	B.Sc. with Physics, Chemistry, Biology, Nursing and English with minimum 50% marks from recognized Board.
	Intake	:	20
	Course Fee	:	Rs. 40,000/-
5)	Name of the Course	:	PG Diploma in Psychological Counselling
	Duration	:	1 yr.
	Eligibility Criteria	:	Bachelor's degree in Psychology. B.Sc.(Nursing), P.B. B.Sc. (Nursing).
	Intake	:	10
	Course Fee	:	Rs. 40,000/-
6)	Name of the Course	:	PG Diploma in Neonatal Nursing
	Duration	:	1 yr.
	Eligibility Criteria	:	B.Sc.(Nursing), P.B. B.Sc. (Nursing).
	Intake	:	10
	Course Fee	:	Rs. 40,000/- per year
7)	Name of the Course	:	Certificate Course in Endoscopy Technician
	Duration	:	1 yr.
	Eligibility Criteria	:	1) Completed 17 yrs at the time of admission. 2) ANM/ GNM / B.Sc. (Nursing)
	Intake	:	10
	Course Fee	:	Rs. 40,000/-

This is for the information of all concerned.

G. Rajakumar
Registrar

Ref. No. BVDU/2019-20/ 5036
Date: March 17, 2020

To,

1. The Dean, Faculty of Medicine, Medical College, Pune
2. The Principal, Medical College, Pune
3. The Controller of Examinations, BVDU, Pune
4. The IT Cell for uploading in the Website.

AC20-1-2020 (60-5.4)

Skill Deve.

Prof. Dr. Shivajirao Kadam
Chancellor M.Sc., Ph.D.

Prof. Dr. M. M. Salunkhe
M.Sc., Ph.D., F.R.S.C.
Vice Chancellor

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.

Founder Chancellor : Dr. Patangrao Kadam

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★ NIRF Ranking - 66 ★

"Social Transformation Through Dynamic Education"

Dr. Vishwajeet Kadam
B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor

G. Jayakumar
M.Com., Dip.Pub.Admn.
Registrar

NOTIFICATION NO. 1034

It is hereby notified for the information of all concerned that the Academic Council, at its 60th meeting held on 20-1-2020 resolved to start the following B.Sc. / PG Diploma / Certificate courses at Medical College, Pune from the academic year 2020-21.

It was further resolved to authorize the Hon'ble Vice Chancellor to approve the course structure, syllabus and the rules of the examinations for all the proposed Degree, Diploma and certificate programmes,

1)	Name of the Course	:	B.Sc. (Cardiovascular Technology)
	Duration	:	3 yrs. + 1 yr. internship
	Eligibility Criteria	:	1)Age- Completed 17 yrs at the time of admission. 2)Candidates who has successfully passed the Higher Secondary Examinations (10+2 Sci.) Course with Physics, Chemistry, Biology and English with minimum 50% marks from recognized Board.
	Intake	:	10
	Course Fee	:	Rs. 1,00,000/- per year
2)	Name of the Course	:	B.Sc. (Neuro Electrophysiology Technology)
	Duration	:	3 yrs. + 1 yr. internship
	Eligibility Criteria	:	1)Age- Completed 17 yrs at the time of admission. 2)Candidates who has successfully passed the Higher Secondary Examinations (10+2 Sci.) Course with Physics, Chemistry, Biology and English with minimum 50% marks from recognized Board.
	Intake	:	10
	Course Fee	:	Rs. 1,00,000/- per year
3)	Name of the Course	:	B.Sc. (Anaesthesia and OT Technology)
	Duration	:	3 yrs. + 1 yr. internship
	Eligibility Criteria	:	1)Age- Completed 17 yrs at the time of admission. 2)Candidates who has successfully passed the Higher Secondary Examinations (10+2 Sci.) Course with Physics, Chemistry, Biology and English with minimum 50% marks from recognized Board.
	Intake	:	10
	Course Fee	:	Rs. 1,00,000/- per year

BHARATI VIDYAPEETH DEEMED UNIV. INWARD NO. 10409 DATE 20/2/2020 MEDICAL COLLEGE

G. Jayakumar

4)	Name of the Course	:	PG Diploma in Clinical Nutrition
	Duration	:	1 yr.
	Eligibility Criteria	:	B.Sc. with Physics, Chemistry, Biology, Nursing and English with minimum 50% marks from recognized Board.
	Intake	:	20
	Course Fee	:	Rs. 40,000/-
5)	Name of the Course	:	PG Diploma in Psychological Counselling
	Duration	:	1 yr.
	Eligibility Criteria	:	Bachelor's degree in Psychology. B.Sc.(Nursing), P.B. B.Sc. (Nursing).
	Intake	:	10
	Course Fee	:	Rs. 40,000/-
6)	Name of the Course	:	PG Diploma in Neonatal Nursing
	Duration	:	1 yr.
	Eligibility Criteria	:	B.Sc.(Nursing), P.B. B.Sc. (Nursing).
	Intake	:	10
	Course Fee	:	Rs. 40,000/- per year
7)	Name of the Course	:	Certificate Course in Endoscopy Technician
	Duration	:	1 yr.
	Eligibility Criteria	:	1) Completed 17 yrs at the time of admission. 2) ANM/ GNM / B.Sc. (Nursing)
	Intake	:	10
	Course Fee	:	Rs. 40,000/-

This is for the information of all concerned.

G. Rajakumar
Registrar

Ref. No. BVDU/2019-20/ 5336
Date: March 17, 2020

To,

1. The Dean, Faculty of Medicine, Medical College, Pune
2. The Principal, Medical College, Pune
3. The Controller of Examinations, BVDU, Pune
4. The IT Cell for uploading in the Website.

AC20-1-2020 (60-5.4)

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.
Founder Chancellor : Dr. Patangrao Kadam

★ Accredited with 'A+' Grade (2017) by NAAC ★
★ Category-I University Status by UGC ★
★ NIRF Ranking - 66 ★

"Social Transformation Through Dynamic Education"

Prof. Dr. Shivajirao Kadam
M.Sc. Ph.D.
Chancellor

Prof. Dr. M. M. Salunkhe
M.Sc. Ph.D. F.R.S.C.
Vice Chancellor

Celebrating 50 and Beyond
BHARATI VIDYAPEETH

Dr. Vishwajeet Kadam
B.Tech. M.B.A. Ph.D.
Pro Vice Chancellor

G. Jayakumar
M.Com. Dip.Pub.Admn.
Registrar

NOTIFICATION NO. 1014

It is hereby notified for the information of all concerned that the Academic Council, at its 58th meeting held on 26-3-2019 considered and resolved to start the following courses at Medical College, Pune under the Faculty of Medical Sciences from the academic year 2019-20.

a) Degree Courses :

1 B.Sc. (Radiology & Imaging Technology)
2 B.Sc. (Laboratory Science)
3 B.Sc. (Endoscopy)
4 B.Sc. (Blood Transfusion)
5 B.Sc. Respiratory Care Technology

b) P. G. Diploma Courses :

1 PG Diploma in Invasive Cardiology
2 PG Diploma in Infection Control

This is for the information of all concern.

G. Jayakumar
Registrar

Ref. No. BVDU/2019-20/2532
Date: October 4, 2019

To,

1 The Principal, Medical College, Pune
2 The Dean, Faculty of Medical Sciences, Medical College, Pune
3 The Eligibility Section, BVDU
4 The IT Cell for uploading in the Website.
5. The Controller of Examinations, BVDU - A set of Rules and Regulations, Examination Pattern and syllabi is enclosed for your reference and further action.

AC26-3-2019(58-S.J)

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.
Founder Chancellor : Dr. Patangrao Kadam

★ Accredited with 'A+' Grade (2017) by NAAC ★
★ Category-I University Status by UGC ★
★ NIRF Ranking - 66 ★

"Social Transformation Through Dynamic Education"

Prof. Dr. Shivajirao Kadam
M.Sc., Ph.D.
Chancellor

Prof. Dr. M. M. Salunkhe
M.Sc., Ph.D., F.R.S.C.
Vice Chancellor

Dr. Vishwajeet Kadam
B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor

G. Jayakumar
M.Com., Dip.Pub.Admn.
Registrar

Estd. 1964
Celebrating and Beyond
BHARATI VIDYAPEETH

NOTIFICATION NO. 987

It is hereby notified for the information of all concerned that the University authorities have approved to start the following certificate courses at BVDU Medical College, Pune from the academic year 2019-20:

Name of the Course	Duration	Intake Capacity	Eligibility	Annual Fees in Rs.
Post Doctoral Certificate Course in Transfusion Medicine	1 yr	3	Pathologist holding MD or DNB degree in Pathology	1,20,000/-
* Note : Stipend Rs. 40,000/- per month to the selected Doctor for admission				
Certificate Course in Biostatistics in Medical Research	12 Saturdays (4hrs. each Saturday) = 48 hours	20	MBBS/BDS/BPT/BAMS/BHMS/B.sc./Any Graduate/ Post graduate	10,000/- (Course fee)

All the concerned are requested to make a note of this.

G. Jayakumar
Registrar

Ref. No. BVDU/2019-20/ 157
Date : June 8, 2019

To,

1. The Dean, Faculty of Medical Sciences, Medical College & Hospital, Sangli.
2. The Principal, Medical College, Pune.
3. The Controller of Examinations, BVDU.
4. The Eligibility Section, BVDU.
5. The International Students' Cell, BVDU.
6. The Head, Department of Community Medicine, Medical College, Pune
7. The Head, Department of Blood Transfusion, Medical College, Pune
8. The IT Cell for uploading in the website.

Copy to :

The Executive Director, Bharati Hospital, Pune

BHARATI VIDYAPEETH DEEMED UNIVERSITY MEDICAL COLLEGE, PUNE-30
INWARD No. 1247
DATE 11/6/19

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.
Founder Chancellor : Dr. Patangrao Kadam
★ Accredited with 'A+' Grade (2017) by NAAC ★
★ Category-I University Status by UGC ★
★ NIRF Ranking - 66 ★
"Social Transformation Through Dynamic Education"

Prof. Dr. Shivajirao Kadam
M.Sc., Ph.D.
Chancellor

Prof. Dr. M. M. Salunkhe
M.Sc., Ph.D., F.R.S.C
Vice Chancellor

Dr. Vishwajeet Kadam
B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor

G. Jayakumar
M.Com., Dip.Pub.Admn.
Registrar

NOTIFICATION NO. 987

It is hereby notified for the information of all concerned that the University authorities have approved to start the following certificate courses at BVDU Medical College, Pune from the academic year 2019-20:

Name of the Course	Duration	Intake Capacity	Eligibility	Annual Fees in Rs.
Post Doctoral Certificate Course in Transfusion Medicine	1 yr	3	Pathologist holding MD or DNB degree in Pathology	1,20,000/-
* Note : Stipend Rs. 40,000/- per month to the selected Doctor for admission				
Certificate Course in Biostatistics in Medical Research	12 Saturdays (4hrs. each Saturday) = 48 hours	20	MBBS/BDS/BPT /BAMS/BHMS/B .sc./Any Graduate/ Post graduate	10,000/- (Course fee)

All the concerned are requested to make a note of this.

G. Jayakumar
Registrar

Ref. No. BVDU/2019-20/ 157
Date : June 8, 2019

To,

1. The Dean, Faculty of Medical Sciences, Medical College & Hospital, Sangli.
2. The Principal, Medical College, Pune.
3. The Controller of Examinations, BVDU.
4. The Eligibility Section, BVDU.
5. The International Students' Cell, BVDU.
6. The Head, Department of Community Medicine, Medical College, Pune
7. The Head, Department of Blood Transfusion, Medical College, Pune
8. The IT Cell for uploading in the website.

Copy to :

The Executive Director, Bharati Hospital, Pune

BHARATI VIDYAPEETH DEEMED UNIVERSITY MEDICAL COLLEGE
INWARD No. 1247
DATE. 11/6/19

O/C.

Appx

Bharati Vidyapeeth
Deemed University, Pune (

(U/s 3 of UGC Act, 1956 Vide Notification No. F.9-15/95-U.3 of the Govt. of I

Hon'ble Dr. Patangrao Kadam
M.A. LL.B. Ph.D
Chancellor

Prof. Dr. Shivajirao Kadam
M.Sc. Ph.D
Vice Chancellor

GRADE
Accredited by
NAAC

Bharati Vidyapeeth Bhavan,
Lal Bahadur Shastri Marg,
Pune - 411 030 (INDIA)

Tel. : +91-20-24407100, 2432570
Fax : +91-20-24339121, 2432191
E-mail : bvuniversity@yahoo.co.in
Web : www.bvuniversity.edu.in

NOTIFICATION NO. 565

It is hereby notified for the information of all concerned that the Academic Council has, at its 39th meeting held on 12/07/2011, approved introduction of the following innovative courses from the academic year 2011-2012 under the Faculty of Medical Sciences.

1. One year Postgraduate Diploma in Paediatric Radiology. The Medical College is also permitted to adopt and follow the same method of training programmes as those being followed in the International Centres for similar course.

2. One year Certificate Course in MR/CT Techniques. The course will mainly aim at training. The successful candidates will be awarded a Certificate by the Medical College.

Ref. No. BVDU/ 2078 /2011-12
Date : August 31, 2011

G. Ayothi
Registrar

1. The Dean, Faculty of Medical Sciences, Pune 43.
2. The Head, Dept.of Paediatrics, Medical College, Pune – 43.
3. The Controller of Examinations.

Appx E

Bharati Vidyapeeth
Deemed University, Pune (India)

'A' Grade University Status by MHRD, Govt. of India
Accredited & Reaccredited with 'A' Grade by NAAC

Hon'ble Dr. Patangrao Kadam
M.A. LL.B. Ph.D.
Chancellor

Prof. Dr. Shivajirao Kadam
M.Sc. Ph.D.
Vice Chancellor

Bharati Vidyapeeth
Lal Bahadur Shastri
Pune - 411 030 (INDIA)

Tel : +91-20-24407
Fax : +91-20-24339
E-mail : bvuniversity
Web : www.bvunive

Ref. No. : BVDU/A10/ 2016-2017/ 6677 July 14, 2016

The Principal,
Bharati Vidyapeeth University
Medical College,
Pune 411043.

Sub. : Skill Development Programme (Para Medical Courses) under the faculty of Medical Sciences from the academic year 2016-17

Sir,

Referring to the subject captioned above I am directed by the Hon'ble Vice Chancellor to inform you that the minutes of the meeting regarding starting of Skill Development Programmes under the Faculty of Medical Sciences at Medical College & Hospital, Pune submitted by you have been approved.

Accordingly, I am directed to inform you that the following Skill Development courses :

i) Dialysis Technician Course
ii) Anaesthesia Technician Course
iii) Operation Theatre Technician Course
iv) Emergency Medicine Technician - Basic Course
v) Urology Technician Course
vi) CSSD Technician Course &

Postgraduate Skill Development Courses :

i) Post Graduate Diploma in Emergency Medicine.
ii) Post Graduate Certificate Course in Counselling Psychology.
iii) Post Graduate Diploma in Invasive Cardiology
iv) Post Graduate Diploma in Non-Invasive Cardiology
v) Post Graduate Diploma in Infection Control

proposed by you are approved and accordingly you have been permitted to start the said courses along with the details such as Eligibility Qualification, Duration, Sanctioned Strength, Fees, etc., shown in annexure No. I and II, attached to your letter under reference from this academic year, namely, academic year 2016-17.

..2..

I am also further directed to request you to obtain the approval for the nomenclature of the courses by the Skill Development Directorate, Govt. of India.

I am also directed by the Hon'ble Vice Chancellor to congratulate on this occasion of starting Skill Development Programme under the Faculty of Medical Sciences at our Medical College & Hospital, Pune, since this is a good and welcome move.

G. Jayakumar

(G. Jayakumar)
Registrar

Copy to :

1 The Dean, Faculty of Medical Sciences, BVU, Pune

2 Dr. Firdaus Bhot, Prof. & HoD. Department of Emergency Medicine
Medical College, Pune.
This has a reference to his letter dated 13/7/2016 on the subject mentioned above.

BHARATI VIDYAPEETH

(DEEMED TO BE UNIVERSITY)
PUNE (INDIA)

Bharati Vidyapeeth Bhavan,
LBS Marg, Pune 411 030

Ref. : BVDU/AC-58/2018-19/ 5956

Date: 12/4/2019

Dr. Rajiv Kulkarni
Dean, Faculty of Medical Sciences,
Medical College & Hospital,
Sangli

The Academic Council, at its 58th meeting held on 26-3-2019 resolved to accord principle approval for starting the following additional skill development courses at Medical College, Pune under the Faculty of Medical Sciences.

A) **Certificate Courses :**
1 ICU Technician Course.
2 Neurophysiology (EEG & EMG) Technician Course.

B) **Diploma Courses :**
1 Diploma in Medical Lab Technology Course (DMLT)-Modified only

C) **Degree Courses :**
1 B.Sc. (Endoscopy)
2 B.Sc. Blood Tranfusion
3 B,Sc. Respiratory Care Technology
4 B.Sc. Radiography
5 B.Sc. Lab Sciences

It was further resolved that the detailed course structure, syllabi and rules of examinations for all the above courses should be worked out by the concerned Board of Studies and Faculty. While devising structure and syllabi for the Bachelor of Science courses the model curriculum provided by the UGC has to be considered.

This is for your information and further necessary action.

G. Jayakumar
(G. Jayakumar)
Registrar

Copy to,

1. The Principal, Medical College, Pune 43.
2. Dr. S. K. Lalwani, Vice Principal, Medical College, Pune 43.

NotificationAC26-3-2019(58-5.2)

DEGREE COURSES

SR.NO.	COURSE NAME	ELIGIBILITY	DURATION	PROPOSED STRENGTH	FEE STRUCTURE	DEPARTMENT RESPONSIBLE FOR CONDUCT
1	B.Sc (Endoscopy)	10+2(Science) and English with 50% minimum marks	3 years	10	Rs.1,00,000/- Per year + Exam Fee	Gastroenterology
2	B.Sc. Blood Transfusion	10+2(Science) and English with 50% minimum marks	3 years	10	Rs.1,00,000/- Per year + Exam Fee	Blood Transfusion
3	B.Sc. Respiratory Care Technology	10+2(Science) and English with 50% minimum marks	3 years	10	Rs.1,00,000/- Per year + Exam Fee	Pulmonary Medicine
4	B.Sc. Radiography	10+2(Science) and English with 50% minimum marks	3 years	10	Rs.1,00,000/- Per year + Exam Fee	Radiology
5	B.Sc. Lab Sciences	10+2(Science) and English with 50% minimum marks	3 years	10	Rs.1,00,000/- Per year + Exam Fee	Dr Meera Modak Incharge Lab Services

Prof. Dr. Shivajirao Kadam
Chancellor M.Sc., Ph.D.
Prof. Dr. M. M. Salunkhe
M.Sc., Ph.D., F.R.S.C.
Vice Chancellor

Bharati Vidyapeeth
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"Social Transformation Through Dynamic Education"

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BHARATI VIDYAPEETH
Dr. Vishwajeet Kadam
B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor
G. Jayakumar
M.Com., Dip.Pub.Admn.
Registrar

NOTIFICATION NO. 1019

It is hereby notified for the information of all concerned that the Academic Council, at its 58th meeting held on 26-3-2019 considered and resolved to start the following courses at Medical College, Pune under the Faculty of Medical Sciences from the academic year 2019-20.

a) Degree Courses :

1 B.Sc. (Radiology & Imaging Technology)
2 B.Sc. (Laboratory Science)
3 B.Sc. (Endoscopy)
4 B.Sc. (Blood Transfusion)
5 B.Sc. Respiratory Care Technology

b) P. G. Diploma Courses :

1 PG Diploma in Invasive Cardiology
2 PG Diploma in Infection Control

This is for the information of all concern.

G. Jayakumar
Registrar

Ref. No. BVDU/2019-20/2532
Date: October 4, 2019

To,

1 The Principal, Medical College, Pune
2 The Dean, Faculty of Medical Sciences, Medical College, Pune
3 The Eligibility Section, BVDU
4 The IT Cell for uploading in the Website.
5. The Controller of Examinations, BVDU - A set of Rules and Regulations, Examination Pattern and syllabi is enclosed for your reference and further action.

AC26-3-2019(58-5.2)

Skill Deve.

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.
Founder Chancellor : Dr. Patangrao Kadam
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Prof. Dr. Shivajirao Kadam
Chancellor M.Sc., Ph.D.

Prof. Dr. M. M. Salunkhe
M.Sc., Ph.D., F.R.S.C.
Vice Chancellor

Dr. Vishwajeet Kadam
B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor

G. Jayakumar
M.Com., Dip.Pub.Admn.
Registrar

NOTIFICATION NO. 1034

It is hereby notified for the information of all concerned that the Academic Council, at its 60th meeting held on 20-1-2020 resolved to start the following B.Sc. / PG Diploma / Certificate courses at Medical College, Pune from the academic year 2020-21.

It was further resolved to authorize the Hon'ble Vice Chancellor to approve the course structure, syllabus and the rules of the examinations for all the proposed Degree, Diploma and certificate programmes,

1)	Name of the Course	:	B.Sc. (Cardiovascular Technology)
	Duration	:	3 yrs. + 1 yr. internship
	Eligibility Criteria	:	1)Age- Completed 17 yrs at the time of admission. 2)Candidates who has successfully passed the Higher Secondary Examinations (10+2 Sci.) Course with Physics, Chemistry, Biology and English with minimum 50% marks from recognized Board.
	Intake	:	10
	Course Fee	:	Rs. 1,00,000/- per year
2)	Name of the Course	:	B.Sc. (Neuro Electrophysiology Technology)
	Duration	:	3 yrs. + 1 yr. internship
	Eligibility Criteria	:	1)Age- Completed 17 yrs at the time of admission. 2)Candidates who has successfully passed the Higher Secondary Examinations (10+2 Sci.) Course with Physics, Chemistry, Biology and English with minimum 50% marks from recognized Board.
	Intake	:	10
	Course Fee	:	Rs. 1,00,000/- per year
3)	Name of the Course	:	B.Sc. (Anaesthesia and OT Technology)
	Duration	:	3 yrs. + 1 yr. internship
	Eligibility Criteria	:	1)Age- Completed 17 yrs at the time of admission. 2)Candidates who has successfully passed the Higher Secondary Examinations (10+2 Sci.) Course with Physics, Chemistry, Biology and English with minimum 50% marks from recognized Board.
	Intake	:	10
	Course Fee	:	Rs. 1,00,000/- per year

BHARATI VIDYAPEETH DEEMED UNIVERSITY MEDICAL COLLEGE
INWARD No. 1409
DATE 20/3/2020

G. Jayakumar

4)	Name of the Course	:	PG Diploma in Clinical Nutrition
	Duration	:	1 yr.
	Eligibility Criteria	:	B.Sc. with Physics, Chemistry, Biology, Nursing and English with minimum 50% marks from recognized Board.
	Intake	:	20
	Course Fee	:	Rs. 40,000/-
5)	Name of the Course	:	PG Diploma in Psychological Counselling
	Duration	:	1 yr.
	Eligibility Criteria	:	Bachelor's degree in Psychology. B.Sc.(Nursing), P.B. B.Sc. (Nursing).
	Intake	:	10
	Course Fee	:	Rs. 40,000/-
6)	Name of the Course	:	PG Diploma in Neonatal Nursing
	Duration	:	1 yr.
	Eligibility Criteria	:	B.Sc.(Nursing), P.B. B.Sc. (Nursing).
	Intake	:	10
	Course Fee	:	Rs. 40,000/- per year
7)	Name of the Course	:	Certificate Course in Endoscopy Technician
	Duration	:	1 yr.
	Eligibility Criteria	:	1) Completed 17 yrs at the time of admission. 2) ANM/ GNM / B.Sc. (Nursing)
	Intake	:	10
	Course Fee	:	Rs. 40,000/-

This is for the information of all concerned.

G. Ramakumar
Registrar

Ref. No. BVDU/2019-20/ 5336
Date: March 17, 2020

To,

1. The Dean, Faculty of Medicine, Medical College, Pune
2. The Principal, Medical College, Pune
3. The Controller of Examinations, BVDU, Pune
4. The IT Cell for uploading in the Website.

AC20-1-2020 (60-5.4)

BHARATI VIDYAPEETH
(Deemed to be University) Pune, India
MEDICAL COLLEGE, PUNE
PUNE –SATARA ROAD, PUNE – 411 043.

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SYLLABUS

SEM III TO SEM VI

B. Sc

(CARDIOVASCULAR TECHNOLOGY)

and

ABILITY ENHANCEMENT

ELECTIVE COURSES

BHARATI VIDYAPEETH

(Deemed to be University) Pune, India

MEDICAL COLLEGE, PUNE

PUNE –SATARA ROAD, PUNE – 411 043.

BACHELOR OF SCIENCE (B.Sc) COURSES

BHARATI VIDYAPEETH

MEDICAL COLLEGE PUNE, 411043

(Choice Based Credit System (CBCS)

Under Faculty of Medical Science

(To be implemented from Academic Year 2020-21)

B.Sc

CARDIOVASCULAR TECHNOLOGY

DOCUMENT ON

CONDUCT OF COURSE

BACHELOR OF SCIENCE (B.Sc) COURSES

BHARATI VIDYAPEETH

MEDICAL COLLEGE PUNE, 411043

(Choice Based Credit System (CBCS))

under Faculty of Medical Science

(To be implemented from Academic Year 2020-21)

General Rules & Regulations

These Rules & Regulations may be called as, "The Rules & Regulations For B.Sc. Paramedical Courses of Bharati Vidyapeeth Medical College", Pune.

Introduction

Bharati Vidyapeeth Deemed University, Pune has developed the training Programme for capacity building since we have 'State of Art' infrastructure, the necessary renowned, experienced and dedicated faculty. We are attached to a spacious well equipped tertiary care hospital and excellent clinical exposure.

These courses will increase the employability in various hospitals, private clinics, medical centers, doctors office etc. It will help in overall development of technical and interpersonal skills required to work under the respective health care areas.

Courses Offered

Details of courses offered along with their eligibility criteria and member of seats are as follows:

Sr. No	Name Of The Course	Eligibility	No Of Seats	Duration
1	B.Sc. (Cardiovascular Technology)	10+2(Science) & English with 50% minimum Marks	10	3 years
2	B.Sc. (Neuro Electrophysiology)	10+2(Science) & English with 50% minimum Marks	10	
3	B.Sc. (Anesthesia & OT Technology)	10+2(Science) & English with 50% minimum Marks	10	

Eligibility for Admission

1) The minimum age for admission shall be 17 years on 31st December of the year in which admission is sought

Minimum education

10+2 class passed with Science subjects (Physics, Chemistry, Biology) & English Core/English Elective with aggregate of 50% marks from any recognized board.

Method of Selection

Admission are made based on the merit list prepared following on interview by a board of faculty members.

. **Course Structure**

a) **B.Sc Courses**

The duration of courses is 3 years divided in to 6 semesters followed by One Year internship. I & II semester shall be common for all the specialization. III, IV, V & VI semesters involve theory, practical and handling of equipment in the respective specialty. I & II semester will have minimum of 90 days, teaching spread over 16 weeks excluding holidays Sundays, vacations, and three weeks of exams followed by CAP.

Semester I (Jul 2020 – Dec 2020)
Semester II (Jan 2021 – Jun 2021)
Semester III (Jul 2021 – Dec 2021)
Semester IV (Jan 2022 – Jun 2022).
Semester V (Jul 2022 – Dec 2022)
Semester VI (Jan 2023 – Jun 2023)

Each Semester will have more than 90 teaching days followed by an university exam. The details of these will be submitted to Bharati Vidyapeeth University prior to end of each semester and permission will be sought for conduct of examination.

Commencement of the Programme

The course will ordinarily commence from 01 July 2020.

Medium Of Instruction: English.

Change Of Course :- As all the heads of the courses are compulsory, change of course is not allowed.

Remuneration / Honorarium:- Following remuneration / honorarium will be paid to faculties:-

Existing Faculty	Rs. 600/- per lecture
Visiting / Guest Faculty	Rs. 1000/ - per lecture

Remuneration/Honorarium will be paid online after consolidated seminary made at the end of each month.

Attendance:- A candidate must have minimum of 80% attendance (irrespective of the kind of absence) in theory and practical in each subjects for appearing for examination. A candidate must have 80% attendance in each of the practical areas before award of degree.

Holidays & Vacation :- As per medical college norms.

Syllabus & Examination Pattern

1) The Syllabus is common during I and II semesters for all B.Sc. Paramedical courses. The subjects include Anatomy, Physiology, Microbiology, Pathology, Biochemistry, Pharmacology, Community medicine, English and Communication skills, Principles of Nursing, Computer related to Medical Care.
2) The Syllabus and the related topics and numbers of hours of teaching in each semester (both theory and practical's) has been based on 'Credit Based Scoring System. As per UGC guidelines, component wise weightage will be as follows :-
   i) General Education Components – 40%
   ii) Skill Development Components – 60%
3) **CHOICE BASED CREDIT SYSTEM (CBCS) :-** The CBCS provides choice for students to select from prescribed courses (Core, elective or minor or soft Skill Courses). Under the CBSC, the requirement for awarding a degree of diploma or certificate is prescribed in terms of number of credit to be completed by the student. The teaching curriculum has been designed and comprises of 140 credit points in three years.

   a) Credit

   - A unit by which the course work measured.
   - It determines the number of hours of instruction required per week.

- While assigning credit values to courses, one credit is considered to be equal to 15 hours of lectures and 30 hours of lab / fieldwork / in-plant training/ internship/ or any other .
- In each of the courses, credits will be assigned on the basis of the number of lectures/ tutorials/ laboratory work other forms of learning required for completing the course the instructional days for one academic year are 180 working days i.e. 90 days per semester.
- Credit Point it is the product of grade point and number of credit for a course.
- The courses in a programme shall be majorly of three kinds, namely, core courses, Open courses, or general courses. Core courses are those which are in the discipline of study and are either foundational or specializations. Core courses may either hard core (Courses which are compulsory to all students in the programme) or soft core (courses which are elective). The hard core courses also include laboratory courses, capstone courses such as internships, in – plant training or full – term projects.
- The core courses should be about 70-75% of the minimum credits that constitute the programme. Remaining 25-30% of the credits may be open courses or general courses. The open courses may be ancillary courses from other disciplines or other specializations or inter – disciplinary. About 5 – 10 % of the credits may be for general courses. .
- The evaluation for all courses shall have two components – Internal assessment (IA) and end of the term University Examination (UE).

b) <u>Grade Point:- Grading System For Various B.Sc. Courses : -</u>

- The university shall adopt a 10 – point absolute grading system for grading in each head of passing. The system will have seven grade points, the highest being 10. The grding system shall be as shown in table – 1 below. The performance indicators O, A+, A, B+, B, C and D shall respectively mean Outstanding, Excellent, Very Good, Good, Average, satisfactory and poor. It may be noted that entries in table are meant for converting marks in individual courses to grade points. The respective grade points can also be computed from the following formulas in given table 2.

Table – 1 : The Grading System Under CBCS

% Marks in a paper / practical	Grade Point	Grade Point (GP)
80 ≤ Marks ≤ 100	10	O
70 ≤ Marks < 80	9	A+
60 ≤ Marks < 70	8	A
55 ≤ Marks < 60	7	B+
50 ≤ Marks < 55	6	B
40 ≤ Marks < 50	5	C
Marks < 40	0	D

The Formulas to calculate the Grade Points (GP) :

Suppose that 'Max' is the maximum marks assigned for an examination or evaluation based on which GP will be computed. In order to determine the GP, set x = Max/10 (since we have adapted 10 – point system). Then GP is calculated by the formulas shown in table – 2. After computing the grade point the grade can be found from able – 1.

Table – 2 : Formula to Calculate Grade Point

In Individual Evaluations

Range of Marks at the evaluation	Formula for the Grade Point
8x ≤ M ≤ 10x	10
5.5x ≤ M < 8x	Truncate(M/x)+2
4x ≤ M < 5.5x	Truncate(M/x)+1

c) **Nature Of Examination:** For all courses there shall be Internal Assessment (IA) conducted by the university. The UE will be based on the entire syllabus.

d) Computation of grade point Averages: Cumulative performance indicators such as GPA, SGPA, or CGPA shall be calculated as described and illustrated below.

e) **(i)** The performance at UE and IA will be combined to obtained the Grade Point Average (GPA) for the course. The weights for performance at UE and IA shall respectively be 60% and 40%.

(ii) The grade point average (GPA) for a course shall be calculated by first finding the total marks out of 100 for the course. The corresponding GP (as per the table in (2) above) shall be the GPA for the course.

(iii) Two kinds of performance indicators, namely the Semester Grade Point Average (SGPA) and the Cumulative Grade Point Average (CGPA) shall be computed at the end of each term. The SGPA measures the cumulative performance of a learner in all the courses in a particular semester, while the CGPA measures the cumulative performance in all courses since his/her enrolment. The CGPA of a learner when he/she completes the programme is the final result of the learner.

(iv) The SGPA is calculated by the formula SGPA = $\frac{\Sigma Ck*GPk}{\Sigma Ck}$, where Ck is the credit – Value assigned to a course and GPk is the GPA obtained by the learner in the course. In the above, the sum is taken over all the courses that the learner has undertaken for the study from the time of his/her enrolment and als the during the semester for which CGPA is calculated, including those in which he/she might have failed or those for which he/she remained absent. The CGPA shall be calculated up to two decimal place accuracy.

(v) The CGPA is calculated by the formula CGPA = $\frac{\Sigma Ck*GPk}{\Sigma Ck}$, where Ck is the credit – Value assigned to a course and GPk is the GPA obtained by the learner in the course. In the above, the sum is taken over all the courses that the learner has undertaken for the study from the time of his/her enrolment and also the during the semester for which CGPA is calculated, including those I which he/she might have failed or those for which he/she remained absent. The CGPA shall be calculated up to two decimal place accuracy.

(vi) The CGPA, calculated after the minimum credits Specified for the programme are 'earned' will be the final result.

f) Standards of Passing and ATKT Rules:-

1. For all courses, both UE and IE constitute separate heads – of – passing (HoP). In order to pass in such courses and to 'earn' the assigned credits.

(a) The learner must obtained a minimum grade point of 5.0 (40% marks) at UE and also a minimum grade point of 5.0 (40% marks) at IA;

2. If he/she fails in IA, the learner passes in the course provided he/she obtains a minimum of 25% in IA and GPA for the course is at least 6.0 (50% in aggregate). The GPA for a course will be calculated only if the learner passes at the UE. The following examples illustrate this rule for passing in a course under.

Table – 3 : Illustration of passing Rule specified in E. 1

Case No.	UE marks Out Of 60	IA marks out of 40	Total marks out of 100	GP of UE	GP of IA	GPA	Remarks
1	24	16	40	5.0	5.0	5.0	Pass
2	40	10	50	7.0	0	6.0	Pass
3	40	06	46	7.0	0	5.0	Fails at IA
4	20	40	--	0	10.0	0	Fails at UE
5	34	12	46	7.0	0	5.0	Fails at IA
6	20	15	--	0	0	0	Fails at both UE &IA

3. A student who fails at UE in a course has to reappear only at UE as a backlog candidate and clear the HoP. Similarly, A student who fails in a course at IA has to reappear only at IA as a backlog candidate and clear the HoP.

ATKT RULES:-

- A student is allowed to carry backlog of courses prescribed for Semester I, III & V to Sem – II, IV & VI respectively.
- A student is allowed to keep term for Semester III if he/she is failing in any number of subjects of Sem – I & II.
- Student is allowed to keep term of Sem – V, if he/she is failing in any number of subjects of Sem – III & IV but passed in all subjects of Sem – I & II.
- Students should have cleared all subjects of Semester I, II, III, IV and V to be eligible for appearing in Semester VI examination.

4) Semester wise and teaching subject wise credits number of hours of teaching required in a semester and per week and scoring pattern of examination is as follows:

SEMESTER I (COMMON)												
CORE COURSES												
Course Code & Course		**Theory Credits (Total Hours)**	**Practical Credits (Total Hours)**	**Teaching Hours Per Week**		**Examination Scheme**						
						Theory Marks			**Practical Marks**			
				Theory/ Tutorial	**Practical**	**U/E**	**I/A**	**Total**	**U/E**	**I/A**	**Total**	
AH 101	ANATOMY	2 (30)	2.5(75)	3	4	40	20	60	60	40	100	
AH 102	PHYSIOLOGY	2 (30)	2.5(75)	3	4	40	20	60	60	40	100	
AH 103	BIOCHEMISTRY	2 (30)	2.5(75)	3	4	40	20	60	60	40	100	
AH 104	ENGLISH	3 (45)	-	3	-	60	40	100	-	-	-	
ABILITY ENHANCEMENT ELECTIVE COURSE												
AEEC 105	PRINCIPLES OF NURSING	2 (30)	2.5(75)	3	4	40	20	60	60	40	100	
CORE ELECTIVE COURSES												
CEC 106	COMMUNICATION SKILLS*	2 (30)	-	2	-	60	40	100	-	-	-	
CEC 107	COMPUTER RELATED TO MEDICAL CARE **	1(15)	1 (30)	1	2	40	20	60	60	40	100	
1 theory credit = 15 classroom &/or experiential learning hours 1 practical credit = 30 practical training hours **Note : Students have chosen all subjects for studying in Semester I**									**Total Credit Points**		**25**	

SEMESTER II COMMON)											
CORE COURSES											
Course Code & Course		**Theory Credits (Total Hours)**	**Practical Credits (Total Hours)**	**Teaching Hours Per Week**		**Examination Scheme**					
						Theory Marks			**Practical Marks**		
				Theory/ Tut/ Sem	**Practical**	**U/E**	**I/A**	**Total**	**U/E**	**I/A**	**Total**
AH 201	MICROBIOLOGY	2 (30)	2 (60)	2	4	40	20	60	60	40	100
AH 202	PATHOLOGY	2 (30)	2 (60)	2	4	40	20	60	60	40	100
AH 203	PHARMACOLOGY	2 (30)	2 (60)	2	4	40	20	60	60	40	100
AH 204	COMMUNITY MEDICINE	2 (30)	2 (60)	2	4	40	20	60	60	40	100
ABILITY ENHANCEMENT ELECTIVE COURSE											
AEEC 205	ENVIRONMENT STUDIES	3 (45)	-	3	-	60	40	100	-	-	-
CORE ELECTIVE COURSE											
CEC 206	HOSPITAL OPERATIONAL MANAGEMENT	2 (30)	2 (60)	2	4	40	20	60	60	40	100
OR											
CEC 207	INTRODUCTION TO QUALITY AND PATIENT SAFETY	2 (30)	2 (60)	2	4	40	20	60	60	40	100
1 theory credit = 15 classroom &/or experiential learning hours				1 practical credit = 30 practical training hours					**Total Credit Points**		**23**

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SYLLABUS

SEM III TO SEM VI

B. Sc

(ANAESTHESIA & OT TECHNOLOGY)

and

ABILITY ENHANCEMENT ELECTIVE COURSES

BHARATI VIDYAPEETH

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BACHELOR OF SCIENCE (B.Sc) COURSES

BHARATI VIDYAPEETH

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B.Sc

ANAESTHESIA & OT TECHNOLOGY

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BACHELOR OF SCIENCE (B.Sc) COURSES

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These courses will increase the employability in various hospitals, private clinics, medical centers, doctors office etc. It will help in overall development of technical and interpersonal skills required to work under the respective health care areas.

Courses Offered

Details of courses offered along with their eligibility criteria and member of seats are as follows:

Sr. No	Name Of The Course	Eligibility	No Of Seats	Duration
1	B.Sc. (Cardiovascular Technology)	10+2(Science) & English with 50% minimum Marks	10	3 years
2	B.Sc. (Neuro Electrophysiology)	10+2(Science) & English with 50% minimum Marks	10	
3	B.Sc. (Anesthesia & OT Technology)	10+2(Science) & English with 50% minimum Marks	10	

Eligibility for Admission

1) The minimum age for admission shall be 17 years on 31st December of the year in which admission is sought

Minimum education

10+2 class passed with Science subjects (Physics, Chemistry, Biology) & English Core/English Elective with aggregate of 50% marks from any recognized board.

Method of Selection

Admission are made based on the merit list prepared following on interview by a board of faculty members.

. **Course Structure**

a) **B.Sc Courses**

The duration of courses is 3 years divided in to 6 semesters followed by One Year internship. I & II semester shall be common for all the specialization. III, IV, V & VI semesters involve theory, practical and handling of equipment in the respective specialty. I & II semester will have minimum of 90 days, teaching spread over 16 weeks excluding holidays Sundays, vacations, and three weeks of exams followed by CAP.

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Semester VI (Jan 2023 – Jun 2023)

Each Semester will have more than 90 teaching days followed by an university exam. The details of these will be submitted to Bharati Vidyapeeth University prior to end of each semester and permission will be sought for conduct of examination.

Commencement of the Programme

The course will ordinarily commence from 01 July 2020.

Medium Of Instruction: English.

Change Of Course :- As all the heads of the courses are compulsory, change of course is not allowed.

Remuneration / Honorarium:- Following remuneration / honorarium will be paid to faculties:-

Existing Faculty	Rs. 600/- per lecture
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Remuneration/Honorarium will be paid online after consolidated seminary made at the end of each month.

Attendance:- A candidate must have minimum of 80% attendance (irrespective of the kind of absence) in theory and practical in each subjects for appearing for examination. A candidate must have 80% attendance in each of the practical areas before award of degree.

Holidays & Vacation :- As per medical college norms.

Syllabus & Examination Pattern

1) The Syllabus is common during I and II semesters for all B.Sc. Paramedical courses. The subjects include Anatomy, Physiology, Microbiology, Pathology, Biochemistry, Pharmacology, Community medicine, English and Communication skills, Principles of Nursing, Computer related to Medical Care.
2) The Syllabus and the related topics and numbers of hours of teaching in each semester (both theory and practical's) has been based on 'Credit Based Scoring System. As per UGC guidelines, component wise weightage will be as follows :-
   i) General Education Components – 40%
   ii) Skill Development Components – 60%
3) **CHOICE BASED CREDIT SYSTEM (CBCS) :-** The CBCS provides choice for students to select from prescribed courses (Core, elective or minor or soft Skill Courses). Under the CBSC, the requirement for awarding a degree of diploma or certificate is prescribed in terms of number of credit to be completed by the student. The teaching curriculum has been designed and comprises of 140 credit points in three years.

   a) Credit

   - A unit by which the course work measured.
   - It determines the number of hours of instruction required per week.

- While assigning credit values to courses, one credit is considered to be equal to 15 hours of lectures and 30 hours of lab / fieldwork / in-plant training/ internship/ or any other .
- In each of the courses, credits will be assigned on the basis of the number of lectures/ tutorials/ laboratory work other forms of learning required for completing the course the instructional days for one academic year are 180 working days i.e. 90 days per semester.
- Credit Point it is the product of grade point and number of credit for a course.
- The courses in a programme shall be majorly of three kinds, namely, core courses, Open courses, or general courses. Core courses are those which are in the discipline of study and are either foundational or specializations. Core courses may either hard core (Courses which are compulsory to all students in the programme) or soft core (courses which are elective). The hard core courses also include laboratory courses, capstone courses such as internships, in – plant training or full – term projects.
- The core courses should be about 70-75% of the minimum credits that constitute the programme. Remaining 25-30% of the credits may be open courses or general courses. The open courses may be ancillary courses from other disciplines or other specializations or inter – disciplinary. About 5 – 10 % of the credits may be for general courses. .
- The evaluation for all courses shall have two components – Internal assessment (IA) and end of the term University Examination (UE).

b) <u>Grade Point:- Grading System For Various B.Sc. Courses : -</u>

- The university shall adopt a 10 – point absolute grading system for grading in each head of passing. The system will have seven grade points, the highest being 10. The grding system shall be as shown in table – 1 below. The performance indicators O, A+, A, B+, B, C and D shall respectively mean Outstanding, Excellent, Very Good, Good, Average, satisfactory and poor. It may be noted that entries in table are meant for converting marks in individual courses to grade points. The respective grade points can also be computed from the following formulas in given table 2.

Table – 1 : The Grading System Under CBCS

% Marks in a paper / practical	Grade Point	Grade Point (GP)
80 ≤ Marks ≤ 100	10	O
70 ≤ Marks < 80	9	A+
60 ≤ Marks < 70	8	A
55 ≤ Marks < 60	7	B+
50 ≤ Marks < 55	6	B
40 ≤ Marks < 50	5	C
Marks < 40	0	D

The Formulas to calculate the Grade Points (GP) :

Suppose that 'Max' is the maximum marks assigned for an examination or evaluation based on which GP will be computed. In order to determine the GP, set x = Max/10 (since we have adapted 10 – point system). Then GP is calculated by the formulas shown in table – 2. After computing the grade point the grade can be found from able – 1.

Table – 2 : Formula to Calculate Grade Point

In Individual Evaluations

Range of Marks at the evaluation	Formula for the Grade Point
8x ≤ M ≤ 10x	10
5.5x ≤ M < 8x	Truncate(M/x)+2
4x ≤ M < 5.5x	Truncate(M/x)+1

c) **Nature Of Examination:** For all courses there shall be Internal Assessment (IA) conducted by the university. The UE will be based on the entire syllabus.

d) Computation of grade point Averages: Cumulative performance indicators such as GPA, SGPA, or CGPA shall be calculated as described and illustrated below.

e) **(i)** The performance at UE and IA will be combined to obtained the Grade Point Average (GPA) for the course. The weights for performance at UE and IA shall respectively be 60% and 40%.

(ii) The grade point average (GPA) for a course shall be calculated by first finding the total marks out of 100 for the course. The corresponding GP (as per the table in (2) above) shall be the GPA for the course.

(iii) Two kinds of performance indicators, namely the Semester Grade Point Average (SGPA) and the Cumulative Grade Point Average (CGPA) shall be computed at the end of each term. The SGPA measures the cumulative performance of a learner in all the courses in a particular semester, while the CGPA measures the cumulative performance in all courses since his/her enrolment. The CGPA of a learner when he/she completes the programme is the final result of the learner.

(iv) The SGPA is calculated by the formula SGPA = $\frac{\Sigma Ck*GPk}{\Sigma Ck}$, where Ck is the credit – Value assigned to a course and GPk is the GPA obtained by the learner in the course. In the above, the sum is taken over all the courses that the learner has undertaken for the study from the time of his/her enrolment and als the during the semester for which CGPA is calculated, including those in which he/she might have failed or those for which he/she remained absent. The CGPA shall be calculated up to two decimal place accuracy.

(v) The CGPA is calculated by the formula CGPA = $\frac{\Sigma Ck*GPk}{\Sigma Ck}$, where Ck is the credit – Value assigned to a course and GPk is the GPA obtained by the learner in the course. In the above, the sum is taken over all the courses that the learner has undertaken for the study from the time of his/her enrolment and also the during the semester for which CGPA is calculated, including those I which he/she might have failed or those for which he/she remained absent. The CGPA shall be calculated up to two decimal place accuracy.

(vi) The CGPA, calculated after the minimum credits Specified for the programme are 'earned' will be the final result.

f) Standards of Passing and ATKT Rules:-

1. For all courses, both UE and IE constitute separate heads – of – passing (HoP). In order to pass in such courses and to 'earn' the assigned credits.

(a) The learner must obtained a minimum grade point of 5.0 (40% marks) at UE and also a minimum grade point of 5.0 (40% marks) at IA;

2. If he/she fails in IA, the learner passes in the course provided he/she obtains a minimum of 25% in IA and GPA for the course is at least 6.0 (50% in aggregate). The GPA for a course will be calculated only if the learner passes at the UE. The following examples illustrate this rule for passing in a course under.

Table – 3 : Illustration of passing Rule specified in E. 1

Case No.	UE marks Out Of 60	IA marks out of 40	Total marks out of 100	GP of UE	GP of IA	GPA	Remarks
1	24	16	40	5.0	5.0	5.0	Pass
2	40	10	50	7.0	0	6.0	Pass
3	40	06	46	7.0	0	5.0	Fails at IA
4	20	40	--	0	10.0	0	Fails at UE
5	34	12	46	7.0	0	5.0	Fails at IA
6	20	15	--	0	0	0	Fails at both UE &IA

3. A student who fails at UE in a course has to reappear only at UE as a backlog candidate and clear the HoP. Similarly, A student who fails in a course at IA has to reappear only at IA as a backlog candidate and clear the HoP.

ATKT RULES:-

- A student is allowed to carry backlog of courses prescribed for Semester I, III & V to Sem – II, IV & VI respectively.
- A student is allowed to keep term for Semester III if he/she is failing in any number of subjects of Sem – I & II.
- Student is allowed to keep term of Sem – V, if he/she is failing in any number of subjects of Sem – III & IV but passed in all subjects of Sem – I & II.
- Students should have cleared all subjects of Semester I, II, III, IV and V to be eligible for appearing in Semester VI examination.

4) Semester wise and teaching subject wise credits number of hours of teaching required in a semester and per week and scoring pattern of examination is as follows:

SEMESTER I (COMMON)												
CORE COURSES												
Course Code & Course		**Theory Credits (Total Hours)**	**Practical Credits (Total Hours)**	**Teaching Hours Per Week**		**Examination Scheme**						
						Theory Marks			**Practical Marks**			
				Theory/ Tutorial	**Practical**	**U/E**	**I/A**	**Total**	**U/E**	**I/A**	**Total**	
AH 101	ANATOMY	2 (30)	2.5(75)	3	4	40	20	60	60	40	100	
AH 102	PHYSIOLOGY	2 (30)	2.5(75)	3	4	40	20	60	60	40	100	
AH 103	BIOCHEMISTRY	2 (30)	2.5(75)	3	4	40	20	60	60	40	100	
AH 104	ENGLISH	3 (45)	-	3	-	60	40	100	-	-	-	
ABILITY ENHANCEMENT ELECTIVE COURSE												
AEEC 105	PRINCIPLES OF NURSING	2 (30)	2.5(75)	3	4	40	20	60	60	40	100	
CORE ELECTIVE COURSES												
CEC 106	COMMUNICATION SKILLS*	2 (30)	-	2	-	60	40	100	-	-	-	
CEC 107	COMPUTER RELATED TO MEDICAL CARE **	1(15)	1 (30)	1	2	40	20	60	60	40	100	
1 theory credit = 15 classroom &/or experiential learning hours 1 practical credit = 30 practical training hours **Note : Students have chosen all subjects for studying in Semester I**									**Total Credit Points**		**25**	

SEMESTER II COMMON)											
CORE COURSES											
Course Code & Course		**Theory Credits (Total Hours)**	**Practical Credits (Total Hours)**	**Teaching Hours Per Week**		**Examination Scheme**					
						Theory Marks			**Practical Marks**		
				Theory/ Tut/ Sem	**Practical**	**U/E**	**I/A**	**Total**	**U/E**	**I/A**	**Total**
AH 201	MICROBIOLOGY	2 (30)	2 (60)	2	4	40	20	60	60	40	100
AH 202	PATHOLOGY	2 (30)	2 (60)	2	4	40	20	60	60	40	100
AH 203	PHARMACOLOGY	2 (30)	2 (60)	2	4	40	20	60	60	40	100
AH 204	COMMUNITY MEDICINE	2 (30)	2 (60)	2	4	40	20	60	60	40	100
ABILITY ENHANCEMENT ELECTIVE COURSE											
AEEC 205	ENVIRONMENT STUDIES	3 (45)	-	3	-	60	40	100	-	-	-
CORE ELECTIVE COURSE											
CEC 206	HOSPITAL OPERATIONAL MANAGEMENT	2 (30)	2 (60)	2	4	40	20	60	60	40	100
OR											
CEC 207	INTRODUCTION TO QUALITY AND PATIENT SAFETY	2 (30)	2 (60)	2	4	40	20	60	60	40	100
1 theory credit = 15 classroom &/or experiential learning hours				1 practical credit = 30 practical training hours					**Total Credit Points**		**23**

BHARATI VIDYAPEETH

(Deemed to be University) Pune, India

MEDICAL COLLEGE, PUNE

PUNE –SATARA ROAD, PUNE – 411 043.

POST GRADUATE DIPLOMA IN NON INVASIVE CARDIOLOGY

1. Introduction

A cardiac lab tech, or cath lab tech, is a person who is trained to assist medical professionals in the diagnosis and treatment of patients who have, or are suspected of having, conditions related to the cardiovascular system. Typically, a person in this position works in a cardiac catheterization lab, assisting cardiologists or those in charge of diagnostic imaging. A person in this field may also assist a head technologist. The exact duties a person in this field may perform depend on the needs of his employer, but they may range from ensuring patient comfort during procedures, such as heart catheterizations, to monitoring patient vital signs

Bharati Vidyapeeth Deemed University, Pune has developed the training programme for capacity building since we have 'State of Art' infrastructure, the necessary renowned, experienced and dedicated faculty. We are attached to a spacious well equipped tertiary care hospital and excellent clinical exposure.

This course will increase the employability in various hospitals, private clinics, medical centres, doctor's office etc. It will help in overall development of technical and interpersonal skills required to work under the supervision of Nephrologists and surgical personnel.

Programs prepare students to work in non-invasive cardiovascular testing positions. These positions may be found in hospitals, clinics, laboratories, medical centers, and doctor offices. Job titles may include:

- Non-invasive cardiovascular technician
- Electrocardiogram (EKG) technician
- Cardiac sonographer

2. Aims and objectives

a. To provide the most dedicated skilful, knowledgeable and practically trained echo technologists to the field cardiology
b. To provide an open, learning atmosphere. This can nurture the potentials of the trainee and orient him/her towards their development in the field cardiology and cardiac diagnostics.
c. To create awareness among the trainees by well scheduled and designed lectures from qualified and experienced staff in the field of medicine along with lectures by guest faculty.
d. To provide an opportunity to get hands on experience in the field by practical work exposure.
e. To display right attitudes to the trainee by being "Role Models" in the field of medical technology as attitudes are "caught" and not "taught".

f. Finally, to increase the number of well qualified technical personnel to suffice their growing need in the field of interventional cardiology.

3. **Eligibility**

   Age: Completed 17 years of age at the time of admission

   Qualification: BSc degree with Physics/ Biology with English and minimum 50% marks. BSc Nursing and GNM Nursing

4. **Selection Process:** On merit and interview, by board of doctors / nurses appointed by the principal of the Bharati Vidyapeeth Deemed University Medical College

5. **Intake Capacity** – **10**

6. **Course Duration – One Year**

7. **Course Details (in brief)**

   This course will run under **"Department of Cardiology'**

   Syllabus: A broad outline of the syllabus is given below

   1. First Term
   a. Anatomy and physiology cardiac
   b. Microbiology
   c. Pharmacology
   d. Preventive cardiology
   e. Basics of ultra sound and Doppler
   f. Physics
   g. Cardiovascular system in details
   h. Internal assessments/viva

   2. Second Term
   a. E.C.G
   b. Defibrillation
   c. Cardiac disease
   d. Cardiac ultrasound and Doppler
   e. Holster
   f. Project study
   g. Viva/internal assessment.

   3. Respond to emergency calls

   4. **Patient Care** Haemodynamic monitoring

Postings:

1. The trainees will be rotated through various departments like medicine, in addition to the cardiology department as per the teaching sections of the course as specified in the program.

Patient Care*:* She/he will be posted along with trainer, to manage patients in the ultrasound and medicine department or any other department where he is posted.

Simulation: Bharati Vidyapeeth Medical College has a well equipped simulation laboratory which will be used to train the trainees for administering basic and advanced life support.

8. **Training Location** - Bharati Hospital and Research Centre and Other Hospitals

9. **Certification** – On completion of all necessary terms and conditions the successful candidates will be given a certificate by of Bharati Vidyapeeth Deemed University Medical College. Certification as "**Post Graduate Diploma in Non Invasive cardiology**"

10. **Employment** – The successful candidates can be employed as non invasive cardiac technician in cardiology establishments.

11. **Others**: Accommodation to be arranged by students.

PG Diploma in CLINICAL NUTRITION

1. Introduction

Bharati Vidyapeeth Deemed University, Pune has developed the training programme for capacity building since we have 'State of Art' infrastructure, the necessary renowned, experienced and dedicated faculty. We are attached to a spacious well equipped tertiary care hospital and excellent clinical exposure.

Clinical nutrition involves studying what nutrients are necessary for your body to function and how what you eat affects your health. Clinical nutrition is the practice of analysing if a person is consuming an adequate amount of nutrients for good health. A clinical nutritionist is concerned with how nutrients in food are processed, stored and discarded by your body, along with how what you eat affects your overall well-being. Professionals in this field assess your nutritional needs based on your family and medical history, lifestyle and laboratory tests in order to make recommendations on your diet and individual nutritional needs. A clinical nutritionist may provide advice on changes to your diet that may help prevent disease

Such Nutritionists can be gainfully employed across fields such as colleges, research institutes, schools, companies, private or government hospitals, airlines, office cafeterias, yoga centre's, maternity, governments health departments, athletes' camps, mass media sector, etc.

Clinical Nutritionists professionally advice regarding promotion of healthy food habits. They may also work as private practitioners or private consultants.

Popular areas of employment include health maintenance organizations, home health agencies, and public health clinics, etc.

2. Aims and objectives

- Provide high-quality dietetic services to help to fulfill Addenbrooke's role as a provider of comprehensive health services to the residents of Cambridge and the surrounding area.
- Increase specialist work and develop specialist dietetic teams within the department.
- Improve the links between these specialist teams and other dietitians in the region.
- Ensure quality is amongst the best, and adopt an approach to constant quality improvement.
- Employ high-caliber staff and invest in their education and training.
- Use evidence-based practice to develop effective therapies and new treatments.
- Work to the highest professional standards.
- Work with others to ensure nutrition is included as a priority in patient care

3. **Eligibility**

   a. Age – Completed 17 years of age at the time of admission.
   b. Qualification – BSc degree with Physics, Chemistry and Biology and English with minimum 50% marks from recognised board is eligible for admission, BSc Nursing

4. **Selection Process:** On merit and interview, by board of doctors / nurses appointed by the Principal of the Bharati Vidyapeeth Deemed University Medical College

5. **Intake Capacity** – **20**

6. **Course Duration – One Year**

7. **Course in brief**

   The course would be run by the "**Department of Dietetics"** Bharati Vidyapeeth Deemed University Medical College.

Major Areas of Training

Dietitians and nutritionists are experts in food and nutrition. They advise people on what to eat in order to lead a healthy lifestyle or achieve a specific health-related goal.Dietitians and nutritionists typically do the following:

- Assess patients' and clients' health needs and diet
- Counsel patients on nutrition issues and healthy eating habits
- Develop meal plans, taking both cost and clients' preferences into account
- Evaluate the effects of meal plans and change the plans as needed
- Promote better nutrition by speaking to groups about diet, nutrition, and the relationship between good eating habits and preventing or managing specific diseases
- Keep up with the latest nutritional science research
- Write reports to document patient progress

Dietitians and nutritionists evaluate the health of their clients. Based on their findings, dietitians and nutritionists advise clients on which foods to eat—and those foods to avoid—to improve their health.Some dietitians and nutritionists provide customized information for specific individuals. For example, a dietitian or nutritionist might teach a client with high blood pressure how to use less salt when preparing meals. Others work with groups of people who have similar needs. For example, a dietitian or nutritionist might plan a diet with limited fat and sugar to help patients lose weight. They may work with other healthcare professionals to coordinate patient care.Dietitians and nutritionists who are self-employed may meet with patients, or they may work as consultants for a variety of organizations. They may need to spend time on marketing and other

business-related tasks, such as scheduling appointments and preparing informational materials for clients.

8. **Training Location** - Bharati Hospital and Research Centre and Other Hospitals

9. **Certification** – On completion of all necessary terms and conditions the successful candidates will be given a Degree certificate by Bharati Vidyapeeth Deemed University. Degree will be termed as "**Post Graduate Diploma in Clinical Nutrition**"

10. **Employment** – As there are few universities running this programme and there is lot of requirement of such technicians, they will be an asset to our institution and will find gainful employment institutes

11. **Others** - Accommodation will have to be arranged by students themselves.

Minutes of the meeting for BOS

(Business Administration)

held on 11th December 2020at Bharati Vidyapeeth (Deemed to be University).

(Mode of Conduct of Meeting Online - Zoom app.), Pune at 4.00 p.m.

Members Present:

Dr. Mahesh V. Sithole , Chairman, BOS (Business Administration)

Dr. Vinod Ingawale	Dr. S. Dharmadhikari	Dr. R. A. Marathe	Mr. Yogesh Gurav
Dr. M.M. Pole	Dr. Nilesh Mate	Dr. Vrushali Yadav	-

Members absent :

1. Mr. Jayant Oke2 .Mr. Rakesh Bhargava

The meeting began with the welcome of the members by the chairmanProf. Dr. Mahesh V. Shitole.

Item 1: Confirmation of the minutes of the previous meeting

Discussion : The minutes of the previous meeting were read out and each item briefed to the members by chairman of the board.

Resolution : The members reviewed and confirmed the minutes of the previous meeting held on 4th March 2020.

Item 2:Syllabus of MBA (Gen) (CBCS – 2020) Sem III & IVunder Regular mode.

Discussion: The Chairman BOS ,Prof. Dr. Mahesh Shitole briefed the members about the syllabus - MBA (Gen) (CBCS – 2020)Sem III & IV

Resolution: The Board unanimously approved the syllabus - MBA (Gen) (CBCS – 2020)- Sem III & IV.

Item 3: SDE - Syllabus of MBA (CBCS – 2020) Sem III & IV, Executive – MBA (CBCS – 2020)Sem III & IV.

Discussion: The Chairman BOS ,Prof. Dr. Mahesh Shitole briefed the members about the syllabus - MBA (Gen) (CBCS – 2020) Sem III & IV, Executive – MBA (CBCS – 2020)Sem III & IV under SDE mode.

Resolution: The Board unanimously approved the syllabus after detailed discussion- MBA (Gen) (CBCS – 2020) Sem III & IV, Executive – MBA (CBCS – 2020)Sem III & IV under SDE mode

Item 4: For Online Degree Programme under CBCS Pattern - Structure and Syllabus of BBA (CBCS - 2018) and MBA (Gen) (CBCS – 2020)

Discussion:

1. The Structure and syllabus under Online Degree Programmeof BBA (CBCS – 2018) and MBA (Gen) (CBCS – 2020) was discussed in detail.

Resolution: The Board unanimously approvedStructure and syllabus under Online Degree Programme of BBA (CBCS – 2018) and MBA (Gen) (CBCS – 2020).

The meeting ended with the vote of thanks proposed by DrRajita Dixit.

Prof. Dr. Mahesh V. Shitole
Chairman - BOS (Business Administration)

Encl: Syllabus - MBA (Gen) – 2020 III&IV Sem – CBCS Pattern

Syllabus - MBA (Gen) (SDE) – 2020 III&IV Sem – CBCS Pattern

Syllabus - E - MBA (SDE) – 2020 III & IVSem – CBCS Pattern

Syllabus - MBA(Gen) (Online) – 2020 I & II Year – CBCS Pattern

Syllabus – BBA (Online) – 2018 I, II & III Year – CBCS Pattern

Minutes of the meeting of

BOS (HR & Communication Studies**)**

held on 11th December 2020at Bharati Vidyapeeth (Deemed to be University).

(Mode of Conduct of Meeting Online - Zoom app.), Pune at 4.00 p.m.

Members Present:

1. Dr. Kirti Gupta – Chairman
2. Dr. Ravindra Marathe - Member
3. Dr. S. B. Sawant – Member
4. Dr. P. P. Kothari – Member
5. Dr. Broto Bharadwaj – Member
6. Prof. M. M. Pole – Member
7. Dr. Shabana Memon – Member
8. Dr. Hema Mirji
9. Dr. Prabhat Kumar – Member
10. Dr. SachinAyarekar – Member
11. Dr. Rajita Dixit – Member

Members absent :

Mr. Prakash Dhoka 2. Mr. Sharad Gangal

The meeting began with the welcome of the members by the chairmanProf. Dr. Kirti Gupta.

Item 1: Confirmation of the minutes of the previous meeting

Discussion : The minutes of the previous meeting were read out and each item briefed to the members by chairman of the board.

Resolution : The members reviewed and confirmed the minutes of the previous meeting held on 4th March 2020.

Item 2: Syllabus of MBA (HR) (CBCS – 2020) Sem III & IV under Regular mode.

Discussion: The Chairman BOS ,Prof. Dr. Kirti Gupta briefed the members about the syllabus - MBA (HR) (CBCS – 2020) Sem III & IV .

Resolution: The Board unanimously approved the syllabus - MBA (HR) (CBCS – 2020) - Sem III & IV.

Item 3: SDE - Syllabus of MBA(HR) (CBCS – 2020) Sem III & IV under SDE mode

Discussion: The Chairman BOS ,Prof. Dr. Kirti Gupta briefed the members about the syllabus - MBA (HR) (CBCS – 2020) Sem III & IV under SDE mode.

Resolution: The Board unanimously approved the syllabus after detailed discussion- MBA (HR) (CBCS – 2020) Sem III & IV under SDE mode

The meeting ended with the vote of thanks proposed by DrRajita Dixit.

Dr. Kirti S. Gupta

Chairman - BOS (HR & Communication Studies)

Encl: Syllabus - MBA (HR) – 2020 III&IV Sem – CBCS Pattern

Syllabus - MBA (HR) (SDE) – 2020 III&IV Sem – CBCS Pattern

Bharati Vidyapeeth
(Deemed to be University), Pune (India)

Minutes of the Meeting of Faculty of Management Studies (FMS) held on 06/04/2021

The online meeting of Faculty of Management Studies (FMS) was held on 06th April 2021 (Tuesday) at 11.30 am. The meeting was chaired by the Dean, Dr.Sachin S.Vernekar.

Following members were present:

Members Present:

1. Dr. Sachin S. Vernekar
2. Dr.Mahesh Shitole
3. Dr. Kirti Gupta
4. Dr. Ajit More
5. Dr. L.S. Chirmulay
6. Dr.Anil Keskar
7. Dr.Nilesh Mahajan

Special Invitees:

8. Prof. Jayant Oke (External Expert)
09. Mrs. Anuja Jadhav (I/c Director, BV(DU), SDE
10. Dr. Nilesh Mate

Leave of absence was granted to :
Dr.P.J. Kulkarni since communicated his inability to attend the meeting.

The Chairman welcomed all the members.

Discussions, Action Items noted and Decisions taken :

Item 1: Confirmation of the minutes of the previous meeting

Note: The minutes of the previous meeting were read out.

Resolution : The minutes of the previous meeting held on 22nd December 2020 were confirmed.

Item No. 2: Introduction of 'Project Management' specialization in the syllabus of following programmes.

1. MBA (Gen) (CBCS – 2020) & MBA (HR) (CBCS – 2020) Sem III and Sem IV under Regular mode.
2. MBA (Gen) (CBCS – 2020), MBA (HR) (CBCS – 2020) & MBA (E) (CBCS – 2020) Sem III and Sem IV under School of Distance Education.
3. MBA (2021-22) Sem III and Sem IV under School of Online Education.

Note :
Dr. Mahesh Shitole, Chairman BoS (Busi. Admin.) and Dr. Kirti Gupta Chairman BoS (HR&Comm.) discussed the salient features of 'Project Management' specialization.
Dr. Ajit More, Chairman BoS (Comp. Appli.) explained the demand of 'Project Management' specialization.
The suggestions of Dr.Anil Keskar and Prof. Jayant Oke were incorporated in the syllabus.
Dr.Sachin S.Vernekar, Dean FMS assign the responsibility to Director, School of Online Education for preparation of Video Lectures and to Director, School of Distance Education to prepare the Self Learning Material for 'Project Management' specialization.
The introduction of 'Project Management' specialization will be from A.Y.2021-22.

Resolution:
It was resolved to recommend to Academic Council for consideration and approval of addition of 'Project Management' specialization in the syllabus of following programmes.

1. MBA (Gen) (CBCS – 2020) & MBA (HR) (CBCS – 2020) Sem III and Sem IV under Regular mode.
2. MBA (Gen) (CBCS – 2020), MBA (HR) (CBCS – 2020) & MBA (E) (CBCS – 2020) Sem III and Sem IV under School of Distance Education.
3. MBA (2021-22) Sem III and Sem IV under School of Online Education.

Additional Item
Item No. 3: Question Paper Analysis for Programmes under Faculty of Management Studies.

Note:
Dr.Sachin S.Vernekar, Dean FMS requested to do all BoS Chairman to do Question Paper Analysis of Programmes under Faculty of Management Studies.

This Question Paper Analysis will help in fulfilling requirements / compilation of data for various statutory bodies like UGC, NAAC etc.
The Chairman of respective boards to carry out Question Paper Analysis with the help of Professors, Associate Professors.
The report of Question Paper Analysis should be submitted in next two months to Dean, FMS.

Resolution:
It was resolved to recommend to Academic Council for consideration and approval of Question Paper Analysis for Programmes under Faculty of Management Studies.

The meeting was concluded with vote of thanks by the Chairman.

Dr.Sachin S.Vernekar
Dean FMS BVDU

Bharati Vidyapeeth
(Deemed to be University), Pune (India)

Minutes of the Meeting of Faculty of Management Studies (FMS) held on 22/12/2020

A meeting of the members of FMS, was held on 22nd December 2020 at 2 pm in IMED. The meeting was chaired by the Dean, Dr.Sachin S.Vernekar.

Following members were present:

Members Present:

1. Dr. Sachin S. Vernekar
2. Dr.Mahesh Shitole
3. Dr. Kirti Gupta
4. Dr. Ajit More
5. Dr. L.S. Chirmulay
6. Dr.Anil Keskar
7. Dr. S.B. Sawant
8. Dr.Nilesh Mahajan

Special Invitees:

9. Dr. Jagdish Avchat (External Expert)
10. Mr. Nilesh Mate
11. Dr.Sonali Dharmadhikari
12. Dr. R.V.Mahadik
13. Dr. Sachin Ayarekar
14. Dr. Shweta Joglekar
15. Dr.Seema Tarnekar

Leave of absence was granted to :
Dr.P.J. Kulkarni since communicated his inability to attend the meeting.

The Chairman welcomed all the members.

Discussions, Action Items noted and Decisions taken :

Item No. 1: Approval of Syllabus of following Programmes

1. MBA(General) (CBCS 2020) Semester III and IV,
2. MBA(General) (CBCS 2020) Sem III and Sem IV under School of Distance Education
3. MBA (Executive) (CBCS 2020) (SDE) Sem III and Sem IV under School of Distance Education
4. MBA(HR) (CBCS 2020)Sem III and Sem IV
5. MBA(HR) (CBCS 2020)Sem III and Sem IV under School of Distance Education
6. MBA(General) (CBCS 2020) Sem I to IV under School of Online Education
7. BBA(CBCS 2018) Sem I to VI under School of Online Education

Note :

Dr.Mahesh Shitole, Chairman BoS (Busi. Admin.) and Dr. Kirti Gupta Chairman BoS (HR&Comm.) submitted the syllabi for all the Programmes under Regular and SDE.

The contents of various subjects in the syllabus were discussed and following suggestions were given:

For MBA (Gen and HR) Sem IV Open Course 404 'Cyber Security' needs to be replaced since it is already given as Add on course at Pune in First Year MBA. Cyber Security replaced with Data Science.

Dr. Ajit More, Chairman BoS (Comp. Appli.) informed that for BBA under School of Online Education, the contents of syllabus of BBA for Regular/SDE are taken as it is but there is change in mode of Evaluation. It is 70:30 for UE and IE, but 70 marks for UE are divided as 50 marks for MCQ and 20 marks for subjective questions.

Dr. S.B. Sawant, Director, BV(DU), SDE added that for SDE and Online the syllabus contents for MBA and MBA(HR) are same as regular but evaluation pattern is 70:30 for UE and IE instead of 50:50 for regular.

Resolution:

The Open Course 404 'Cyber Security' be replaced with Course 'Data Science' in MBA Gen. (regular and SDE), MBA HR (regular and SDE), MBA (Executive) SDE.

It was resolved to recommend to Academic Council for consideration and approval of the following syllabus.

- MBA (General) (CBCS 2020) Semester III and IV,
- MBA(General) (CBCS 2020) Sem III and Sem IV under School of Distance Education
- MBA (Executive) (CBCS 2020) (SDE) Sem III and Sem IV under School of Distance Education
- MBA(HR) (CBCS 2020)Sem III and Sem IV
- MBA(HR) (CBCS 2020)Sem III and Sem IV under School of Distance Education
- MBA(General) (CBCS 2020) Sem I to IV under School of Online Education
- BBA(CBCS 2018) Sem I to VI under School of Online Education

Bharati Vidyapeeth
(Deemed to be University), Pune (India)

Item No. 2: Approval of Syllabus of Diploma in Big Data and Diploma in Dot Net Technology

Note:

Dr. Ajit More submitted the syllabus for Certificate Courses on Diploma in Big Data and Diploma in Dot Net Technology. The name for Course Diploma in Dot Net Technology be replaced with name 'Diploma in Programming Platforms'.

The contents of the syllabus were discussed.

Resolution:

It was resolved to recommend to Academic Council for consideration and approval of syllabus of Diploma in Big Data and Diploma in Programming Platforms.

The meeting was concluded with vote of thanks by the Chairman.

Sd/-

Dr.Sachin S.Vernekar
Dean FMS BVDU

Bharati Vidyapeeth

(Deemed to be University), Pune (India)

Minutes of the Meeting of Faculty of Management Studies held on 24/6/2020

A meeting of the members of FMS, was held on 24th June 2020 at 12.30 pm in IMED. The meeting was chaired by the Dean, Dr.Sachin S.Vernekar. Seven invitees from IMED were also present.

Members Present:

1. Dr. Sachin S. Vernekar
2. Dr.Anil Keskar
3. Dr.Mahesh Shitole
4. Dr. Kirti Gupta
5. Dr. Ajit More
6. Dr. L.S. Chirmulay

Special Invitees:

7. Dr.Nilesh Mahajan
8. Dr. Shweta Joglekar
9. Mr. Nilesh Mate
10. Dr. Sonali Dharmadhikari
11. Dr.Seema Tarnekar
12. Dr. Sonali Khurjekar
13. Dr. Rajita Dixit

Leave of absence was granted to :

Dr.P.J. Kulkarni
since communicated inability to attend the meeting.

Discussions, Action Items noted and Decisions taken:

Item No.1: Approval of MBA (CBCS - 2020) Syllabus for regular and School of distance Education.

Note :

The revision is done as per the suggestions received in the meeting of syllabus revision held on 10th December 2019.

Prof. Dr.Mahesh Shitole, Chairman BOS Business Administration, submitted the proposed structure for MBA- G Programme with detailed syllabus of first year.

Salient Features of the syllabus were described as:

1. Credits - 1 credit = 12 hours (AICTE Model Curriculum has recommended 10 hours per credit)
2. Examination - UE – 50 marks, IE =50 marks, with duration = 2 hours
3. Open courses – ONE per semester. All other to be Add On courses

4. AICTE MODEL CURRICULUM SUGGESTIONS - Inclusion of courses / topics like - management of SMEs, Indian ethos and values, etc.

Proportion of marks for U.E.(University Examination) to I.A.(Internal Assessment) was suggested as 50:50 as recommended by AICTE for MBA.

Suggestions:
Following changes were suggested in the Syllabus:

1) For subject 403 change title. 'Indian Entrepreneurship Model' be included in the content.
2) In Sem. I, interchange course 108 and 109. 108 with title 'Data Analysis using Advance Excel'.
3) 'Business Analytics' be made as regular course, Open Courses 'Digital Marketing' and 'Cyber Security' be added.
4) 306 MK04 : 'Sales and Distribution Management': Make Integrated Marketing as Unit I.
5) All 8 specializations be retained.

Resolution:

1) Breakup of CES marks (50) was decided as follows for MBA, MBA(HR):

Class Participation / Attendance	10
Mid-term	15
End-term	15
Class Tests, Assignments, MOOCs, Presentation/Project, Case Study/Lab work etc.	10

   This distribution be added in the respective curricula.

2) The syllabus and Structure for regular and School of Distance Education was approved with suggested changes as above in the Note.

Item No.2: Approval of MBA HR (CBCS - 2020) Syllabus for regular and School of Distance Education.

Note :

Dr. Kirti Gupta, Chairman BOS- HR and Communication Studies, submitted the proposed structure for MBA- HR Programme with detailed syllabus of first year.
Salient Features of the syllabus were described as:

1. Credits - 1 credit = 12 hours (AICTE Model Curriculum has recommended 10 hours per credit)
2. Examination - UE – 50 marks, IE =50 marks, with duration = 2 hours
3. Open courses – ONE per semester. All other to be Add On courses
4. AICTE MODEL CURRICULUM SUGGESTIONS - Inclusion of courses / topics like - management of SMEs, Indian ethos and values, etc.

Suggestions:

1) Labour Laws I in 3rd Semester and Labour Laws II in 4th Semester.

2) In 303 Include Establishment and Closure of Enterprises, Business Plan, DPR

Resolution:
The syllabus and Structure for regular and School of Distance Education was approved with suggested changes as above in the Note.

Item No. 3: Approval of MCA (CBCS – 2020) Two year program syllabus for regular and School of Distance Education.

Note :

Dr. Ajit More, Chairman BOS Computer Applications submitted the proposed structure for MCA Two Year Programme with detailed syllabus of first year.
Salient Features of the syllabus were described as:

1) Industry oriented syllabus reviewed by industry Experts.
2) Outcome based curriculum.
3) More Practical exposer through projects.
4) Comprehensive contents on latest technology.
5) More Elective courses.
6) Additional SWAYAM/ NPTEL certifications.
7) Choice based Credit Courses.
8) Courses developed on Blooms Taxonomy.

Resolution:
The syllabus and Structure for regular and School of Distance Education was approved.

Item No. 4: Industrial Training for students of B.Sc. (H & HA) Sem III (CBCS 2018).

Note :
Dr. L.S. Chirmulay mentioned that as per the CBCS 2018 curriculum of B.Sc (H & HA), the students are required to undergo Industry exposure during semester III (June – Oct 2020). However, due to the COVID-19 pandemic, the hotels are less likely to take interns until the situation/hotel business improves.

Suggestion:
The students will undergo Desk Research, assignments, webinars and vacation training.

Resolution:
Suggestion was considered and approved.

Item No. 5: Short Term Courses/ Programs under regular and School of Distance Education.

Note:
All the BOS Chairpersons submitted structure and syllabus of short term courses/ programs for regular and School of Distance Education as follows:

Business Administration

Sr.No	Type of Course	Name of Course	Duration
1	Certificate	Certificate program in Capital Markets	60 hours
2	Certificate	Certification course on Financial Statement Analysis	10 hours
3	Certificate	Certification Course on Financial Planning	10 hours
4	Certificate	Certification Course in executive excellence	30 hours
5	Certificate	Design Thinking for Leadership	30 hours
6	Certificate	IPR - Trademark and its registration	30 hours
7	Diploma	One Year Diploma in Supply Chain Management for E-commerce Companies.	1Y ear
8	Diploma	Diploma in banking and insurance.	6 Months
9	Diploma	Diploma In Entrepreneurship And Business Management : 1year(two semesters)	1year

HR and Communication Studies

Sr.No	Type of Course	Name of Course	Duration
1	Certificate	Certificate Course in HR Analytics	60 Hrs
2	Certificate	Leadership Skills for the 21st Century Managers	20 Hrs
3	Certificate	Training and Development –training need analysis, methods, designing, analysis, evaluation, emerging trends in T&D	30 Hrs

Computer Applications

Sr.No	Type of Course	Name of Course	Duration
1	Certificate	Certificate program in Data Science with R	30 hours
2	Certificate	Appliction of Artificial Intelligence	30 hours
3	Certificate	Basics and Introduction to Industry 4.0 tools.(Block chain/3D printing/5G/IOT,etc.)	30 hours
4	Certificate	Digital Marketing	60 Hours
5	Certificate	Advance Excel for Managers	30 hours
6	Certificate	Certificate course in Cloud Computing	50 hours
7	Certificate	Certificate Course in Web Designing & Dot Net Technology	60 hours
8	Certificate	Certificate Course in Software Testing	60 hours
9	Certificate	Certificate Course in Cyber Security	40 hours
10	Certificate	Certificate Course Python for Everybody	20 hours
11	Diploma	One Year Diploma in Artificial Intelligence.	1Yr
12	Diploma	Diploma in Mobile app development.	6 Months

Resolution:

1. The syllabus and Structure for regular and School of Distance Education submitted by all BOS were accepted and approved. Blended Teaching Pedagogy be used for the courses.
2. Diploma in Digital Marketing be run as regular programme in various institutes and School of Distance Education as well.

Item No. 6: Conducting Viva Exam online for MCA Sem VI students of BVDU.

Resolution:

The Dean FMS has suggested to finalize the date for online Viva Exam for MCA Semester VI of all BVDU Centers and send for confirmation to the Dean.

Item No. 7: Removing Lateral Entry Admission part from BMAT Brochure 2020.

Note:

As the programme duration of MCA has been changed from 3 years to 2 years. Hence the Chairman BOS Computer Applications suggested to remove Lateral Entry MCA Programme from Admission Brochure.

Resolution:

FMS recommends to the University that there will not be any lateral entry MCA programme henceforth, under BVDU.

The meeting was concluded with vote of thanks by the Chairman.

Dr.Sachin S.Vernekar
Dean FMS BVDU

Course : MBA (General) CBCS 2020 – w.e.f. - Year 2020 – 2021			
Semester	**Course Code**	***Course Title***	
II	208	Business Ethics and Corporate Governance	
Type	**Credits**	**Evaluation**	**Marks**
Core Elective	02	CES	IE = 100

Course Objectives:
i) To help the students understand the importance of ethical values and principles in life. **ii) To enable students to comprehend the different dimensions of Business Ethics.** iii) To enlighten about the corporate social responsibility in the corporate business.
Learning Outcomes :
i) The Students should be able to understand the importance of ethics and values in personal and professional life. **ii) There should be a positive change in the attitude of the students towards morals, values and ethics after studying the subject.** **iii) The students understand their responsibility towards the society while running any business or as an employee.**

Unit No.	Contents	Hours
01	Overview of Business Ethics: Importance and need for Business Ethics, **Theories of Ethics**, Ethical Issues in Business, Ethics and Management. Ethics and values,, Norms, Beliefs, Morality	**05**
02	Spirituality and Ethics: **What is Spirituality? Importance, relationship between spirituality and ethics.** Influence of Major religions on ethics: Hinduism, Islam, Christianity, Buddhism, Sikhism, and Zoroastrianism. **Indian culture, Ethos and Values- Role of Indian ethos in managerial practices, management lessons from Vedas, Mahabharat, Bible, Quran, Kautilya's Arthshastra.**	**06**
03	**Ethical Decision Making** : **Ethical Decision Making process. Framework for ethical decision making. Ethical Dilemma**, resolving ethical dilemmas, Ethical dilemmas in different business areas, finance, Marketing, HRM, IB, and technology etc. Ethical culture in organizations, Developing code of ethics and conduct, professional ethics.	**05**
04	**Corporate Governance: Meaning and importance of corporate governance,** **Difference between governance and management, purpose of good governance, key pillars of corporate governance.** **Stakeholders: Rights and privileges; problems and protection,** **Board Of Directors – Role in Governance; Role and responsibilities of auditors** **Whistle blowing – concept of whistle blowing, whistle blowers, policy for whistle blowing .** **Corporate Social Responsibility (CSR)– concept and models of CSR,**	**06**

05	**Social, Environmental and Ethical Issues in Business: Business action that affects society (Ethical issues), Social responsibility of Business, Ethics and the Environment (pollution control and conserving depletable resources), Legal and Regulatory Issues, Sexual**	**04**
06	**Implementation of Business Ethics** Need for organizational ethics program, Codes of Conduct, Ethics Audit and its 4 process, Corruption and Scams, Impact of Corruption on Society and Economy, Anti-Corruption Laws, Agencies such as Central Vigilance Commission(CVC) and Central Bureau of Investigation(CBI) for anti-corruption cases, Professional values for business and managerial values **Case studies: Major Corporate Governance Failures : Enron (USA); World.com (USA); Vivendi (France); Satyam computer (India); Sahara (India); Kingfisher Ltd (India); etc.**	**04**

*More than 40% change in syllabus

Reference Books:

Sr. No.	Name of Author	Title of the Book	Publisher
1 National	Murthy CSV	Business Ethics	Himalaya Publishing House
2 National	Hartman L, Chatterjee A	Perspectives in Business Ethics	McGraw Hill Publishing Co. Ltd
3 National	Ananda Das Gupta	Business Ethics –An Indian Perspective	Springer Publications
4 International	Velasquez Manuel G	Business Ethics	Eastern Economy Edition
5 International	Ferrell O C, Fraedrich John Paul, Ferrell Linda	Business Ethics, Ethical Decision Making and Cases	Biztantra
6 International	Boatright John	Ethics and the conduct of Business	Pearson Education

Online Resources:

Resource No.	Website Address
01	https://www.ethicssage.com/ethics-resources.html
02	https://maag.guides.ysu.edu/businessethics/web
03	https://www.researchgate.net/publication/226607374_Business_Ethics_Resources_on_the_Internet

MOOCs:

Sr. No.	Details
01	www.coursera.org
02	www.udemy.com
03	my-mooc.com

MBA Semester II

Business Ethics & Corporate Governance

Course Code 208 Course Type FULL CREDIT

Credits III Marks IE =100

Course Objectives

 To enable the students understand the importance of Ethical values and corporate social responsibility in the contemporary business.

Unit Contents Sessions

1 Introduction 4

Overview of Business Ethics: Importance of Business Ethics, Development of Business Ethics, Ethical Issues in Business, Ethics as a Dimension of Social Responsibility. Ethics and Management. Ethics and values, Norms, Beliefs, Morality

2 Ethical Decision Making Process 6

Ethical Decision Making and Corporate Governance, Moral Philosophies and Moral Development. Factors involved: Corporate Culture, Structure, Relationship and Conflicts. Framework for ethical decision making.

3 Spirituality and Ethics 8

Influence of Major religions on ethics: Hinduism, Islam, Christianity, Buddhism, Sikhism, and Zoroastrianism.

4 Social, Environmental and Ethical Issues in Business 10

Issues and opportunities for Business in socio-environmental context, Business action that affects society (Ethical issues), Social responsibility of Business, Ethics and the Environment (pollution control and conserving depletable resources), Legal and Regulatory Issues:

5 Ethics in Business disciplines: Ethics and Marketing, Ethics and Human Resource Management, Ethics and Finance, Ethics and technology 5

6 Implementation of Business Ethics

Need for organizational ethics program, Codes of Conduct, Ethics Audit and its 4 process, Corruption and Scams, Impact of Corruption on Society and Economy, Anti-Corruption Laws, Agencies such as Central Vigilance Commission(CVC) and Central Bureau of Investigation(CBI) for anti-corruption cases, Professional values for business and managerial values,

Teaching Methodology

- Case based Lectures, Assignments, Projects, Exercises, Class Discussions and Videos.

Suggested Readings

Murthy CSV Business Ethics, Himalaya Publishing House.

Velasquez Manuel G – Business Ethics, Eastern Economy Edition.

Ferrell O C, Fraedrich John Paul, Ferrell Linda – Business Ethics, Ethical Decision Making and Cases, Biztantra.

Hartman L, Chatterjee A, - Perspectives in Business Ethics, McGraw Hill Publishing Co. Ltd

Boatright John – Ethics and the conduct of Business, Pearson Education.

Course:MBA(General)CBCS2020–w.e.f.-Year2020–2021			
Semester	CourseCode	*CourseTitle*	
I	**103**	***FinancialandManagementAccounting***	
Type	Credits	Evaluation	Marks
Core	3	CES	UE:IE=50:50

Course Objectives:

i) Toacquaint thelearners withthefundamentals ofFinancialAccounting.

ii) ToorienttotheAccountingmechanicsinvolvedinpreparationofBooksofAccountsand FinancialStatementsofasoleproprietor

iii) To make the students familiar with International Accounting Standards and International FinancialReportingStandards(IFRS)

iv) Tointroducetheconceptsof CostandManagementAccounting

v)Toorientthestudentsaboutapplicationofbudgetarycontrolasatechniqueof Management Accounting

vi) To acquaint the students with application of Standard Costing and Marginal Costing as techniquesofManagementAccounting.

LearningOutcomes:

I. LearnerswillabletoknowthefundamentalsofFinancialAccountingandAccounting Principles

II.Learners will demonstrate the ability to prepare Financial Statements of a sole proprietor

III. LearnerswillunderstandtheutilityandimportanceofInternationalAccounting Standards andInternationalFinancialReportingStandards (IFRS)

IV. Learners willbefamiliarwithconcepts ofCost andmanagement Accounting

V.Learners willbeabletoapply thetechniqueofBudgetary Control

VI. LearnerswillbeabletoapplythetechniqueofStandardCostingandMarginal Costing.

Name : -	Syllabus–FinancialandManagementAccounting	Hrs.
UnitNo:1	**IntroductiontoFinancial Accounting** FinancialAccounting: Definition,Objectives andScope AccountingConcepts andConventions,**GAAP,**BranchesofAccounting AccountingCycle,**EndUsersofFinancialStatements**	7
UnitNo:2	**AccountingMechanics** PrinciplesofDoubleEntryBook-Keeping,Journal LedgerandPreparationofTrialBalance PreparationofTrading,Profit&LossAccount andBalanceSheetofaSole Proprietor	11
UnitNo:3	**IntroductiontoInternational Accounting Standards** Development of international accounting Standards and financial reporting rules**. Role of ICAI and Ministry of Corporate affairs in setting up Accounting Standards.** Need and Advantages of International Financial Reporting Standards (IFRS) IFRS for Small and Medium Enterprises(SMEs).	5
UnitNo:4	**IntroductiontoCostand ManagementAccounting** CostAccounting:MeaningandImportance ClassificationofCosts, Preparationof CostSheetManagementAccounting:Definition,NatureandScope DistinctionbetweenFinancial AccountingandManagementAccounting	6
UnitNo:5	**TechniquesofManagementAccounting(BudgetaryControl)**	8

	Meaning,Objectives,Advantages andLimitationsof BudgetaryControl TypesofBudgets PreparationofFlexible Budget andCashBudget	
UnitNo:6	**TechniquesofManagementAccounting(StandardCostingandMarginal Costing)** MeaningofStandardCosting,StepstoimplementStandardCosting Variance AnalysisofMaterialandLabourCosts MarginalCosting –MeaningofMarginalCost,Characteristics and AdvantagesofMarginalCosting,Cost-Volume-ProfitAnalysis–Profit/Volumeratio,Break-EvenAnalysis andMarginofSafety	11

ReferenceBooks:

Reference Books (Publisher)	Name of the Author	Titleof the Book	Year Edition	Publisher Company
1–National	S.N.Maheswari	AnIntroductiontoAccounting	11th edition	Vikas
2–National	AmbarishGupta	FinancialAccounting forManagement	5th edition	Pearson
3–National	AshokSeghal, DeepakSeghal	Taxman'sFinancialAccounting	2015 edition	Taxman
4–International	ColinDrury, Huddersfield	Cost and Management Accounting	7th2011	Cengage Learners
5–International	PaulineWeetman Fin	FinancialandManagement Accounting–Anintroduction,	7th2015	Pearson
6–International	Jan Williams, Sue Haka, Mark Bettner,Joseph Carcell	Financial &Managerial Accounting,	18th edition	McGraw hill

OnlineResources:

OnlineResourcesNo	Websiteaddress
1	https://www.moneycontrol.com/
2	www.icai.org
3	https://www.ifrs.org/
4	https://icmai.in/icmai
5	https://www.rbi.org.in/

MOOCs:

ResourcesNo	Websiteaddress
1	https://www.coursera.org/learn/wharton-accounting
2	https://www.classcentral.com/course/whartonaccounting-769
3	https://swayam.gov.in/nd2_cec19_cm04/preview
4	https://swayam.gov.in/nd1_noc19_mg36/preview
5	https://www.coursera.org/learn/accounting-for-managers

Course:MBA(General)CBCS2020–w.e.f.-Year2020–2021			
Semester	CourseCode	*CourseTitle*	
II	**202**	**FinancialManagement**	
Type	Credits	Evaluation	Marks
Core	3	CES	UE:IE=50:50

Course Objectives:

i) TointroducethefundamentalsofFinancial Management
ii) ToorientontheskillssetrequiredforFinancial DecisionMaking Techniques iii) ToorientonFinancial StatementAnalysisandInterpretation
iv) Todevelopanalytical skillswhichwouldhelpdecisionmakinginBusiness.
v) Todeveloptheentrepreneurial mindset

LearningOutcomes:

i) Developmentofbasicskillsets requiredforFinancialDecisionMaking
ii) Developmentofanalyticalskillset tounderstandandinterpret FinancialStatements
iii) Graduates are able to improve their knowledge about functioning business, identifying potentialbusinessopportunities, evolvement ofbusinessenterprisesandexploring entrepreneurial opportunities(BEDK)
iv) Graduatesareexpectedtodevelop skillson analyzingthebusinessdata,application ofrelevant analysis,problem solving inthefunctional areas,i.e. Critical thinking-BusinessAnalysis-Problem Solving andInnovativeSolutions(CBPI)
v) Developing Social Responsivenesstocontextual social issues/ problemsandexploring solutions. Graduatesareexpected toidentify problems,explorethe opportunities,designthe business solutionsanddemonstrateethical standardsinorganizational decisionmaking.(SRE)

Unit No1	Contents	Hrs.
1	**Introduction** **MeaningofFinancialManagement**,Scope and FunctionsofFinancialManagement, ObjectivesofFinancialManagementProfitVsWealth Maximization,Finance Functions:InvestmentDecision,Liquidity Decision,Financing Decision and DividendDecision, **concept of Social Responsibility**	7
2	**InvestmentDecision:CapitalBudgetingDecision** **Meaning**,ImportanceandprocessofCapitalBudgeting, **ConceptofTime Value of Money**,CapitalBudgetingTechniques-Problems&casestudies-AccountingRate ofReturn,PaybackPeriod,NetPresentValue,ProfitabilityIndex,Discounted PaybackPeriod,InternalRateof Return CapitalBudgetingunderRiskandUncertaintyConceptandTechniques	10
3	**LiquidityDecision:WorkingCapitalManagement:**Meaning,NeedandTypesof WorkingCapital, ComponentsofWorkingCapital, Factorsdetermining Working capital,EstimationofWorkingCapital, Problems andCaseStudiesonEstimation ofWorkingCapital, **SourcesofWorkingCapitalFinancing**	6
4	**Financing Decision: Sources of Long Term Domestic Finance**: Shares, Debentures,RetainedEarnings, **CapitalStructure:** MeaningandPrinciples ofCapital StructureManagement,FactorsaffectingCapital Structure,**Costof Capital**:Meaning,Components,CostofDebt,CostofPreference Share,Costof EquityShare,CostofRetainedEarnings,andWeightedAverageCostofCapital.	8

	,**Leverage**:ConceptandTypesofLeverage,	
5	**Dividend Decision:Factorsdetermining Divined policy, Theories of Dividend-Gordon Model,WalterModel,MMHypothesis,and FormsofDividend Payment: CashDividend,BonusShare and Stock Split,StockRepurchase,DividendPolicies inPractice.**	4
6	**Financial Statement Analysis**:Meaningand Types, Techniques of Financial StatementAnalysis:CommonSize Statement,Comparative Statement,Trend Analysisand Ratio Analysis.(Orientation levelProblemson Ratio analysis)Funds FlowStatement andCashFlowStatement.	10

ReferenceBooks:

Sr.No.	Name ofthe Author	Title ofthe Book	Year Edition	Publisher Company
1–National	SheebaKapil	Fundamentalsof FinancialManagement		Pearson Publications
2–National	I.M. Pandey	FinancialManagement		Vikas Publication
3–National	KhanandJain	FinancialManagement		TATA McGrawHill
4-National	R.P. Rustogi	FinancialManagement		
4–International	EugeneF.Brigham, MichaelC.Ehrhardt	FinancialManagement –TheoryandPractice	11th edition.	
5–International	JonathanBerk,Peter DeMarzoandAshok Thampy	FinancialManagement		Pearson Publication
6–International	JournalofInternationalFinancialManagementAndAccountingByWiley Publication			
7–International	JournalofBusinessFinanceAndAccountingBy WileyPublication			

OnlineResources:

Online ResourcesNo	ResourcesName	Websiteaddress
1	GoogleScholar	https://scholar.google.com/
2	Gutenberg	https://www.gutenberg.org/
3	OpenCulture	http://www.openculture.com/free_ebooks
4	OpenLibrary	https://openlibrary.org/

MOOCs:

Resources No	ResourcesName	Websiteaddress
1	Alison-freetechnology,language,science, health,humanities,business,math,marketingand lifestylecourses.	https://alison.com/
2	KhanAcademy-free onlinecoursesandlessons	https://www.khanacademy.org/
3	Futurelearn	http://www.openculture.com/free_eboo

		ks
4	SWAYAMwhichisaIndiaMOOCsplatformfor whichUniversityGrantsCommissionhas allowed upto20%credittransferfacility.	https://swayam.gov.in/
5	UniversityofFlorida	www.coursera.org
6	UniversityofLondon	www.cefims.as.uk
7	IIM,Bangalore	www.edx.org

Course : MBA (General) CBCS 2020 – w.e.f. - Year 2020 – 2021			
Semester	**Course Code**	***Course Title***	
I	FM01	*Investment Analysis and Portfolio Management*	
Type	**Credits**	**Evaluation**	**Marks**
Core Elective	3	CES	UE:IE = 50:50

Course Objectives:

Subject / Course Objectives :

i) To acquaint the students with basic concepts and avenues of investment, concept of risk and return related to investment.
ii) To explain the concept of Mutual Funds and derivatives and how to evaluate them.
iii) To explain the concept and applications of fundamental analysis and technical analysis for stock investments.
iv) To clarify how to construct the Investment plans for Individuals in different stages of life cycles and different situations.
v) To explain the calculation of the risk and return for securities and for portfolios.
vi) To elucidate the modern portfolio theory and market efficiency using both theoretical and empirical arguments.

Learning Outcomes : At the end of the programme students will able to-

i) Understand the risk and return relationship and various investment alternatives available in India.
ii) Comprehend the concept of Mutual Funds and derivatives and how to evaluate them.
iii) Understand how to use fundamental analysis and technical analysis for stock investments.
iv) Create a policy statement to showcase the objectives and risk tolerances of numerous categories of individual and institutional investors which can help in making Investment plans for Individuals in different stages of life cycles and different situations.
v) Evaluate the effect of risk on investment decisions. Students will able to calculate the risk and return for securities and for portfolios.
vi) Understand the modern portfolio theory and market efficiency using both theoretical and empirical arguments.

Units: -	***Investment Analysis and Portfolio Management***	Hrs.
Unit No : 1	Introduction: Meaning, objectives, Scope, and Constraints Process of Investment, Avenues of Investments, Concepts of risk and return with reference to Investment, basic principles of risk management, risks involved in Investment, Current scenario of Investment in India, Role of	8

	Securities Market in Indian economy	
Unit No : 2	Mutual Fund and Derivatives: Basic concepts, Functioning and Objectives of Mutual Fund, Types of Mutual Fund Schemes, Analysis of MF, Performance Evaluation of MF Schemes using Sharpe, Treynor and Jenson's Models, Basic concept and types of Derivatives, Developments in Derivative and MF market in India	7
Unit No : 3	Fundamental Analysis and Technical Analysis: Fundamental Analysis - Economic, Industry and Company analysis, Valuation of Equity and Preference shares, Technical Analysis - Concept, Importance and Limitations of Technical Analysis, Dow Theory, Technical Indicators and charts used in technical Analysis, Behavioral Finance and its impact on Investment decision making	8
Unit No : 4	Portfolio Management: Portfolio Meaning, Characteristics and Objectives, Process of Portfolio Management, Investment policy statement and asset allocation, Equity Management Strategies, Systematic Investment Plan (SIP), Analysis of Debt Instrument, Bond Management Strategies, preparation of Investment plans for Individuals in different stages of life cycles and different situations	7
Unit No : 5	Calculation for risk and return for Security/Portfolio: Problems on calculation of risk and return for security (mean, variance, and standard deviation), Problems on risk and return associated with portfolio consisting maximum three securities (mean, variance, and standard deviation), Capital Asset Pricing Model and its application	8
Unit No : 6	Portfolio Theories: Efficient Market Hypothesis concepts and forms of EMH, Testing techniques of Weak Form, Random Walk Theory, High Frequency Trading and its impact on EMH, Arbitrage Pricing Theory, Efficient Frontier, **Optimal Portfolio,Efficient Frontier and Investor Utility ,Indifference Curve**	7

Student has to upgrade Knowledge by using below inputs:

Reference Books:

Reference Books	Name of the	Title of the Book	Year	Publisher Company

(Publisher)	Author		Edition	
1 – National	Prasanna Chandra	Investment Analysis and Portfolio Management	2012, 4th Edition	Tata McGraw Hill, New Delhi
2 – National	I M Pandey	Financial Management	2010, , 10th revised Edition	Vikas Publishing House
3 – National	Bhalla, V.K.	Investment Management: Security Analysis and Portfolio Management	2010, 17th Edition.	S.Chand& Sons,
4 – International	Frank K. Reilly, Keith C Brown	Investment Analysis and Portfolio Management	2012, 10th Edition	Cengage Learning
5 – International	E. Fischer Donald , J. Jordan Ronald , K. Pradhan Ashwini	Security Analysis Portfolio Management	2018, 7thedition.	Pearson Education,
6 – International	Eugene F. Brigham, Michael C. Ehrhardt	Financial Management :Theory and Practice	2017	Cengage Learning

Online Resources:

Online Resources No	Web site address
1	https://www.moneycontrol.com
2	https://www.nseindia.com
3	https://www.sebi.gov.in
4	https://www.rbi.org.in
5	https://www.investopedia.com

MOOCs:

Resources No	Web site address
1	https://swayam.gov.in
2	https://www.edx.org
3	https://alison.com/certificate-courses

Course : MBA (General) CBCS 2020 – w.e.f. - Year 2020 – 2021			
Semester	Course Code	*Course Title*	
III	FM02	**Management of Financial Services**	
Type	Credits	Evaluation	Marks
Core Elective	3	CES	UE:IE = 50:50

Course Objectives:

Subject / Course Objectives :

i) To give the students an insight into the principles, practices of the prominent Financial services and their functioning in the changing economic scenario.
ii) To make critical appraisal of the working of the specific financial Services in India.
iii) To brief the students about developments in financial services.
iv) To provide a judicious mixture of theory and business practices of the contemporary Indian financial services.

Learning Outcomes : After completion of this course, the student will be able to

i) Understand the role and function of the Indian financial system , Financial Market and Various instruments of Financial Services.
ii) Demonstrate an awareness of the current structure and regulation of the Stock Exchange Mutual Fund Industry, Merchant Banking and Venture capital concept in Indian Context.
iii) Understand the concept of Rural Banking, Microfinance in Indian Financial service.
iv) Evaluate and create strategies to promote financial products and services.

Units: -	Syllabus – Management of Financial Services	Hrs.
Unit No : 1	Introduction to Indian Financial System: **Meaning** and Functions of IFS, Development of Financial System in India, Weakness of Indian Financial Systems. Structure of Financial System-Financial Market, Financial Institutions /Intermediaries and Instruments. Financial Service : Meaning, Features of Financial Service, Classifications, Importance and Scope of Assets/Fund Based Services:- Hire purchase finance, Leasing , Factoring , Forfeiting, Loan Syndication, Consumer Credit, Challenges facing the financial services sector .	5

Unit No : 2	Financial Market Operations: Recent Development of Indian Capital and Money Market , Capital Market Operation: New Issue Market- Functions of New issue market, players of New issue market, Primary and Secondary market Operation, Procedure of (IPO), Book Building. **Role of Capital market Intermediaries Recent cases of IPO's in India.** Money Market Operation: features and objective of money market, Recent Developments, Composition of Money Market. **Stock Market Operations: Stock Exchange functions in India, Listing of securities-Stock Indices in India- SENSEX and NIFTY - BSE&NSE**	6
Unit No : 3	Investment Banking Overview of commercial vs. Investment banking, capital raising, debt, equities, Merchant Banking: Origin, Nature and scope of merchant banking , Role of Merchant Banker, types of Merchant banking services, Project Counseling , Pre-issue and Post –Issue Management ,Progress of Merchant banking in India, guidelines for merchant bankers issued by SEBI. Mutual Fund: Concept, Structure of Mutual fund Operations in India, Types of Mutual Fund, Advantages and Limitations of Mutual Fund, Problems for Slow growth of Mutual fund concept in India, Guidelines for Mutual fund service, Rights &facilities for Investors, Future of Mutual fund industry. **Recent cases on Mutual Fund Industries in India**	10
Unit No : 4	**Venture Capital: Venture capital: Origin, concept, features, Advantages and Limitations, Stages in venture capital financing, Venture capital Guidelines-Methods of venture financing. Case studies of Venture capitalist companies**	6

Unit No : 5	Credit Rating and Securitization: Credit Rating: Introduction, Meaning, functions of credit rating agencies, Major Players in credit rating agencies in India, Debt Rating System of CRISIL, ICRA and CARE. Securitization: Concept and Meaning, modus Operandi, Securitization in India and new guidelines on Securitization	5
Unit No : 6	**Rural Banking and Microfinance: -Financing Rural Development: Functions and policies of RBI and NABARD; Rural Credit Institutions-Role and function, Regulation of Rural Financial Services.** Microfinance: Origin, Meaning and Concept, advantages and Limitations, Micro credit, micro insurance scheme, SHGs/NGOs, linkages with banking, Role and Functions of Linkage banks towards development of Microfinance Industry in India.	4

Student has to upgrade Knowledge by using below inputs:

Reference Books:

Reference Books (Publisher)	Name of the Author	Title of the Book	Year Edition	Publisher Company
1 – National	E-Gordon, K Natarajan	Financial Markets and Services	Revised 6th Edition 2010	Himalaya Publishing House
2 – National	M.Y.Khan	Financial Services,.	2010	Tata McGraw Hill
3-National	Bharati V. Pathak	The Indian Financial System: Markets, Institutions and Services	2010	Tata McGraw Hill
5 –National	Ramesh Babu	Indian Financial System	2011	
6 –National	G.S. Batra	Financial Service New Innovation	2015	ND publication
7–National	Gurusamy	Financial Services	2009	Tata McGraw-Hill Education,

				2009

Journals :

1. Indian Journal of Finance.
2. ICFAI Journal of Applied Economics
3. ICFAI Journal of Emerging Market Finance
4. Journal of Financial Research

Online Resources:

Online Resources No	Web site address
1	corporatefinanceinstitute.com
2	https://www.pdfdrive.com/banking-and-indian-financial-systems
3	https://www.pdfdrive.com/indian-financial-system-and-management-of-financial-institutions
4	https://www.pdfdrive.com/capital-markets-financial-management-and-investment-management-
5	https://www.google.co.in/books/edition/The_Indian_Financial_System_Markets_Inst

MOOCs:

Resources No	Web site address
1	FinTech and the Transformation in Financial Services (Coursera)
2	http://ugcmoocs.inflibnet.ac.in/Subject : Indian Financial Markets andServices (26)
3	https://www.edx.org/course/financial-development-and-financial-inclusion
4	https://www.coursera.org/specializations/digital-transformation-financial-services

Semester	**Course Code**	***Course Title***	
IV	FM03	Corporate Finance	
Type	**Credits**	**Evaluation**	**Marks**
Core Elective	3	CES	UE:IE = 50:50

Course Objectives:

Subject / Course Objectives :

I. To orient the students regarding application of Corporate Finance
II. To orient the students to understand basic concepts of Financial Planning and Liquidity Management
III. To orient the students to understand the concept of Corporate Restructuring & forms of Business combination
IV. To orient the concept of International Business Combination Forms and structure.

Learning Outcomes :

I. To acquire the concept of Corporate Finance and Financial decision in terms of Planning and Liquidity Management
II. To gain the knowledge of Business combination structure and various forms of corporate restructuring in Indian and International Context
III. Students can able to apply common frameworks and tools related to mergers and acquisitions.
IV. To acquire the knowledge of Restructuring decision while working for M&A process in organization with the help on various interaction of Cases in the Indian and International contexts.

UNITS	**Syllabus – Corporate Finance**	Hrs.
1	**Corporate Finance** Meaning, Nature and Scope of Corporate Finance, Changing role of Corporate Finance in global economic environment, Corporate Governance.	5
2	**Financial Planning** **Meaning, Objectives, Characteristics of sound Financial Planning** , Steps /Process involved preparation of sound Financial Plan, Factors affecting financial planning, **Capitalization**: Meaning, Over-Capitalization and Under capitalization- Meaning, Causes and Remedial Measures.	6

3	**Liquidity Management:** Inventory Control Management-inventory control system , Factors determining level of Inventory, Techniques of Inventory control. **Receivable Management**	7
4	**Corporate Restructuring** Meaning , different forms , Motives and applications of corporate restructuring, forms of restructuring **Joint venture** – sell off and spin off , divestitures, meaning of LBO, MBO, **governance and mode of Purchased in LBO, Key motives behind MBO, Structure of MBO.** **Demerger**- Meaning of Demerger, **Characteristics of demerger, Structure of Demerger, and Tax implication of demergers**.	12
5	**Mergers and Acquisition:** Meaning ,Types of Mergers, motives behind the M & A, **advantages and disadvantages of M & A,Process of merger integration,** **Methods of financing mergers**, calculation and Significance of P/E Ratios and EPS Analysis , Market Capitalization, Analysis of Mergers & Acquisitions. **The Legal and Regulatory framework of Mergers and Acquisition Company Act 1956**& 2013. **Accounting for Mergers & Acquisitions** **Accounting methods for Mergers & Acquisition - Purchase Method and Pooling of Interest Method, Tax aspects on Mergers and Acquisitions.** **Prominent Cases of Mergers and Acquisitions - examples of M & A in the Indian and International contexts.**	12
6	**International M & A –Introduction of international M & A activity, the opportunities and threats, role of M & A in international trade growth.** **Impact of government policies and political and economic stability on international M&A decisions, recommendation for effective cross-**	8

	border M & A.	

Student has to upgrade Knowledge by using below inputs:

Reference Books:

Reference Books (Publisher)	Name of the Author	Title of the Book	Year Edition	Publisher Company
1 – National	I.M. Pandey	Financial Management	2015	Vikas Publishing House Pvt Limited
2 – National	R.P. Rustagi, Galgotia	Financial Management - Theory, Concepts and Problems	January 2018	Taxmann's
3 – National	Richard A. Brealey	Principles of Corporate Finance	2007	Tata McGraw-Hill Education
4- National	Kamal Ghose Ray	Mergers, Acquisitions, Strategy and Integration	2010	Kindle Edition
5- National	Prasad Godbole	Mergers, Acquisitions and Corporate Restructuring	January 2013	Vikas Publication
6-International	A.P.Dash	Mergers & Acquisitions	Feb-2020	Dreamtech press-Wiley
7-International	William R Snow	Mergers & Acquisitions for Dummies –A willey brand	2008	John Willey&sonsInc

Online Resources:

Online Resources No	Web site address
1	https://onlinelibrary.wiley.com/-Mergers and Acquisitions: A Step- by- Step Legal and Practical Guide, Second Edition
2	https://www.ebooks.com/ Mergers, Acquisitions and Corporate Restructuring
3	https://www.questia.com/library/economics-and-business/business/corporations/corporate-mergers-acquisitions

MOOCs:

Resources No	Web site address
1	http://ugcmoocs.inflibnet.ac.in
2	https://nptel.ac.in
3	https://swayam.gov.in
4	https://coursera.

Course : MBA (General) CBCS 2020 – w.e.f. - Year 2020 – 2021			
Semester	**Course Code**	***Course Title***	
IV	FM04	*International Financial Management*	
Type	**Credits**	**Evaluation**	**Marks**
Core Elective	3	CES	UE:IE = 50:50

Course Objectives:

Subject / Course Objectives :

i) To understand the core concepts of International Finance and Domestic Finance.
ii) To study the International Flow of Funds and International Monetary System.
iii) To analyze the nature and functioning of foreign exchange markets, determination of exchange rates and study the techniques of Foreign Exchange Risk Management.
iv) The course also aims to provide students with a thorough understanding of international investment, taxation and financing decisions.
v) To gain the conceptual clarity of the theoretical aspects of international trade and finance.
vi) To identify the processes, risks and instruments used in the financing of international trade.

Learning Outcomes :

i) Gain understanding of core concepts of International Finance and Domestic Finance.
ii) Knowledge of International Flow of Funds and International Monetary System.
iii) Analyze and understand the nature and functioning of foreign exchange markets and develop the ability to manage the foreign exchange risk.
iv) Understanding of International Capital Budgeting and International Taxation.
v) Knowledge of details of International Trade Settlement.
vi) Familiarize with the mechanism of International Trade Finance.

Units	Syllabus – International Financial Management	Hrs.
Unit No : 1	**Introduction:** Overview, Scope and Objective of International Finance. Distinction between Domestic Finance and International Finance. Importance and Challenges of International Financial Management. **Foreign Direct Investment: Concept, Cost and Benefits of Foreign Direct Investment, Concept of International Portfolio Management.**	06
Unit No : 2	**International Flow of Funds and International Monetary System:** Concept, principles and components of Balance of Payments. International Monetary System: Evolution, Gold Standard, Bretton Woods System, The Flexible Exchange Rate regime, The Current Exchange Rate arrangement.	07
Unit No : 3	**Foreign Exchange Market and Foreign Exchange Risk Management:** Functions and structure of Foreign Exchange Market. Major participants. Types of transactions. Foreign Exchange Exposure. Various tools and techniques of Foreign Exchange Risk Management. **Foreign Exchange Rate Determination:** **An overview, Factors influencing Exchange Rates, Foreign Exchange Quotations, International Arbitrage, Interest Rates Parity, Purchasing Power Parity, Relationship between Inflation, Interest Rates and Exchange Rates**.	11

Unit No : 4	**International Capital Budgeting and International Taxation:** **Introduction of international capital budgeting, adjusted present value model, capital budgeting from parent firm's perspective and expecting the future expected exchange rate analysis.** **International tax system, double taxation, double taxation avoidance agreement (DTAA), tax havens and transfer pricing.**	10
Unit No : 5	**International Trade Settlement:** Concept, objectives and importance of International Trade, Risks involved in International Trade, Factors influencing International Trade, Settlement methods of International Trade viz. Open Account, Advance Payment, Documentary Credit, Documentary Collection, Consignment Trading.	7
Unit No : 6	**International Trade Finance:** Pre shipment finance, Post shipment finance, Supplier's credit, Buyer's credit, Factoring, Forfeiting, Offshore banking documentary credit mechanism, Steps involved in Letter of Credit (L.C.) mechanism along with role played by the parties to L.C.	7

Student has to upgrade Knowledge by using below inputs:

Reference Books:

Reference Books (Publisher)	Name of the Author	Title of the Book	Year Edition	Publisher Company
1 – National	P.G.Apte.	International Financial Management	2014	Tata Mcgraw Hill
2 – National	VyuptakeshSharan	International Financial Management	2012	Prentice Hall of India Pvt Ltd
3 – National	MadhuVij	International Financial Management	2006	Excel Books

4 – International	Eiteman David, I. Stonehill Arthur, et al.	Multinational Business Finance	2017	Pearson
5 – International	Alan C. Shaprio	International Financial Management	2016	Wiley
6 – International	Cheol S. Eun, Bruce G. Resnick	International Financial Management	2017	Tata McGraw-Hill

Online Resources:

Online Resources No	Web site address
1	https://www.investopedia.com/
2	www.icmai.in
3	https://www.yourarticlelibrary.com
4	www.youtube.com
5	https://www.freebookcentre.net/

MOOCs:

Resources No	Web site address
1	https://www.coursera.org/learn/global-financial-markets-instruments
2	https://www.coursera.org/specializations/global-challenges-business
3	https://nptel.ac.in/courses/110/105/110105057/
4	https://nptel.ac.in/courses/110/105/110105031/

Semester –I Subject: FinancialandManagementAccounting

Unit No.	Concept added	Concept removed
1	GAAP, EndUsersofFinancialStatements	
2	No Change	No Change
3	Role of ICAI and Ministry of Corporate affairs in setting up Accounting Standards.	
4	No Change	
5	No change	
6	No change	

Course objectives are also updated as per Current Business management requirement.Specific Learning outcomes are added to the course.

Course Objectives:

i) Toacquaint thelearners withthefundamentals ofFinancialAccounting.
ii) ToorienttotheAccountingmechanicsinvolvedinpreparationofBooksofAccountsand FinancialStatementsofasoleproprietor
iii) To make the students familiar with International Accounting Standards and International FinancialReportingStandards(IFRS)
iv) Tointroducetheconceptsof CostandManagementAccounting
v)Toorientthestudentsaboutapplicationofbudgetarycontrolasatechniqueof Management Accounting
vi) To acquaint the students with application of Standard Costing and Marginal Costing as techniquesofManagementAccounting.

LearningOutcomes:

I. LearnerswillabletoknowthefundamentalsofFinancialAccountingandAccounting Principles
II.Learners will demonstrate the ability to prepare Financial Statements of a sole proprietor
III. LearnerswillunderstandtheutilityandimportanceofInternationalAccounting Standards andInternationalFinancialReportingStandards (IFRS)
IV. Learners willbefamiliarwithconcepts ofCost andmanagement Accounting
V.Learners willbeabletoapply thetechniqueofBudgetary Control
VI. LearnerswillbeabletoapplythetechniqueofStandardCostingandMarginal Costing.

Semester –II Subject: Financial Management

Unit No.	Concept added	Concept removed
1	MeaningofFinancialManagement, Concept of Social Responsibility	
2	Meaning, of Capital Budgeting ConceptofTime Value of Money,	
3	Unit is renamed as - LiquidityDecision:WorkingCapitalManagement SourcesofWorkingCapitalFinancing	
4	Previous syllabus unit IV and V is combined and new concepts are introduced in unit V	Financing through Financial Institutions, International Financing, Venture Capital financing: concept and Venture capital scenario in India, Recent Case Studies and examples on above topics 5 Capital EBIT- EPS Analysis, Analysis of leverages
5	New concepts are introduced in Unit V Dividend Decision:Factors determining Divined policy, Theories of Dividend-Gordon Model,WalterModel,MMHypothesis,and FormsofDividend Payment: CashDividend,BonusShare and Stock Split,StockRepurchase,DividendPolicies inPractice.	
6	No change	

Course objectives are also updated as per Current Business management requirement.**Specific Learning outcomes are added to the course.**

Course Objectives:	
i)	TointroducethefundamentalsofFinancial Management
ii)	ToorientontheskillssetrequiredforFinancial DecisionMaking Techniques iii) ToorientonFinancial StatementAnalysisandInterpretation
iv)	Todevelopanalytical skillswhichwouldhelpdecisionmakinginBusiness.
v)	Todeveloptheentrepreneurial mindset
LearningOutcomes:	

i) Developmentofbasicskillsets requiredforFinancialDecisionMaking

ii) Developmentofanalyticalskillset tounderstandandinterpret FinancialStatements

iii) Graduates are able to improve their knowledge about functioning business, identifying potentialbusinessopportunities, evolvement ofbusinessenterprisesandexploring entrepreneurial opportunities(BEDK)

iv) Graduatesareexpectedtodevelop skillson analyzingthebusinessdata,application ofrelevant analysis,problem solving inthefunctional areas,i.e. Critical thinking-BusinessAnalysis-Problem Solving andInnovativeSolutions(CBPI)

v) Developing Social Responsivenesstocontextual social issues/ problemsandexploring solutions. Graduatesareexpected toidentify problems,explorethe opportunities,designthe business solutionsanddemonstrateethical standardsinorganizational decisionmaking.(SRE)

Semester –III Subject: Investment Analysis and Portfolio Management (Finance Specialization)

Unit VI-concept of Optimal Portfolio, Efficient Frontier and Investor Utility, Indifference Curve is added

Course objectives are also updated as per Current Business management requirement.**Specific Learning outcomes are added to the course.**

Subject / Course Objectives :

i) To acquaint the students with basic concepts and avenues of investment, concept of risk and return related to investment.
ii) To explain the concept of Mutual Funds and derivatives and how to evaluate them.
iii) To explain the concept and applications of fundamental analysis and technical analysis for stock investments.
iv) To clarify how to construct the Investment plans for Individuals in different stages of life cycles and different situations.
v) To explain the calculation of the risk and return for securities and for portfolios.
vi) To elucidate the modern portfolio theory and market efficiency using both theoretical and empirical arguments.

Learning Outcomes :

At the end of the programme students will able to-

i) Understand the risk and return relationship and various investment alternatives available in India.
ii) Comprehend the concept of Mutual Funds and derivatives and how to evaluate them.
iii) Understand how to use fundamental analysis and technical analysis for stock investments.
iv) Create a policy statement to showcase the objectives and risk tolerances of numerous categories of individual and institutional investors which can help in making Investment plans for Individuals in different stages of life cycles and different situations.
v) Evaluate the effect of risk on investment decisions. Students will able to calculate the risk and return for securities and for portfolios.
vi) Understand the modern portfolio theory and market efficiency using both theoretical and empirical arguments.

Semester –III Subject: Management of Financial Services (Finance Specialization)

Unit No.	Concept added	Concept removed
1	Meaning of Indian Financial System	Financial System and Economic Development
2	Role of Capital market Intermediaries Recent cases of IPO's in India. Stock Market Operations: Stock Exchange functions in India, Listing of securities-Stock Indices in India- SENSEX and NIFTY - BSE&NSE	
3	Recent cases on Mutual Fund Industries in India	
4	Unit 4 is totally reframed and concept added are – Venture Capital: Venture capital: Origin, concept, features, Advantages and Limitations, Stages in venture capital financing, Venture capital Guidelines-Methods of venture financing. Case studies of Venture capitalist companies	
5	No change	
6	Added the concept of – Rural Banking and Microfinance: -Financing Rural Development: Functions and policies of RBI and NABARD; Rural Credit Institutions-Role and function, Regulation of Rural Financial Services. Above concept was earlier part of Unit-IV Concepts related to venture capital was taken as part of unit-IV	

Course objectives are also updated as per Current Business management requirement.**Specificlearning outcomes are added to the course.**

Course Objectives:

Subject / Course Objectives :

i) To give the students an insight into the principles, practices of the prominent Financial services and their functioning in the changing economic scenario.
ii) To make critical appraisal of the working of the specific financial Services in India.
iii) To brief the students about developments in financial services.

iv) To provide a judicious mixture of theory and business practices of the contemporary Indian financial services.
Learning Outcomes : After completion of this course, the student will be able to i) Understand the role and function of the Indian financial system , Financial Market and Various instruments of Financial Services. ii) Demonstrate an awareness of the current structure and regulation of the Stock Exchange Mutual Fund Industry, Merchant Banking and Venture capital concept in Indian Context. iii) Understand the concept of Rural Banking, Microfinance in Indian Financial service. iv) Evaluate and create strategies to promote financial products and services.

Semester –IV Subject: Corporate Finance (Finance Specialization)

Unit No.	Concept added	Concept removed
1		sources of long term and short term finance
2	Meaning, Objectives, Characteristics of sound Financial Planning ,	
3	Unit-IIIrd has been renamed as Liquidity Management from Cash flow Management/Liquidity Management: Inventory Control Management	
4	advantages and disadvantages of M & A, Process of merger integration, , governance and mode of Purchased in LBO, Key motives behind MBO, Structure of MBO. Characteristics of demerger, Structure of Demerger, and Tax implication of demergers.	
5	motives behind the M & A, advantages and disadvantages of M & A, Process of merger integration, The Legal and Regulatory framework of Mergers and Acquisition Company Act 1956. Accounting for Mergers & Acquisitions Accounting methods for Mergers& Acquisition - Purchase Method and Pooling of Interest Method, Tax aspects on Mergers and Acquisitions.	

	Prominent Cases of Mergers and Acquisitions - examples of M & A in the Indian and International contexts.	
6	Unit VI is completely replaced as earlier Unit VI concepts are added in unit V International M & A –Introduction of international M & A activity, the opportunities and threats, role of M & A in international trade growth. Impact of government policies and political and economic stability on international M&A decisions, recommendation for effective cross-border M & A.	

Course objectives are also updated as per Current Business management requirement.**Specific learning outcomes are added to the course.**

Course Objectives:

Subject / Course Objectives : I. To orient the students regarding application of Corporate Finance II. To orient the students to understand basic concepts of Financial Planning and Liquidity Management III. To orient the students to understand the concept of Corporate Restructuring & forms of Business combination IV. To orient the concept of International Business Combination Forms and structure.
Learning Outcomes : I. To acquire the concept of Corporate Finance and Financial decision in terms of Planning and Liquidity Management II. To gain the knowledge of Business combination structure and various forms of corporate restructuring in Indian and International Context III. Students can able to apply common frameworks and tools related to mergers and acquisitions. IV. To acquire the knowledge of Restructuring decision while working for M&A process in organization with the help on various interaction of Cases in the Indian and International contexts.

Semester –IV Subject: International Financial Management (Finance Specialization)

Unit No.	Concept added	Concept removed
1	Foreign Direct Investment: Concept, Cost and Benefits of Foreign Direct Investment, Concept of International Portfolio Management	India's financial sector reforms after globalization
2	No Change	
3	Foreign Exchange Rate Determination: An overview, Factors influencing Exchange Rates, Foreign Exchange Quotations, International Arbitrage, Interest Rates Parity, Purchasing Power Parity, Relationship between Inflation, Interest Rates and Exchange Rates.	
4	Unit IV is completely replaced as earlier UNIT IV concepts are added in unit III International Capital Budgeting and International Taxation: Introduction of international capital budgeting, adjusted present value model, capital budgeting from parent firm's perspective and expecting the future expected exchange rate analysis. International tax system, double taxation, double taxation avoidance agreement (DTAA), tax havens and transfer pricing.	
5	No Change	
6	No Change	

Course objectives are also updated as per Current Business management requirement.**Specific learning outcomes are added to the course.**

Course Objectives:

Subject / Course Objectives :

i) To understand the core concepts of International Finance and Domestic Finance.
ii) To study the International Flow of Funds and International Monetary System.
iii) To analyze the nature and functioning of foreign exchange markets, determination of exchange rates and study the techniques of Foreign Exchange Risk Management.
iv) The course also aims to provide students with a thorough understanding of international investment, taxation and financing decisions.

v) To gain the conceptual clarity of the theoretical aspects of international trade and finance.
vi) To identify the processes, risks and instruments used in the financing of international trade.

Learning Outcomes :

i) Gain understanding of core concepts of International Finance and Domestic Finance.
ii) Knowledge of International Flow of Funds and International Monetary System.
iii) Analyze and understand the nature and functioning of foreign exchange markets and develop the ability to manage the foreign exchange risk.
iv) Understanding of International Capital Budgeting and International Taxation.
v) Knowledge of details of International Trade Settlement.
vi) Familiarize with the mechanism of International Trade Finance.

MBA Sem II (CBCS 2020-21)

Human Resource Management

Course Code	203	Course Type	FULL CREDIT
Credit	III	Marks	UE 60 + IE 40 = 100

Course Objectives:

- To explain the significance of HRM and changing role of HRM
- To bring out the role of HR in organizations effectiveness and employee performance Syllabus

Unit 1.Introduction to HRM : Definition, Nature and Scope of HRM, Evolution of HRM, Challenges of HRM, HR Profession and HR Department, Global perspective of HRM

Unit 2.Human Resource Planning: Steps involved in HRP, factors Affecting HRP, Job analysis and Job Design, Recruitment and Selection – Recruitment Process, Sources and Methods of Recruitment, Evaluation of methods of recruitment. Steps in selection

Unit 3.Training and Development: Need and Importance of Training and Development, Training Need Analysis and techniques, Design Training Programme, Types of training, Training evaluation, Executive Development, Concept of Career Development

Unit 4.Wages and salary Management: Job Evaluation, Wage Determination, Types of Wages, Salary Structure, Fringe benefits, Executive Compensation

Unit 5.Performance Appraisal: Need and Importance of Performance Appraisal, Performance Appraisal Process, Methods of Performance Appraisal

Unit 6.Industrial Relations Management: Overview of Industrial Relations Movement, Employee Relation Management Tool, Issues in Employee Relation Management. Violations of Policy/ Discipline, Industrial Disputes, Grievance Procedure, Employees Separation -Termination, Resignation, downsizing, Lay off Retirement, VRS.
HR in new era: HR in Virtual organisation, HRIS, International HRM and Cross Culture.
(only conceptual knowledge), Employee Engagement, Green HRM, Talent Management.

Reference Material:

1. Gary Dessler, BijuVarkey - Human Resource Management, Pearson Publication, 12th Edition
2. SeemaSanghi, Human Resource Management, Macmilan Publication, 2011
3. Decenzo, Robbins, Human Resource Management, John Wiley & Sons Inc, Sixth Edition
4. V.S.P. Rao, Human Resource Management
5. K. Ashwathappa, Human Resource Management, Tata McGraw Hill Publishing Compnay
6. Edwin Flippo, Personal Management

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Semester –II Subject: International Business

Unit No.	Concept added	Concept removed
1	MarketEntry Strategies– Exporting,Importing,Jointventure,Franchising,Merger and acquisition.	Statutory Basis of International Business Introduction to India's Foreign Trade Policy,
2	Cultural environment in International Business (Hofstede Theory – Applicationintrade).Ease ofDoingBusiness(Parametersgivenbyworld bank)inIndiaandacrossBRICS.	Trade Theories Mercantilism, Absolute Cost Advantage, Comparative Advantage, Huckscher Ohlin Theory, Product Life cycle Theory, Porter's Diamond Theory
3	Trade Theories, Trade Policy, Trade Analytics- Trade theories – Mercantilism,AbsoluteAdvantage,Revealed ComparativeAdvantage,H.O TheoryandPortersDiamondModel. InternationalTradeClassificationandHarmonizedSystem (HS**),**Current ForeignTrade Policyinforce (GeneralProvisions),Incentivesofferedunder FTP (Ch-3andCh-4 ofForeignTradePolicy). TradeMapAnalyticsandcalculationofRCA,TIIforvariousproducts,Ease ofDoingBusiness.	Development in Monetary Scenario Breeton Woods System to EURO and its Implications, SAARC,G7 ,G20 and BRIC countries, Country Risk Analysis
4	Balance of Payment and FEMA Act - Components of BOP (Current and Capital Account) , Credit and Debit Entries in BOP, Differentiate betweenBOT and BOP , Key Provisions of FEMA Act 1999 and difference between FERA and FEMA. Country Risk Analysis and Lessons from ASIAN financial Crisis in 1997.	EPRG Framework. Comparative Environmental framework, Cultural, Political, Legal and Economic framework,
5	Dispute settlement mechanism through WTO. Levels of trade integration. Basic conceptual note of NAFTA, SAARC and European Union. Role of BRICS.	Purchasing Power Parity
6	Factors affecting Foreign Exchange Rate , Role, Functions and Participants of Foreign Exchange Market	Offshore Currency and Market, Export and Import Strategies, Collaborative and Control Strategies

Course objectives are also updated as per Current Business management requirement.Specific Learning outcomes are added to the course.

Course Objectives:

vii) Topreparethestudents thoroughly withthedomainknowledgeandglobalissues ofInternationalbusiness.

viii) Todiscuss thereasonofenteringintoInternationalbusiness throughvarious tradetheoriespropoundedby economist andpracticalaspects.

ix) Todemonstratethroughtrade dataanalytics as to what toexport andwhereto export fromIndia.

x) Todiscuss theroleandfunctionsofInternationalorganizations andtrade organisationthat is IMF,WorldBank andWTO.

xi) Tofamiliarizethestudents withthekey tradeblocks suchasNAFTA,EUetc. xii) Todemonstratetheroleofexchangeratesin globalmarkets.

LearningOutcomes:

V) Toenablethestudents totake decisions relatedtoglobalissuesandpolicies. VI) TobeabletoInterpret Foreigntradepolicy andavailincentivesofferedunder various schemes.

VII) Toanalyzethetrade datafordecisionmakingas towhat toexport andwhereto export.

VIII) Torecall theroleandfunctions of GlobalInstitutions IMF,WTOandWorldBank. IX) Toacquaint withthetradeblocks SAARC,NAFTA,EUetc.

X) Tocomprehendtheexchangeratespractically andits implications ontrade.

UnitNo.	Contents	Hrs.
1	Introduction of International Business and Entry Strategies- Definition of InternationalBusiness,NatureandScopeofInternationalBusiness,Domestic Trade versusInternationalTrade,FormsofCountertrade.MarketEntry Strategies– Exporting,Importing,Jointventure,Franchising,Merger and acquisition.	06
2	GlobalizationandCulturalIssues-DefinitionofGlobalization,Globalization of Markets, Pros and cons of Globalisation, Drivers of Globalization , Cultural environment in International Business (Hofstede Theory – Applicationintrade).Ease ofDoingBusiness(Parametersgivenbyworld bank)inIndiaandacrossBRICS.	06
3	Trade Theories, Trade Policy, Trade Analytics - Trade theories – Mercantilism,AbsoluteAdvantage,Revealed ComparativeAdvantage,H.O TheoryandPortersDiamondModel. InternationalTradeClassificationandHarmonizedSystem (HS**),**Current ForeignTrade Policyinforce (GeneralProvisions),Incentivesofferedunder FTP (Ch-3andCh-4 ofForeignTradePolicy). TradeMapAnalyticsandcalculationofRCA,TIIforvariousproducts,Ease ofDoingBusiness.	10
4	BalanceofPaymentandFEMAAct -Components ofBOP(Currentand CapitalAccount),CreditandDebitEntriesinBOP,Differentiatebetween	08

	BOTandBOP,KeyProvisionsofFEMAAct1999anddifferencebetween FERAandFEMA.Country RiskAnalysis andLessonsfromASIANfinancial Crisisin1997.	
5	InternationalFinancialandTradeOrganizations-RoleofGATT,WTO,IMF andWorldBankgroup.Dispute settlementmechanismthroughWTO.Levels oftrade integration.Basicconceptualnote ofNAFTA,SAARCandEuropean Union.RoleofBRICS.	09
6	ForeignExchangeMarketandTypesofexchangerates-Directandindirect Quotes,ConceptofNostroandVostroAccount,TypesofExchange-Fixed vs.Flexible Exchange Rate (IndependentandManaged Float),Factors affectingForeignExchangeRate, Role,Functions andParticipantsofForeign ExchangeMarket	06
Activity	Students are required to prepare workbook (practical file) -Hands on experienceontradedataanalyticstofindoutthe trade relatedratiossuchas RCA(RevealedComparativeAnalysis)andTII(Trade Intensityindex). Students areadvisedtoprepareassignment/fileusingHScodesgivenand find outthe competitivenesstodecidewhichmarkettoenterandwhatproducts shouldbe exported fromIndia. CompareBRICSonEODBRatingsusingdatafromworldbankreports. Culturaldifferencesofatleastfivecountriesbyagroupofstudentstobe done.GlobalisationIndextobeunderstoodinordertofindoutthereasonsfor thosewhoare highlyglobalizedversusthosewhoarelessglobalized.Cultural differencesacrossthecountriestobeexplainedusingHofstedetheory.Key ExportsfromIndiaandmajormarketstobestudiedthroughdata analytics.	

The above highlighted activity is added, which were not there in 2016-2017 Syllabus.

Semester –III Subject: ***Regulatory Aspects of International Business***

Unit No.	Concept added	Concept removed
1	No change	
2	No change	
3	No change	
4		Indian scenario – Process of Regulation & Deregulation
5	Indian scenario – Process of Regulation & Deregulation ,	
6	World Transfer Pricing	

Course : MBA (General) CBCS 2020 – w.e.f. - Year 2020 – 2021			
Semester	Course Code	*Course Title*	
III	IB01	*Regulatory Aspects of International Business*	
Type	Credits	Evaluation	Marks
Core elective	3	CES	UE:IE = 50:50

Course Objectives:

Subject / Course Objectives :

- To enable the student to understand the international business transactions and legal compliances related to the smooth conduct of business.
- To give background of legal framework of Cross border trade.
- To make students aware of Regulatory framework and also keep abreast with latest cross border trade regulations

Learning Outcomes :

- The course will help students to understand the scenario of world trade and how regulations help the smooth conduct of trade processes.
- The course will help students to know the various legal compliances and documentations in the cross border trade.

Units: -	Syllabus – *Regulatory Aspects of International Business*	Hrs.
Unit No : 1	International Business transactions – Nature of cross border trade, Need to govern the cross border trade, International Law, choice of Law, conflict of Laws, Legal & Regulatory aspects	10
Unit No : 2	Framework of Statutes that govern cross border trade, Statutes framed by country of origin of transaction & International Guidelines	10
Unit No : 3	Regulation of International Banking, High Financial gearing, BCCI International affair, Bank for International Settlement	10
Unit No : 4	Regulation of Monetary System, Period between wars, Breton Woods, Euro, Smithsonian Agreement, Snake in Tunnel, Plaza & Louvre Accord, Regulatory Arbitrage, Labuan Model, Currency Board	10
Unit No : 5	Indian scenario – Process of Regulation & Deregulation ,Exchange Control Manual, An Introduction to FEMA, FEDAI Role & Rules , UCPDC – ICC Publication URC – ICC Publication Important clauses & interpretation ,Customs & Baggage Rules – Sale of Goods Act, INCOTERMS	10
Unit No : 6	International Debt Crises, Herstst Bank Crisis, Asian & other crises, Sovereign Risk – State Immunity Act, International Accounting Standards, Trade related Intellectual Property Rights, World Transfer Pricing	10

Semester –III Subject:Export Import Policies, Procedures and Documentation

Unit No.	Concept added	Concept removed
1	No Change	
2	World's Foreign Trade Scenario and Trade Composition, India's Foreign Trade, Important Statutes/Acts/Policies for International Trade, Export Procedure step by step from registration to final shipment and post shipment.	2 Cross border trade flows, Procedural aspects involved with respect to statutes & Logistic aspects in maintaining flows, Import Export Code Procedure & INCOTERMS
3	Documentation in Export/ Import required for Sales Contract, Shipment, Custom Clearance, Banks, Insurance and Transport etc.	International Trade Logistics – Meaning, Objective of Logistics, Implications of 3 R in Exports Marketing, System elements common to Physical Supply Management and Physical Distribution Management
4	Cross Border Payment Settlement Procedure with Advanced Payment Method, Open Account Method, Documentary Credit, Documentary Collection and Consignment Trading	Economic Order Quantity – Concept, Warehousing, Transportation, Communication, Ports in India, Port Efficiency and Productivity, Freight Forwarder, Custom House Agent, Multimodal Transport Operator Containerization – Types and Dimensions, Linear Shipping Services
5	International Trade Logistics – Meaning, Objective, International Logistic Agencies in India and outside India, their functions.	Cross Border Settlement Procedure with Advanced Payment Method, Open Account Method, Documentary Credit, Documentary Collection and Consignment Trading
6	Warehousing, Ports in India, Port Efficiency and Productivity, Freight Forwarder, Custom House Agent, Multimodal Transport Operator, Containerization – Types and Dimensions, Linear Shipping Services Project –Students are supposed to select a product for export with the help of Product and Market selection techniques and need to explain each step involved in the export process from the registration stage to post shipment stage.	Documentation in Export and Import a) Regulatory & non Regulatory b) Financial – Bills of Exchange c) Commercial – Invoices d) Risk bearing Documents – Insurance e) Transport Documents – Bill of lading, Airway bill f) Other documents – Packing List, Weight List

Course : MBA (General) CBCS 2020 – w.e.f. - Year 2020 – 2021			
Semester	**Course Code**	***Course Title***	
III	IB02	*Export Import Policies Procedures and Documentation*	
Type	**Credits**	**Evaluation**	**Marks**
Core Elective	3	CES	UE:IE = 50:50

Course Objectives:

Subject / Course Objectives :

- To make students aware about the cross border trade procedures and practices in International Logistics

Learning Outcomes :

- The course will provide a clarity on the Import-Export cycle.
- The course will help students to know the various compliances and documentations in the Import Export Process
- The course will help students to know the logistic process and various agencies involved the export –import process.

Units: -	Syllabus – *Export Import Policies Procedures and Documentation*	Hrs.
Unit No : 1	International Business – Nature & Scope, Framework of International Business, Meaning of Export/ Deemed Export/ Import	10
Unit No : 2	World's Foreign Trade Scenario and Trade Composition, India's Foreign Trade, Important Statutes/Acts/Policies for International Trade, Export Procedure step by step from registration to final shipment and post shipment.	10
Unit No : 3	Documentation in Export/ Import required for Sales Contract, Shipment, Custom Clearance, Banks, Insurance and Transport etc.	10
Unit No : 4	Cross Border Payment Settlement Procedure with Advanced Payment Method, Open Account Method, Documentary Credit, Documentary Collection and Consignment Trading	10
Unit No : 5	International Trade Logistics – Meaning, Objective, International Logistic Agencies in India and outside India, their functions.	10
Unit No : 6	Warehousing, Ports in India, Port Efficiency and Productivity, Freight Forwarder, Custom House Agent, Multimodal Transport Operator, Containerization – Types and Dimensions, Linear Shipping Services <u>Project</u> –Students are supposed to select a product for export with the help of Product and Market selection techniques and need to explain each step involved in the export process from the registration stage to post shipment stage.	10

Semester –IV Subject:International Marketing

Unit No.	Concept added	Concept removed
1	International Marketing- Concept, Importance, International Marketing Research and Information System,	Nature, Importance and Scope, International marketing Vs Domestic Marketing, International marketing Orientation : EPRG framework, International Market Segmentation ,Positioning and targeting (STP)
2	Market Analysis and Foreign Market Entry Strategies, Future of International Marketing, India's Presence in International Marketing	International marketing Environment: Introduction, Political Environment, Legal and Regulatory Environment, Economic Environment, Scio-cultural Environment, Technological Environment. Challenges in front of International Marketing
3	Internationalization of Retailing and Evolution of International Retailing, Motives of International Retailing, International Retail Environment – Socio-Cultural, Economic, Political, Legal, Technological	International market Entry Strategies : Introduction, Different modes of entry: Exporting, Licensing, Franchising, Contract Manufacturing, Joint Ventures, Direct Investment, Strategic Alliance, Case studies on modes of entry
4	Selection of Retail Market, Study and Analysis of Retailing in Global Setting, Methods of International Retailing, Forms of Entry-Joint Ventures, Franchising, Acquisition	International product and pricing Strategies:Product Designing: product Standardization Vs. Adoption, Managing International product Line, International PLC , Branding Decision ,Packaging strategies, new Product Development, Pricing for International Market, Factors affecting International pricing
5	Competing in Foreign Market, Multi-country competition and Global Competition, Competitive Advantages in Foreign Market, Cross Market subsidization, Retail Structure, Global Structure.	International Distribution and promotion : International Distribution channel their role and functions , factors affecting choice of channels, Types of Intermediaries, Modes of Transportation, International Promotion Mix: Advertising and others means of communication , Role of trade fair and exhibitions International marketing

6	Case Studies in International Retailing Management	Emerging Trends International Marketing : International Marketing Information System, Role of WTO in International Marketing ,Regionalism VsMultilaterism , Trade Block, global quality standards , quality issues for Indian Products in International Business

Course : MBA (Gen) CBCS 2020 – w.e.f. - Year 2020 – 2021			
Semester	**Course Code**	***Course Title***	
IV	IB03	*International Marketing*	
Type	**Credits**	**Evaluation**	**Marks**
Core Elective	3	CES	UE:IE = 50:50

Course Objectives:

Subject / Course Objectives :

i. Apply the key terms, definitions, and concepts used in marketing with an international perspective.
ii. Compare the value of developing global awareness vs. a local perspective in marketing.
iii. Evaluate different cultural, political, and legal environments influencing international trade.
iv. Distinguish the advantages and disadvantages Canadian products and services possess in international marketing in both emerging markets and mature markets.

Learning Outcomes :

i. Explain the impact of global and regional influences on products and services for consumers and businesses.
ii. Apply basic internationally oriented marketing strategies (total product concept, pricing, place, and promotion).
iii. Develop creative international market entry strategies.
iv. Understand the importance of the Internet for global business.
v. Explain the differences in negotiating with marketing partners from different countries and the implications for the marketing strategies (4Ps).

Units	*Syllabus: International Marketing*	.
Unit No : 1	International Marketing- Concept, Importance, International Marketing Research and Information System,	
Unit No : 2	Market Analysis and Foreign Market Entry Strategies, Future of International Marketing, India's Presence in International Marketing	

Unit No : 3	Internationalization of Retailing and Evolution of International Retailing, Motives of International Retailing, International Retail Environment – Socio-Cultural, Economic, Political, Legal, Technological	
Unit No : 4	Selection of Retail Market, Study and Analysis of Retailing in Global Setting, Methods of International Retailing, Forms of Entry-Joint Ventures, Franchising, Acquisition	
Unit No : 5	Competing in Foreign Market, Multi-country competition and Global Competition, Competitive Advantages in Foreign Market, Cross Market subsidization, Retail Structure, Global Structure.	
Unit No : 6	Case Studies in International Retailing Management	

Semester –IV Subject: International

Unit	Concept added	Concept removed

No.		
1	No change	
2	No change	
3	No change	
4	No change	
5	No change	
6	No change	

Course : MBA (Gen) CBCS 2020 – w.e.f. - Year 2020 – 2021			
Semester	**Course Code**	***Course Title***	
IV	IB04	*Global Business Strategies*	
Type	**Credits**	**Evaluation**	**Marks**
Core	3	CES	UE:IE = 50:50

Course Objectives:

Subject / Course Objectives :

i) Knowledge: Basic and broad knowledge in international business environment, strategies and management. Ability to apply concepts, principles and theories to simple business situations.
ii) Global Perspective: Awareness of the different thinking and viewpoints of diverse cultures.
iii) Awareness of the global business environment and its impacts on businesses.
iv) . Practical Application: Use of excel tools in real world scenarios.

Learning Outcomes :

i) Explain the concepts in international business with respect to foreign trade/international business
ii) Apply the current business phenomenon and to evaluate the global business environment in terms of economic, social and legal aspects
iii) Analyse the principle of international business and strategies adopted by firms to expand globally
iv) . Integrate concept in international business concepts with functioning of global trade

Units : -	Syllabus – *Global Business Strategies*	.
Unit No : 1	Export – Import – Strategies, Third Party Intermediaries, Cause of Ethical dilemma 'Is demand always Export' Technology impact on Export Strategy	
Unit No : 2	Global Manufacturing Strategies, Global Supply Chain Management, Ethical Dilemma –supplier relations approach that yields best result	
Unit No : 3	Control Strategies – Introduction, Planning, Organizational Structure, Location of Decision making, Control in process of Internationalization,	

	Control Strategy Mechanisms Corporate Culture & Co-ordinating Methods, Control in special situations Acquisitions, Shared ownership	
Unit No : 4	Role of legal structure in Control Strategies – Control or No control Constant Balancing Act	
Unit No : 5	Collaborative Strategies – Motives for collaborative arrangements, Considerations in collaborative arrangements, Licensing/ Franchising / Contracts/ Joint Ventures/ Equity Alliances	
Unit No : 6	Problems of Collaborative Arrangements, Collaborative Importance, Differing Objectives, Control Problems, Cultural Difference, Compatible Partners, Steps to know how Innovation breeds collaboration	

Programme:MBA(General)CBCS2020 –w.e.f.-Year 2020–2021			
Semester	**CourseCode**	***CourseTitle***	
I	101	*ManagementConceptsandApplications*	
Type	**Credits**	**Evaluation**	**Marks**
Core	3	CES	UE:IE=50:50

CourseObjectives:
1) TounderstandthebasicManagementConcepts andSkills. 2) Tostudythe Principles andFunctions ofManagement. 3) TolearntheApplications ofPrinciples ofManagement. 4) Tofamiliar withtheFunctionalareas ofmanagement. 5) TostudytheLeadershipstylesintheorganization. 6) ToexposetotheRecenttrendsinmanagement.
LearningOutcomes:
On completionof thiscourse,the studentswillbeableto 1) UnderstandtheManagementConcepts andManagerialSkills. 2) Focus onthe Principles andFunctions ofManagement. 3) LearntoapplythePrinciplesofManagementinpractice. 4) FamiliarizewiththeFunctionalareas ofmanagement. 5) UsetheeffectiveLeadershipstylesintheorganization. 6) RecognizetheRecenttrendsinmanagement.

Unit	Contents	Sessions
1	**IntroductiontoManagement:** DefinitionandmeaningofManagement,Characteristics ofManagement, ScopeofManagement,ScientificManagementApproachbyF.W.Taylor, Principles ofManagementbyHenryFayol,Levels ofmanagement, ManagerialSkills,Functions ofManagement-Planning,Organizing, Staffing, DirectingandControlling.conceptof"POSDCORB".	06
2	**Planning:** MeaningofPlanning,NatureandimportanceofPlanning,Processof Planning,Principles ofPlanning,Types ofPlans-SingleUsePlans-RepeatedUse Plans,Types ofObjectives,SettingObjectives,Management by**Objectives (MBO),Decisionmaking-ProcessofDecisionmaking, Decisionmakingmodels: classical,Administrative,PoliticalandVroom-JagoModel.**	06
3	**Organizing:** **MeaningofOrganizing,ProcessofOrganizing andCreationofOrganization structure, Typesoforganizationalstructures-Formaland Informal,** **Staffing:** **MeaningofStaffing,HumanResourcePlanning -JobAnalysis,Recruitment-Sourcesof Recruitment,Selection-ProcessofSelection,Placementofemployees, Departmentalization-BasesofDepartmentalization,LineandStaffRelationship.**	07
4	**Directing:** Meaning of Directing, Principles of Directing, Leadership Styles, Span of	08

	Management - Determinants of Span of Management, Centralization and Decentralization, Authority, Responsibility and Accountability, Delegation of Authority -AdvantagesofEffectiveDelegation.Barrierstoeffectivedelegation-Guidelines for effective delegation-Distinctions between Delegation &Decentralization.	
5	**Controlling:** MeaningofControlling,Needforeffectivecontrolling,Processof Controlling, Techniquesof Controlling,RelationshipbetweenPlanningandControlling,Use of ITfor Controlling,Controltechniques,ZeroBaseBudgetingandManagement audit.	08
6	**Functional Departments And Sections -** HR, Marketing, Production &Operations,Finance,etc. **IntroductionToBusinessSectors:**Manufacturing(Automobile,Pharmaceutical, etc),Service(IT, Telecom,Banking,Insurance,etc),ManagementofSMEs.	10

ReferenceBooks:

Sr.No.	Name of the Author	Titleof the Book	YearAddition	Publisher Company
1–National	S.A. SherlekarandV.S. Sherlekar	Principlesof Business Management		Himalaya Publishing House.
2–National	Dr.T. Ramasamy	Principles and Practiceof Management		Himalaya Publishing House.
3–National	L.M. Prasad	Principles and Practiceof Management,		Sultan Chand& Sons
4–International	Koontz,Weihrichand A.RamchandraAryasri	Principlesof Management		Tata McGraw-Hill.
5–International	PeterF. Drucker	Practiceof Management		Harper Business.
6–International	RichardL. Daft	Principlesof Management		Cengage Learning.

OnlineResources:

Online ResourcesNo	Websiteaddress
1	http://www.ft.com/business-education.
2	http://www.makeinindia.com/policy/new-initiatives. https://india.gov.in/ http://www.makeinindia.com/policy/new-initiativeshttps://mygov.in/group/digital-india www.skilldevelopment.gov.in/World%20Youth%20Skills%20Day.html

MOOCs:

ResourcesNo	Websiteaddress
1	https://www.coursera.org/learn/management-fundamentals-healthcare-administrators

Bharati Vidyapeeth (Deemed To Be University), Pune

The syllabus of Marketing Management (CBCS 2020) has been designed as per the AICTE Model Curriculum Guidelines and the inputs received from academician and industry experts. It includes the course objectives and the outcomes thereof.

Course Objectives:

i) To understand the core concepts of Marketing and approaches to Marketing.
ii) To differentiate the Marketing and Selling processes.
iii) To study the Marketing Environment and understand its influence on Marketing Decisions.
iv) To study the concept of Segmentation, Targeting and Positioning.
v) To understand the Marketing Mix Elements and their utility in marketing.
vi) To Study the concept of Marketing Research and Marketing Information Systems.

Course Outcomes:

i) Gain a solid understanding of key marketing concepts and skills.
ii) Identify and demonstrate the dynamic nature of the environment in which marketing decisions are taken and appreciate the implications for marketing strategy determination and implementation.
iii) Develop the students' skills in applying the analytical perspectives on the concepts of marketing and the decisions related to segmentation, targeting and positioning, determining marketing mix etc.
iv) Develop an understanding of the underlying concepts, strategies and the issues involved in the exchange of products and services and control the marketing mix variables in order to achieve organizational goals.
v) Develop strong marketing research plans and persuasively communicate your recommendations and rationale.
vi) Discuss the scope and managerial importance of marketing research and its role in the development of marketing strategy

This syllabus includes national and international reference books, online resources for other readings in the field of Marketing Management. In addition to this, it also facilitates the enrichment of student's learning through Massive Online Open Courses i.e. MOOCs through the web links provided in the syllabus.

A Comparison of CBCS 2016 and CBCS 2020 Marketing Management Syllabus

Sr.No.	Program	Semester	Subject Name	Comparison of Old and New Syllabus of Marketing Management are shown in green color
1	MBA CBCS 2020	II	Marketing Management	• Unit I – There is no difference in the contents of both the syllabus. • Unit II - **importance of consumer behaviour, different buying roles, buying decision making process.** • Unit III - There is no difference in the contents of both the syllabus. • Unit IV - **product line – decisions: line stretching, filling, pruning, New product development process, 5 Ms. of Advertising.** • Unit V - There is no difference in the contents of both the syllabus. • Unit VI - There is no difference in the contents of both the syllabus.

Course:MBA(General)CBCS2020–w.e.f.-Year2020–2021			
Semester	CourseCode	*CourseTitle*	
I	**102**	***ManagerialEconomics***	
Type	Credits	Evaluation	Marks
Core	3	CES	UE:IE=50:50

CourseObjectives:

Subject/CourseObjectives:

i) Toacquaintlearnerswithbasicconceptsandtechniquesofeconomicanalysis andtheirapplicationtomanagerialdecisionmaking.

ii) To preparethe students for the use of managerial economics tools and techniquesinspecificbusiness settings.

iii) Comprehendhowchangesintheenvironmentinwhichfirmsoperateinfluence theirdecision-making.

iv) Todevelopmanagerialskills fordevelopingbusiness strategy at the firmlevel.

v) Tounderstandrecentdevelopmentsinstrategicthinkingandhowitisappliedto economicdecisionmaking.

vi) Identify possibleexternal and internal economic risks and vulnerabilities to economicgrowthandidentifypolicies toaddress them.

LearningOutcomes:

i) Understandtheroleofmanagers infirms.

ii) Analyzethe demandandsupply conditions andassess the positionofa company. iii) Estimationofproductionfunctionandfindingoutoptimalcombinationofinput usingIsoquant andIsocost.

iv) Designcompetition strategiesincludingcosting,pricingandmarket environment according tothenatureoftheproduct andstructureofmarket.

v) Enabletoknow theimportanceofvarious sectorsoftheeconomy andtheir contributiontowards nationalincome.

vi) Investigate potentialoutput andcomputeoutputgaps anddiagnosetheoutlook for theeconomy.

Unit No.	Contents	Hrs.
1	IntroductiontoEconomicsForBusiness -NatureandScopeofManagerial Economics,FirmanditsObjectives,TheoriesofFirm,RoleofManagerial EconomicsinDecisionMaking.	5
2	Demand Theoryand supply- Demand and its Determination - Law of Demand, Typesof Demand, Demand Function, Economic Concept of Elasticity(Price,CrossandIncomeElasticity).ConceptofSupply,Demand andSupplyEquilibrium,ShiftinDemandandSupply.	9
3	TheoryofProduction -Productionfunction,LawofDiminishingMarginal Returns,Three stagesofProduction,The Longrun Productionfunction, IsoquantandIsocostcurve,Importance ofProductionfunctioninmanagerial decisionmaking.	8
4	TheoryofCost-ClassificationofCosts-ShortRunandLongRunCost, Cost Function, Scale Economies, Scope Economies, Dual Relationship Between Costand Production Function,Leastcostcombination ofinput (ProducerEquilibrium).	7

5	Market Structure - Introduction to different types of Market- *Price Determination underPerfect Competition*- Introduction, Market and Market Structure, Perfect Competition, Price-Output Determination under Perfect Competition, Short-run Industry Equilibrium, Short-run FirmEquilibrium,Long-runIndustry Equilibrium,Long-run Firm EquilibriumunderPerfectCompetition. *PricingUnderImperfectCompetition*- Introduction,Monopoly,Price Discrimination underMonopoly,MonopolisticCompetition, Oligopoly (KinkedCurve),Gametheory.	9
6	Macroeconomic markets and Integration -Product Market: Saving and Investment Function, consumption function. Aggregate demand and Aggregate supply. Fiscal Policyand Monetary Policy for uplifting the economy.TypesofBusinessCycle.	7
Activity	Studentsarerequiredtoprepareworkbook(practicalfile)-Handsonpractice towardsdiagramsofDemand,Supply,Markets andpricedetermination. Newsfromeconomictimes–ForPolicyMaking,Industryrelatedandcountry specific. Applicationsofmanagerialeconomicsindifferentfirms. Comparing the GDP and other key indicators across the countries. Macroeconomic indicators andtherole offiscalpolicyinupliftingeconomy.	

ReferenceBooks:

Sr.No.	Name of the Author	Titleof the Book	Year Edition	Publisher Company
1National	DNDwivedi	ManagerialEconomics	2015	Vikas Publishing
2National	G.S Gupta	ManagerialEconomics: MicroEconomic	2004	McGraw Hill
3National	H.L.Ahuja	ManagerialEconomics	2017	S. Chand
4International	D. Salvatore	ManagerialEconomics	2015	Oxford
5International	R.Dornbusch, S.Fischer	MacroEconomics	2018	McGraw Hill
6International	A.Koutsoyiannis	MicroEconomics	1979	Mac Millan

OnlineResources:

Online ResourcesNo	Websiteaddress
1	www.rbi.org.in
2	www.economicshelp.org
3	www.federalreserve.gov
4	www.economist.com
5	www.bbc.com
6	InternationalJournalofEconomicpolicyinEmerging Economieshttps://www.inderscience.com/jhome.php?jcode=ijepee
7	JournalofInternational Economicshttps://www.journals.elsevier.com/journal-of-international-economics/

MOOCs:

ResourcesNo	Websiteaddress
1	Swayam–IIT https://swayam.gov.in/nd1_noc20_mg20/preview
2	Swayam–IIM https://swayam.gov.in/nd2_imb19_mg16/preview
3	EDX–IIM https://www.edx.org/course/introduction-to-managerial-economics-2
4	Coursera https://www.coursera.org/specializations/managerial-economics-business-analysis

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Course: MBA(General)CBCS2020–w.e.f.-Year2020–2021			
Semester	Course Code	*Course Title*	
I	**104**	***Organizational Behavior***	
Type	Credits	Evaluation	Marks
Full Credit	3	CES	UE:IE=50:50=100

Course Objectives:

i) To create Dynamic and Effective Business Professionals and Leaders.
ii) To transform the individuals to cater to the needs of the society and contribute to Nation building
iii)To develop entrepreneurs to register different aspect so if their business under remedial individual and team behavior.
iv)To improve Organizational Behavior by having a sound knowledge of cultural differences.

Learning Outcomes:

i) Understand the expected individual and team behavior in business world.
ii) The awareness of applicable leadership qualities for entrepreneurs / corporate / Managers.
iii) To develop skills and inculcate motivational concepts.
iv) To be aware of individual, cultural difficulties of organizations and to be able to master over them.

Unit No.	Contents	Hrs.
1	Introduction to Organizational Behavior–Definition-Evolution of the Concept of OB- Contributions to OB by major behavioral science disciplines- Challenges and Opportunities for OB managers-Models of OB study	8
2	Individual Behavior: Perception–Factors influencing perception, Process, Perception distortion-halo effect, stereotyping, **projection,** Attitudes and Job Satisfaction-Components of Attitude-Major Job Attitudes-Job Satisfaction, Job involvement, Organizational Commitment. Personality and Values-Personality Determinants-MBTI, Big-Five Model, Values-Formation-Types of Values, Learning- Theories of Learning – reinforcement	8
3	Motivation Concepts to applications: Concept of motivation-Definition- Theories of Motivation-Maslow's 'need Theory, Herzberg's Two factor *theory*, McClelland, Porter and Lawler Model, ERG Theory- Theory X and Theory Y Equity Theory-Vroom's Expectancy Theory–Application of Motivation concept, Individual motivation and motivation in the organization, Cultural Differences in Motivation, Intrinsic and Extrinsic Motivation, The Job Characteristics model–Work Redesign	8
4	Group Behavior: Group-Formation of Group -Classification-informal and formal groups, Group Properties-Roles norms, status, size and	8

	cohesiveness-Group decision making–**Group Shift ,Group think,** Teams: team building :selecting team members, team roles, stages in team development,teambuilding,teamidentity,teamloyalty,commitmenttoshared beliefs,multi-disciplinaryteams,TeamDynamics:decision-makingbehaviour, dysfunctional teams, Understanding teams- creating effective teams. Conflict-Process-Conflict management	
5	Leadership: Concept of Leadership-Traits of good Leader-Difference between Leader and Manager-Theories of Leadership– Trait theory, Behavioral theory and Contingency theory, Ohio State and Michigan Studies -Blake and Mouton theory-Fielders model-Liker's model. Managers asleaders.3Dleadershipmodel.LeadershipStyles.The management Grid, Future perspectives of Leadership	8
6	The Organization System: Stress: meaning and types ,burnout, **causes and consequences of stress,** strategies to manage stress, Workforcediversity-**Diversitymanagementstrategies**.Culture-Definition, Culture's function, need and importance of Cross Cultural training– Organizational Change–**Forces for change, resistance to change, Managing organizational change.**	8

Reference Books:

Sr. No.	Name of the Author	Title of the Book	Year Edition	Publisher Company
1 National	Kavita Singh	Organizational Behavior	2015, 3rd edition	Pearson Publication
2International	Robbins, Timothy Judge, Seema Sanghi	Organizational Behavior	12thedition	Stephen Pearson Prentice Hall
3National	**M N Mishra**	**Organizational Behavior**	**2010**	**Vikas Publishing HousePvt. Limited**
4International	Fred Luthans	Organizational Behavior	13th edition	McGrow HillInc
5International	John Newstrom and Keith Davis	Organizational Behavior	11thedition	Tata McGrowHill

Online Resources No	Website address
1	**www.bretlsimmons.com....**
2	**https://www.youtube.com/watch?v=JIa7vP3gyL4**
3	**www.positivesharing.com**
4	**https://www.youtube.com/watch?v=r2Xv9Am7PWQ**

MOOCs:

Resources No	Website address
1	**Alisons**
2	**Swayam**

Course : MBA (General) CBCS 2020 – w.e.f. - Year 2020 – 2021

Production and Operations Management

Unit 1: Introduction to POM
Nature, Scope, Importance and Functionsof POM, Production Process, Difference between Production and Service operations, **Responsibilities of Production Manager,** Production process selection decisions, Production System, Classification of Production System.

Unit 2: Production Planning Control
Objectives of PPC &it‟s various functions of common and optional nature, **Co-ordination of PPC with other departments.** Job sequencing, Assembly Line Balancing.

Unit 3: **Plant Location** and Layout
Plant Location: Meaning, **Need for selecting a suitable Location,** Factors affecting Plant Location Decision, Plant Layout: objectives, types of Plant Layout.

Unit 4: Maintenance Management
Concepts, Need of maintenance, Objectives & types of maintenance.

Unit 5: Inventory management
Concept, Importance, Classification of Inventory System, EOQ Model with numerical, Basic concept of Material Requirement Planning(MRP).

Unit 6: Emerging Trends in POM
Supply Chain Management(SCM),Just in Time (JIT),QualityControl,QualityAssurance(QA),ISOcertification,Enterprise Resource Planning(ERP), Total Quality Management(TQM),TPM, Quality Circles.

Course : MBA CBCS 2020 – w.e.f. - Year 2020 – 2021
Statistical Techniques

Unit No : 1
Introduction to Statistics: Introduction to Statistics, Importance of Statistics in modern business environment.Scope and Applications of Statistics. Advantages and limitations of Statistics.
Sources of data – Primary and secondary, Universe or Population, Sample, Concept of Sampling, Advantages of Sampling, Types of Sampling.
Classification, Tabulation and Presentation of Data, Requisites of a good classification, Types of classification, Methods of classification,Tabulation - Frequency and Frequency Distribution, Diagrammatic and graphic representation of Data – Bar diagrams, Pie chart, Histogram, Frequency polygon , Frequency curve, Ogive curves

Unit No :2
Measures of Central Tendency and Dispersion:
Statistical Averages - Arithmetic mean, Median and Mode,
Positional averages - Quartiles, deciles and percentiles.
Dispersion – Range - Quartile deviations, Mean deviation ,Standard Deviation -**Properties of standard deviation**, **Variance**, Coefficient of Variation. **Applications in business and management.**

Unit No :3
Correlation: Correlation, Types of Correlation, Scatter diagram, Karl Pearson‟s correlation coefficient, Properties of Karl Pearson‟s correlation coefficient, Spearman‟s Rank Correlation Coefficient. Association of attributes.
Unit No : 4
Regression - Regression analysis, Regression lines, Regression coefficients. Business application.
Unit No : 5

Elementary probability concepts, Probability Distributions- Binomial, Poisson and Normal Distribution

Unit no 6

Introduction to Testing of Hypothesis : Null and alternate hypothesis, Significance Level, type I and Type II error, Chi – Square Test.

Business Communication

Course : MBA (General) CBCS 2020 – w.e.f. - Year 2020 – 2021

Semester Course Code Course

Title I 107 Business Communication

Type Credits Evaluation Marks Core 03 CES UE:IE =50:50

Course Objectives: i) To familiarize the students with the process of communication, make them understand the principles and techniques of Business Communication. ii) To enable students to comprehend the different dimensions of Business Communication. iii) To enlighten about the communications strategy for managers.

Learning Outcomes: i) The Students should be able to communicate effectively in professional circles. ii) There should be a positive change in the oral and written communication skills of the students after studying the subject. iii) The students should be able to draft business letters, give effective presentations write formal reports and deliver speeches independently.

Unit 01: Basic Principles of Communication: Introduction, Understanding Communication, the Communication Process, Barriers to Communication, the Importance of Communication in the Workplace, Types of Communication channels, their effectiveness and limitations 06

Unit 02 Communication in Organizations Communication needs of business organization, Strategies for improving Organizational communication, direction of flow of communication in organization, networks of flow of communication– wheel network, chain network, Y network, circle network. Feedback, types of feedback, importance of feedback Intra-organizational communication, inter-organizational communication. Inter-cultural communication – guidelines for effective communication across cultures 06

Unit 03 Developing Oral Business Communication Skills: Introduction, Advantages of Oral Communication, Speech Writing, Creative Writing, Public Speaking, Presentation Skills – Techniques for effective Presentations, Qualities of a skillful Presenter. Exercises for Oral Communications – Individual and Group Presentations, Extempore, Role Playing, Debates and Quiz 06

Unit 04 The Importance of Listening and Reading Skills: Introduction, what is listening? Barriers to Listening, Strategies for Effective Listening, Listening in a Business Context Reading Skills for Effective Business Communication: Introduction, what is reading? Types of reading, SQ3R Technique of Reading.

Unit 05 Guidelines for Written Business Communication: Introduction, General Principles of Writing, Principles of Business Writing

Internal Business Communication: Writing Memos, Circulars and Notices: Introduction, What is a Memo? Circulars and Notices, Meetings, Notices, agenda, minutes of the meeting Communicating through Email, Communication with Shareholders

External Business Communication– Writing Business Letters: Introduction, Principles of Business Letter Writing, Types of Business Letters, Format for Business Letters (Types of business letters: office order, office circular, invitation letters, enquiry letters, trade reference letters, etc Letters from Purchase department, Letters from the Sales/Marketing Department, Accounts department, Personnel department, Letters of social significance, Tenders, Quotations and Orders, Banking Correspondence, Letters of enquiry, dealing with complaints)

Exercises for Written Communications: Essay writing, Poster Making, Writing, an Advertisement Copy, Slogans, Captions, & preparing Press notes, Letter Of Acceptance, Letter Of Resignation Writing Business Reports: Introduction, What is a Report? Types of Business Reports, Format for Business Reports, Steps in Report Preparation

Employment Communication – Resumes and Cover Letters: Introduction, Writing a Resume, Writing Job Application Letters, Other Letters about Employment Group Discussions and Interviews: Introduction, What is a Group Discussion? Attending Job Interviews, Preparation for GD and Interviews. 15 (this unit is more elaborate in CBCS 2020 syllabus)

Unit 06 Technology enabled communication–role of technology, different forms of technology for communication, Telephone Etiquette, Netiquette Communication Strategy for Managers: Communicating different types of messages – positive or neutral messages, negative messages, persuasive messages, effective team communication, motivational communication

Course : MBA (General) – SDE - CBCS 2020 – w.e.f. - Year 2020 – 2021			
Semester	Course Code	Course Title	
I	106	Legal Aspects of Business	
Type	Credits	Evaluation	Marks
Core	2	CES	UE:IE = 70:30

Course Objectives:
Subject / Course Objectives : i) To create Dynamic and Effective Business Professionals ii) To transform the stake holders to cater to the needs of the society and contribute to Nation building iii) To improve decision making by having a sound knowledge of law. iv) To develop entrepreneurs to register different aspects of their business under the law.
Learning Outcomes :
I)To extrapolate the legal knowledge to business. II) The graduates' attributes reflect legal knowledge and understanding global Competencies. III)To demonstrate domain comprehensive knowledge. IV)To articulate with business skills. V)To inculcate the culture of abiding law. VI) To Develop a coherent approach.

Units	Contents
Unit 1	- Introduction to Business laws, structure and sources of law, **Law of contract- The Indian Contract Act,1872** –Introduction, Objectives, Definition of a Valid Contract, Offer and Acceptance, Capacity to Contract, Consent ,Consideration, Performance of Contracts, Discharge of Contracts, Breach of Contract and Void Agreements, Quasi Contracts
	Contracts of Guarantee and indemnity, Bailment, Pledge
Unit 2	**Contract of Agency** – Introduction, Agent and Agency, general rules, Modes of creation of Agency, Classification of Agents, Duties and Rights of Agents, Principal's Duties to the Agent and his Liability to Third Parties
Unit 3	**Law of sales of Goods** – Essentials of contract of sale, Goods and their classification, Sale, Agreement to Sell and Hire Purchase, Conditions and Warranties (Implied and Expressed), Unpaid seller and his rights, rights of buyer. **Law of Negotiable Instruments** – Negotiable instruments, Promissory notes, Bills of exchange, Cheques, Dishonour,
Unit 4	**Consumer Protection Act**-Introduction, Definitions – consumer,complaint,complainant, Rights of Consumers, Nature and Scope of Complaints, Remedies Available to Consumers

	The Partnership Act, 1932 - types of partners, formation of partnership, rights and liabilities of partners.
Unit 5	**The Company's Act, 2013 (Amended)**: Introduction and types of companies, Formation of a Company, Memorandum of Association, Articles of Association, Winding up. Arbitration and Conciliation Act, 1996 – Types of Arbitration, Alternative Dispute Resolution,Arbitration agreement, Arbitral Tribunal, Arbitral proceedings.
Unit 6	**Information Technology Act, 2000 Amended 2018**, Definition - —Certifying Authority, Controller, Digital Signature and electronic governance, Role of certifying authorities, Functions of controller, Offences Intellectual Property Laws- Introduction and types of IPR,

Land mark case laws to be cited and discussed.

Reference Books:

Reference Books (Publisher)	Name of the Author	Title of the Book	Year Addition	Publisher Company
1 – National	N.D. Kapoor	Mercantile Law	2019	Eastern Book Company
2 – National	Narayan	Intellectual Property Laws	2019	
3 – National	Bare Act	The Patent Act	2019	
4 –National	Bare Act	The Trademark Act	2019	
5 – International	Bare	The Negotiable Act	2019	

Online Resources:

Online Resources No	Web site address
1	https://www.mca.gov.in/Ministry/pdf/CompaniesAct2013.pdf
2	http://www.ipindia.nic.in/writereaddata/Portal/IPOAct/1_43_1_trade-marks-act.pdf
3	http://legislative.gov.in/sites/default/files/A1996-26.pdf
4	http://www.ipindia.nic.in/writereaddata/Portal/IPOAct/1_31_1_patent-act-1970-11march2015.pdf
5	https://www.youtube.com/watch?v=vlk40C91HqQ

MOOCs:

Resources No	Web site address
1	alisons

1. Approval of structure for B.Tech (Electronics & Tele-communication) effective from A.Y.2021-22 Semester – I & II

B.Tech (Electronics & Tele-communication) Semester –I & II

- Linear Algebra and Calculus
- Physics for Electronics Engineering
- Electrical Technology
- Elementary Electronics
- 'C' Programming
- MATLAB Fundamentals
- Differential Equations and Complex Analysis
- Chemistry of Electronic Materials
- Digital Electronics
- Semiconductor Devices and Circuits-I
- Python Programming
- Computer Aided Drafting

Resolution:

The structure for the courses at B.Tech (Electronics &Tele-Communication) SemI & Sem II were discussed & finalized as per choice based credit system structure. The same is forwarded to Faculty of Engineering & Technology for consideration.

2. Approval of structure for B.Tech (Electronics & Tele-communication) effective from A.Y.2021-22 Semester –III & IV.

B.Tech (Electronics & Tele-communication) Semester –III & IV

- Advanced Mathematics-for Electronics
- Semiconductor Devices and Circuits-II
- Signals and Linear Systems
- Network Analysis and Synthesis
- Database Management Systems*
- EDA Tool Practices
- PCB Design and Soldering

- Vocational Course - I: Networking
- MOOC-I
- Environmental Studies***(Mandatory Audit Course)
- Control Systems and Application
- Integrated Circuits and Applications
- Electromagnetics and Transmission Lines
- Analog Communication
- Data Science**
- Advanced Computer Programming
- Sensor Modelling and Simulation Laboratory
- Vocational Course-II Calibration and repair of lab equipments
- Social Activities-I
- Disaster Management***(Mandatory Audit Course)

*Industry taught course-I
**Industry taught course-II
***100 marks end semester exam

Resolution:

The structure for the courses at B.Tech (Electronics &Tele-Communication) Sem III & Sem IV were discussed & finalized as per choice based credit system structure. The same is forwarded to Faculty of Engineering & Technology for consideration.

3. Approval of structure for B.Tech (Electronics & Tele-communication) effective from A.Y.2021-22 Semester –V&VI.

B.Tech (Electronics &Tele-Communication) Semester –V & VI

- Embedded systems
- Digital Communication System
- Power Electronics
- Microwave and Antenna

- Data Communication and Networking*
- Microcontroller Programming
- Project-I-Stage –I
- Vocational course III: PLC
- MOOC- II
- Photonics
- Quantitative techniques, Communication and Values
- Digital Signal Processing
- CMOS Design
- Internet of Things**
- VHDL
- Project-I- Stage-II
- Vocational 4: Web App development
- *** Internship

*Industry taught course-III
**Industry taught course-IV

Resolution:

The structure for the courses at B.Tech (Electronics &Tele-Communication) Sem V&VI were discussed & finalized as per choice based credit system structure. The same is forwarded to Faculty of Engineering & Technology for consideration.

4.Approval of structure for B.Tech (Electronics & Tele-communication) effective from A.Y.2021-22 Semester –VII&VIII.

B.Tech (Electronics &Tele-Communication) Semester –VII& VIII

- Soft Computing
- Radio Frequency Engineering
- Elective- I
- Industrial Wireless Sensor Network*

- Project II-Stage I
- Electronic Product Design
- Research paper publication
- MOOC-III
- Mobile Communication
- Satellite Communication & Radar
- Elective II
- Cyber security**
- Cloud Computing
- Project –II-Stage-II
- Social Activities-II

Professional Elective-I i) Telecom Network Management ii) Advanced Embedded System Design iii) Image processing

Professional Elective-II i) Software Defined Radio ii) Automotive Electronics iii) Computer Vision

*Industry taught course-V
**Industry taught course-VI

Resolution:

The structure for the courses at B.Tech (Electronics &Tele-Communication) Sem VII&VIII were discussed & finalized as per choice based credit system structure. The same is forwarded to Faculty of Engineering & Technology for consideration.

Bharati Vidyapeeth (Deemed to be) University, Pune

Faculty of Engineering & Technology

	Programme :B.Tech (E &Tc) Sem – I (2021 Course)													
Sr. No.	**Name of the course**	**Teaching Scheme (Hrs. / Week**			**Examination Scheme (Marks)**						**Credits**			
		L	**P**	**T**	**UE**	**IA**	**TW**	**TW& OR**	**TW& PR**	**Total**	**L**	**P TW/OR/PR**	**T**	**Total**
1	Linear Algebra and Calculus	03	00	01	60	40	00	00	00	100	03	00	01	04
2	Physics for Electronics Engineering	03	02	00	60	40	50	00	00	150	03	01	00	04
3	Electrical Technology	04	02	00	60	40	50	00	00	150	04	01	00	05
4	Elementary Electronics	04	02	00	60	40	00	50	00	150	04	01	00	05
5	‘C’ Programming	04	02	00	60	40	50	00	00	150	04	01	00	05
6	MATLAB Fundamentals	00	04	00	00	00	50	00	00	50	00	02	00	02
	Total	18	12	01	300	200	200	50	00	750	18	06	01	25

Bharati Vidyapeeth (Deemed to be) University, Pune.
Faculty of Engineering & Technology

	Programme :B.Tech (E &Tc) Sem – II (2021 Course)													
Sr. No.	**Name of the course**	**Teaching Scheme (Hrs. / Week**			**Examination Scheme (Marks)**						**Credits**			
		L	**P**	**T**	**UE**	**IA**	**TW**	**TW & OR**	**TW& PR**	**Total**	**L**	**P** **TW/OR/PR**	**T**	**Total**
7	Differential Equations and Complex Analysis	03	00	01	60	40	00	00	00	100	03	00	01	04
8	Chemistry of Electronic Materials	03	02	00	60	40	50	00	00	150	03	01	00	04
9	Digital Electronics	04	02	00	60	40	00	50	00	150	04	01	00	05
10	Semiconductor Devices and Circuits-I	04	02	00	60	40	00	00	50	150	04	01	00	05
11	Python Programming	04	02	00	60	40	50	00	00	150	04	01	00	05
12	Computer Aided Drafting	00	04	00	00	00	50	00	00	50	00	02	00	02
	Total	18	12	01	300	200	150	50	50	750	18	06	01	25

Bharati Vidyapeeth (Deemed to be) University, Pune
Faculty of Engineering & Technology

	Programme :B.Tech (E &Tc) Sem – III (2021 Course)													
Sr. No.	**Name of the course**	**Teaching Scheme (Hrs. / Week**			**Examination Scheme (Marks)**						**Credits**			
		L	**P**	**T**	**UE**	**IA**	**TW**	**TW & OR**	**TW& PR**	**Total**	**L**	**P TW/OR/PR**	**T**	**Total**
13	Advanced Mathematics- for Electronics	03	00	01	60	40	00	00	00	100	03	00	01	04
14	Semiconductor Devices and Circuits-II	04	02	00	60	40	00	00	50	150	04	01	00	05
15	Signals and Linear Systems	04	02	00	60	40	25	00	00	125	04	01	00	05
16	Network Analysis and Synthesis	04	02	00	60	40	00	00	50	150	04	01	00	05
17	Database Management Systems*	03	02	00	60	40	25	00	00	125	03	01	00	04
18	EDA Tool Practices	00	02	00	00	00	50	00	00	50	00	01	00	01
19	PCB Design and Soldering	00	04	00	00	00	00	50	00	50	00	02	00	02
20	Vocational Course - I: Networking	00	00	00	00	00	00	50	00	50	00	02	00	02
21	MOOC-I	00	00	00	00	00	00	00	00	00	00	00	00	02
22	Environmental Studies** (Mandatory Audit Course)	00	00	00	00	00	00	00	00	00	00	00	00	00
	Total	18	14	01	300	200	100	100	100	800	18	09	01	30

*Industry taught course-I

**100 marks end semester exam

Bharati Vidyapeeth (Deemed to be) University, Pune

Faculty of Engineering & Technology

	Programme :B.Tech (E &Tc) Sem – IV (2021 Course)													
Sr. No.	**Name of the course**	**Teaching Scheme Hrs. / Week**			**Examination Scheme (Marks)**					**Total Marks**	**Credits**			
		L	**P**	**T**	**UE**	**IA**	**TW**	**TW& OR**	**TW& PR**	**Total**	**L**	**P TW/OR/ PR**	**T**	**Total**
23	Control Systems and Application	04	02	00	60	40	25	00	00	125	04	01	00	05
24	Integrated Circuits and Applications	04	02	00	60	40	00	00	50	150	04	01	00	05
25	Electromagnetics and Transmission Lines	03	00	01	60	40	00	00	00	100	03	00	01	04
26	Analog Communication	04	02	00	60	40	00	50	00	150	04	01	00	05
27	Data Science*	03	02	00	60	40	25	00	00	125	03	01	00	04
28	Advanced Computer Programming	00	04	00	00	00	00	50	00	50	00	02	00	02
29	Sensor Modelling and Simulation Laboratory	00	02	00	00	00	00	50	00	50	00	01	00	01
30	Vocational Course-II Calibration and repair of lab equipments	00	00	00	00	00	00	50	00	50	00	02	00	02
31	Social Activities-I	00	00	00	00	00	00	00	00	00	00	00	00	02
32	Disaster Management** (Mandatory Audit Course)	00	00	00	00	00	00	00	00	00	00	00	00	00
	Total	18	14	01	300	200	50	200	50	800	18	09	01	30

*Industry taught course-II

**100 marks end semester exam

Bharati Vidyapeeth (Deemed to be) University, Pune.

Faculty of Engineering & Technology

	Programme :B.Tech (E &Tc) Sem – V (2021 Course)													
Sr. No.	**Name of the course**	**Teaching Scheme Hrs. / Week**			**Examination Scheme (Marks)**					**Total Marks**	**Credits**			
		L	**P**	**T**	**UE**	**IA**	**TW**	**TW & OR**	**TW & PR**	**Total**	**L**	**P** TW/OR/ PR	**T**	**Total**
33	Embedded systems	03	02	00	60	40	00	50	00	150	03	01	00	04
34	Digital Communication System	03	02	00	60	40	25	00	00	125	03	01	00	04
35	Power Electronics	03	02	00	60	40	25	00	00	125	03	01	00	04
36	Microwave and Antenna	04	02	00	60	40	00	50	00	150	04	01	00	05
37	Data Communication and Networking *	03	00	00	60	40	00	00	00	100	03	00	00	03
38	Microcontroller Programming	00	04	00	00	00	00	00	50	50	00	02	00	02
39	Project-I Stage –I	00	02	00	00	00	00	100	00	100	00	04	00	04
40	Vocational course III: PLC	00	00	00	00	00	00	50	00	50	00	02	00	02
41	MOOC- II	00	00	00	00	00	00	00	00	00	00	00	00	02
	Total	16	14	00	300	200	50	250	50	850	16	12	00	30

*Industry taught course-III

Bharati Vidyapeeth (Deemed to be) University, Pune

Faculty of Engineering & Technology

	Programme :B.Tech (E &Tc) Sem – VI (2021 Course)													
Sr. No.	**Name of the course**	**Teaching Scheme Hrs. / Week**			**Examination Scheme (Marks)**					**Total Marks**	**Credits**			
		L	**P**	**T**	**UE**	**IA**	**TW**	**TW & OR**	**TW & PR**	**Total**	**L**	**P** **TW/OR/PR**	**T**	**Total**
42	Photonics	04	02	00	60	40	25	00	00	125	04	01	00	05
43	Quantitative techniques, Communication and Values	02	02	00	60	40	00	00	00	100	03	00	00	03
44	Digital Signal Processing	03	02	00	60	40	25	00	00	125	03	01	00	04
45	CMOS Design	04	02	00	60	40	00	50	00	150	04	01	00	05
46	Internet of Things*	03	00	00	60	40	00	00	00	100	03	00	00	03
47	VHDL	00	02	00	00	00	00	00	50	50	00	01	00	01
48	Project-I Stage-II	00	02	00	00	00	00	100	00	100	00	04	00	04
49	*Vocational 4: Web App development	00	00	00	00	00	00	50	00	50	00	02	00	02
50	*** Internship	00	00	00	00	00	00	50	00	50	00	03	00	03
	Total	16	12	00	300	200	50	250	50	850	17	13	00	30

*Industry taught course-IV

Bharati Vidyapeeth (Deemed to be) University, Pune

Faculty of Engineering & Technology

	Programme :B.Tech (E &Tc) Sem – VII (2021 Course)													
Sr. No.	**Name of the course**	**Teaching Scheme Hrs. / Week**			**Examination Scheme (Marks)**					**Total Marks**	**Credits**			
		L	**P**	**T**	**UE**	**IA**	**TW**	**TW& OR**	**TW & PR**	**Total**	**L**	**P** **TW/OR/PR**	**T**	**Total**
51	Soft Computing	04	02	00	60	40	00	00	50	150	04	01	00	05
52	Radio Frequency Engineering	04	00	01	60	40	00	00	00	100	04	00	01	05
53	Elective- I	04	02	00	60	40	00	50	00	150	04	01	00	05
54	Industrial Wireless Sensor Network*	04	02	00	60	40	00	50	00	150	04	01	00	05
55	Project II Stage I	00	04	00	00	00	00	200	00	200	00	04	00	04
56	Electronic Product Design	00	04	00	00	00	00	100	00	100	00	02	00	02
57	Research paper publication	00	00	00	00	00	00	00	00	00	00	00	00	02
58	MOOC-III	00	00	00	00	00	00	00	00	00	00	00	00	02
	Total	16	14	01	240	160	00	400	50	850	16	09	01	30

Elective-I

1) Telecom Network Management
2) Advanced Embedded System Design
3) Image processing

*Industry taught course-V

Bharati Vidyapeeth (Deemed to be) University, Pune
Faculty of Engineering & Technology

	Programme:B.Tech (E &Tc) Sem – VIII (2021 Course)													
Sr. No.	**Name of the course**	**Teaching Scheme Hrs. / Week**			**Examination Scheme (Marks)**					**Total Marks**	**Credits**			
		L	**P**	**T**	**UE**	**IA**	**TW**	**TW & OR**	**TW & PR**	**Total**	**L**	**P** **TW/OR/PR**	**T**	**Total**
59	Mobile Communication	04	02	00	60	40	00	50	00	150	04	01	00	05
60	Satellite Communication & Radar	04	02	00	60	40	00	00	50	150	04	01	00	05
61	Elective II	04	02	00	60	40	00	50	00	150	04	01	00	05
62	Cyber security*	04	00	01	60	40	00	00	00	100	04	00	01	05
63	Cloud Computing	00	04	00	00	00	00	100	00	100	00	02	00	02
64	Project -II Stage-II	00	04	00	00	00	00	200	00	200	00	06	00	06
65	Social Activities-II	00	00	00	00	00	00	00	00	00	00	00	00	02
	Total	**16**	**14**	01	240	160	00	400	50	850	**16**	11	**01**	**30**

Elective-II

1) Software Defined Radio
2) Automotive Electronics
3) Computer Vision

*Industry taught course-VI

Bharati Vidyapeeth
(Deemed to be University)
College of Engineering, Pune

B. Tech. Sem. I: Electronics & Telecommunication Engineering **SUBJECT: - LINEAR ALGEBRA and CALCULUS**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 03	End Semester Examination: 60 Marks	Credits: 03
Practical: 00	Internal Assessment: 40 Marks	
Tutorial: 01		Credits: 01
		Total Credit: 04

Course Pre-requisites: Class XII Mathematics

Course Objectives:

1.	To teach the differential calculus.
2.	To teach linear algebra and linear transformation.
3.	To introduce ordinary differential equations.

Course Outcomes: After learning this course students will be able to

1	Evaluate the matrices and its application to the system of linear equations.
2	Evaluate vector spaces and linear transformation
3	Solve numerical problems involving differential calculus.
4	Compute maxima, minima, and multiple integrals.
5	Evaluate the theorems in integral Calculus.

6	Use the methods of first order and first-degree differential equation.	
UNIT – I	**Linear algebra: Matrices**	**(06 Hours)**
	Algebra of Matrices, System of Linear Equations, Linear Dependence and Independence, rank, row operations and Gauss elimination, Applications to systems of linear equations, Cayley – Hamilton Theorem	
UNIT – II	**Vector space and Linear Transformations**	**(06 Hours)**
	Vector spaces, subspaces, Eigen values and Eigen Vectors and their basic properties, Linear and Orthogonal Transformations, rank -nullity theorem, Existence and Uniqueness Theorem for Linear Systems, product spaces, Gram-Schmidt process, Diagonalization	
UNIT - III	**Differential Calculus**	**(06 Hours)**
	Limits of sequences and functions, continuity, uniform continuity and differentiability, Mean value theorems, L' Hospital's Rule. Euler's Theorem on Homogeneous Functions. Taylor's theorem with proof, Partial derivatives, Chain rule.	
UNIT -IV	**Maxima and Minima for several**	**(06 Hours)**
	Maxima, minima, saddle points. gradient, directional derivatives, Lagrange multipliers, Exact differentials, Errors, and approximations. Repeated and multiple integrals applications to volume, surface area, moments of inertia, etc.	

UNIT -V	**Integral Calculus**	**(06 Hours)**
	Riemann integral and the fundamental theorem of integral calculus, Rolle's theorem, Applications to length, area, volume, surface area of revolution. Moments, centers of mass and gravity.	
UNIT -VI	**Ordinary differential equation**	**(06 Hours)**
	Ordinary differential equations of the 1st order, exactness and integrating factors,applications of first order and first-degree differential equation in orthogonal trajectories and electrical circuits. Picard's iteration method.	

Topics for projets based learning*
1. Cramer’s rule
2. System of linear equations solution
3. Rank of matrix
4. Gauss elimination
5. LU-decomposition method
6. Dimension and basis
7. Gram Schmidt Orthogonalization
8. rank -nullity theorem
9. Euler's Theorem on Homogeneous Functions
10. Maxima and minima for two variable function
11. Eigen values and Eigen vectors
12. Multiple integrals applications
13. Formation of differential equation
14. Linear differential equation
15. Kirchhoff’s voltage law
*Students in a group of 3 to 4 shall complete any one project from the above list

Textbooks/Reference Books
1.'Advanced Engineering Mathematics' by Erwin reyszig
2.'Advanced Engineering Mathematics' by Dennis G. Zill and Warren S. Wright
3.AppliedMathematics(VolumesIandII)byP.N.Wartikar&J.N.Wartikar
4.HigherEngineeringMathematicsbyB.S.Grewal
5.HigherEngineeringMathematicsbyB.V.Ramana
6.AdvancedEngineeringMathematics

Bharati Vidyapeeth
(Deemed to be University)
College of Engineering, Pune

B. Tech. Sem. I: Electronics & Telecommunication Engineering **SUBJECT: - PHYSICS FOR ELECTRONICS ENGINEERING**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 03	End Semester Examination: 60 Marks	Credits: 03
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW: 50 Marks	Credit: 01
		Total Credit: 04

Course Pre-requisites:	
	Basic Physics and Calculus.

Course Objectives:	
	To impart knowledge of basic concepts in physics relevant to engineering applications in a broader sense with a view to lay foundation for the Electronics and Telecommunication.

Course Outcomes:	
After learning this course students will be able to	
1	Demonstrate the knowledge of properties of charged particles and their use in modern instruments
2	Solve the quantum physics problemsat micro level phenomena.
3	Explain mechanical properties of solid matter and connect to applications in the field of engineering.
4	Demonstrate the working of PN junctions in semiconductor devices under various conditions.

5	Demonstrate the wave nature of light and apply it to measure stress, pressure and dimension.	
6	Analyze the problems associated with architectural acoustics and give their remedies.	
UNIT – I	**Modern Physics**	**(06 Hours)**
	Motion of a charged particle in electric and magnetic fields, Electrostatic and Magnetostatic focusing, Electron microscope, Wavelength and resolution, Specimen limitation, Depth of field and focus, TEM, SEM and EDS, Separation of isotopes by Bainbridge mass spectrograph, CRT.	
UNIT – II	**Quantum mechanics**	**(06 Hours)**
	Dual nature of matter, concept of wave packet, group and phase velocity and relation between them, Physical significance of wave function, Schrodinger's time dependent and time independent wave equation, Application of Schrodinger's time independent wave equation to the problems of Particle in a rigid box, Applications of Schrodinger's Equation: Infinite Potential Well and the Potential Barrier.	
UNIT - III	**Solid state Electronics-I**	**(06 Hours)**
	Superconductors, properties, Meissner effect, Type I and Type II superconductors, BCS theory of superconductivity (Qualitative) - High Tc superconductors – Applications of superconductors – SQUID, cryotron, magnetic levitation. Formation of Energy Bands, E-k Diagram, Origin of band gap, Energy bands in solids, Effective mass of electron, Fermi-Dirac Distribution, Conductivity in conductor and semi-conductors.	

UNIT -IV	**Solid State Electronics-II**	**(06 Hours)**
	Review of intrinsic and Extrinsic semiconductors, The no and po equations, Drift and Diffusion Currents, Regeneration process, Recombination Process, Derivation of Current Continuity Equation, Position of Fermi level in intrinsic semi-conductors (with derivation) and in extrinsic semi-conductors, Minority Carrier injection and recombination in Homogeneous Semiconductor, p-n junction formation, Band structure of p-n junction diode under forward and reverse biasing, Junction Capacitance, Photovoltaic effect, Solar cell and its characteristics.	
UNIT -V	**Interference, Diffraction and Polarization**	**(06 Hours)**
	Interference: Interference due to thin film of uniform thickness, engineering applications of interference (optical flatness, non-reflecting coatings). **Diffraction**: Diffraction at a single slit (Geometrical method), Conditions for maximum and minimum, Diffraction at a circular aperture (Result only), Plane diffraction grating, Conditions for principal maxima and minima. **Polarization**: Introduction, Double refraction and Huygen's theory, Positive and negative crystals, Nicol prism	
UNIT -VI	**Acoustics**	**(06 Hours)**
	Elementary Acoustics, reverberation and reverberation time, Sabine's formula, pressure and intensity level, different types of noise and their remedies, Electro Acoustic transducers	

	(piezoelectric transducers, electrostatic transducer, magnetic transducer, magneto strictive transducer), Types of Microphones, Loudspeaker, stereophony, sound recording and Sound reinforcement systems.	

Lab Experiment :(Any Eight of the Following)

1. Study of Lissajous figure by Cathode Ray Oscilloscope (CRO)
2. Determination of e/m by Thomson method.
3. Plotting the hysteresis loop for given magnetic material.
4. To study Hall effect and determine the Hall voltage.
5. Calculation of conductivity by four probe methods.
6. Study of solar cell characteristics and calculation of fill factor.
7. Determination of band gap of semiconductor.
8. Determination of radius of Plano convex lens/wavelength of light/Flatness testing by Newton's rings
9. Determination of wavelength of light using diffraction grating.
10. Determination of resolving power of telescope.
11. Determination of thickness of a thin wire by air wedge.
12. Determination of refractive index for O-ray and E-ray.
13. To determine the velocity of sound.
14. Measurement of average SPL across spherical wavefront and behavior with the distance.
15. Expansion chamber muffler: investigation of muffler response as a filter in the low frequency approximation by determining insertion loss.
16. Interference of sound using PC speakers.

Assignments

Six assignments to be given by the subject teacher (Theory)-one from each unit/one mini project with report-students can work in group of 4 Maximum

Topics for projets based learning*

1. Design and simulation of automatic solar powered time regulated water pumping

2. Solar technology: an alternative source of energy for national development
3. Comparison of various method used in measuring the gravitational constant g
4. Possible effects of electromagnetic fields (emf) on human health
5. The design and construction of the hearing aid device
6. Design and construction of digital distance measuring instrument
7. Design and construction of automatic bell ringer
8. Design and construction of sound or clap activated alarm
9. Electronic eye (Laser Security) as autoswitch/security system
10. Electric power generation by road power
11. Wireless power transfer
12. Determination of velocity of O-ray and E-ray in different double refracting materials
13. Quantum confinement effect in wide band semiconductors
14. Tesla Coil
15. LiFi- wireless data transfer system using light
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. A Textbook of Engineering Physics, M N Avadhanulu, P G Kshirsagar and TVS Arun Murthy, S. Chand Publishing (2018).
2. Engineering Physics, R K Gaur and S L Gupta, Dhanpat Rai Publishing Co Pvt Ltd (2015)
3. Concepts of Modern Physics, Arthur Beiser, Shobhit Mahajan and S. Rai Choudhury, McGraw Hill Education (2017)
Reference Books:
1. Fundamentals of Physics, Jearl Walker, David Halliday and Robert Resnick, John Wiley and Sons (2013)
2. Optics, Francis Jenkins and Harvey White, Tata Mcgraw Hill (2017)
3. Principles of Physics, John W. Jewett,Cengage publishing (2013)
4. Introduction to Solid State Physics, C. Kittel, Wiley and Sons (2004)
5. Principles of Solid-State Physics, H. V. Keer, New Age International (1993)
6. Laser and Non-Linear Optics, B. B. Laud, New Age International Private Limited (2011)
7. Nanotechnology: Principles and Practices, Dr. S. K. Kulkarni, Capital Publishing Company (2014)
8. Science of Engineering Materials- C.M. Srivastava and C. Srinivasan, New Age International Pvt. Ltd. (1997)
9. Introduction to Electrodynamics –David R. Griffiths, Pearson (2013)

10. Renewable Energy: Power for a Sustainable Future, Boyle, Oxford University Press (2012)

Bharati Vidyapeeth
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B. Tech. Sem. I: Electronics & Telecommunication Engineering **SUBJECT: - ELECTRICAL TECHNOLOGY**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits :04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW: 50 Marks	Credit: 01
		Total Credits: 5

Course Pre-requisites:	
	Physics and Mathematics

Course Objectives:	
1.	To introduce fundamental concepts, various laws-principles and theorems associated with electrical systems.
2.	To impart basic knowledge of all electrical quantities such as current, voltage, power, energy, frequency along with different types of fields.
3.	To provide knowledge about fundamental parameters such as resistance, inductance and capacitance and magnetic circuits, AC and DC circuits
4.	To provide knowledge of Electrical Measurement technique and Electrical Safety Practices.

Course Outcomes: After learning this course students will be able to	
1	Calculate the circuit parameters using dc network theorems.
2	Demonstrate the knowledge of various parameters related to magnetic circuit and single-phase ac circuits.
3	Classify the various parameters of 3-phase AC circuits and apply the concepts of single-phase transformer.

4	Demonstrate the knowledge of various power generation and transmission techniques.	
5	Explain the Construction and working principle of DC and AC machines.	
6	Apply the various measurement techniques of circuit parameters and safety norms.	
UNIT – I	**DC Circuit Analysis and Network Theorems:**	**(08 Hours)**
	Circuit Concepts: Concepts of network, Active and passive elements, voltage and current sources, concept of linearity and linear network, unilateral and bilateral elements, R, L and C as linear elements, source transformation. Kirchhoff's laws; loop and nodal methods of analysis; star-delta transformation; Network Theorems: Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem (simple numerical problems).	
UNIT – II	**Magnetic Circuit and Single-Phase AC Circuits**	**(08 Hours)**
	Magnetic Circuit: Magnetic circuit concepts, analogy between electric & magnetic circuits, magnetic circuits with DC and AC excitations, magnetic leakage, B-H curve, hysteresis and eddy current losses, magnetic circuit calculations, mutual coupling **Single Phase AC Circuits:** AC Fundamentals: Sinusoidal, square and triangular waveforms – average and effective values, form and peak factors, concept of phasors, phasor representation of sinusoidally varying voltage and current. Analysis of series, parallel and series parallel RLC Circuits: apparent, active & reactive powers, power factor, causes and problems of low power factor, power factor improvement; resonance in series and parallel circuits, quality factor (simple numerical problems	
UNIT - III	**Three Phase AC Circuits:**	**(08 Hours)**
	Three Phase AC Circuits: Three phase system-its necessity and advantages, meaning of phase sequence, star and delta connections, balanced supply and balanced load, line, and phase voltage/current relations (Simple derivations), three-phase power and its measurement (simple numerical problems). **Single Phase Transformer:** Principle of operation, construction, e.m. f. equation, equivalent	

	circuit, power losses, efficiency (simple numerical problems), introduction to auto transformer. Three phase transformer and its different winding connections	
UNIT -IV	**Power Generation and Power System**	**(08 Hours)**
	Power Generation: Power Generation techniques using conventional (Hydro, Thermal, nuclear, Gas) & non-conventional resources (Solar, Wind, biogas). **Introduction to Power System:** General layout of electrical power system and functions of its elements, standard transmission, and distribution voltages, layout. Concept of grid (elementary treatment only)	
	DC Machines and AC Machines	**(08 Hours)**
	DC Machines: Principle**s** of electromechanical energy conversion, DC machines: types, Construction & working, e. m. f. equation of generator and torque equation of motor, speed control, characteristics and applications of dc motors (simple numerical problems). **AC Machines:** Single Phase Induction motor: Principle of operation and introduction to methods of starting, applications. Three Phase Induction Motor: Principle of operation, slip-torque characteristics, applications (numerical problems related to slip only	
UNIT -VI	**Electrical Measurement technique**	**(08 Hours)**
	Electrical Measurement technique: Electrical instruments such as wattmeter, energy meter, tong-tester, megger, and power analyzer. Measurement of circuit parameters like resistance, inductance and capacitance using DC and AC bridges. **Electrical Safety Practises:**Electric shock, precautions against shock, First aid for electric shock other hazards of electrical laboratories & safety rules, Objectives of Earthing, types of earthing;	

	pipe and plate earthing, Residual current circuit breaker (RCCB).	

Term Work:

1. Find the current in the given network using Super position Theorem
2. Find the current in the given network using Thevenin's and Notton's Theorem
3. To Plot the B-H characteristics for a magnetic material
4. To find the voltage and current relationships in R-L series, R-C series, R-L-C series circuit
5. To find the voltage and current relationships in R-L-C series resonance circuit.
6. Verification of voltage and current relationships in star and delta connected 3-phase networks
7. To find efficiency and regulation of single-phase transformer
8. To control the speed of DC shunt motor using fulx control and armature voltage control method.
9. To control the speed of DC shunt motor using fulx control and armature voltage control method.
10. Find the unknown resistance using Kelvin's double bridge.
11. Find the unknown inductance using Anderson's bridge.
12. Measurement of power and energy in single phase ac circuit.

Note: The term work shall be the record of minimum eight experiments performed from the above list.

Topics for projets based learning*

1.Design a small circuit for superposition theorem.
2. Design small circuit to study Thevenin's Theorem.
3. Design Small circuit to study Norton's Theorem.
4. Design small circuit to study R-C series circuit.
5. Design small circuit to study R-L series circuit.
6. Design small circuit to study R-L-C series circuit.
7. Design of Tesla Coil.
8. Design small two winding transformer.
9. Design small electromagnet.
10. Design a small doorbell.

11. Design of wireless power transmission.
12. Design of electric buzzer.
13. Design of small wind farm.
14. Design of small solar power plant.
15. Design of small galvanometer.
*Students in a group of 3 to 4 shall complete any one project from the above list
Text-books:
1. Electrical Technology - Edward Huges (Pearson
1. Basic Electrical Engineering - D. P. Kothari, J Nagarath (TMC)
2. Electrical power system technology - S. W. Fordo, D. R. Patric (Prentice Hall)
Reference Books:
1. Principles of Electronics-Dr. H. M. Rai (Satya Prakashan)
2. Electronic Devices and Circuit Theory- R. L. Boylestad and L. Nashelsky (PHI)
3. Electrical, Electronics Measurements and Instruments - (SatyaPrakashan)
4. Principles of Communication Engineering - Anokh Singh, A. K. Chhabra (S Chand)
5. Electrical Technology - Volume I & volume – II by B L Theraja and AK Theraja*(S Chand)*

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B. Tech. Sem. I: Electronics & Telecommunication Engineering **SUBJECT: - ELEMENTRY ELECTRONICS**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits: 04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW & OR: 50 Marks	Credit: 01
		Total Credit: 05

Course Pre-requisites:	
	Physics, Chemistry, Mathematics (Class XII)
Course Objectives:	
1.	To teach the construction, working, ratings and application of passive devices like resistors, capacitors, inductors, transformers, and relays
2.	To introduce types of Voltage and current sources
3.	To teach the construction, working and ratings of devices like PNjunction diode, Schottky diode, Zener diode, bipolar junction transistor
4.	To teach the construction, working and ratings of field effect transistor and MOSFET
5.	To teach the construction, working and ratings of optoelectronic devices like LDR, LED, phototransistor, and photovoltaic cell
6.	To introduce the concept of grounding and shielding, PCB layout design, PCB fabrication process, with the aid of an EDA tool.

Course Outcomes: After learning this course students will be able to		
1	Classify resistors, capacitors, inductors, and transformer based on their construction, types and ratings and analyze simple circuits consisting of passive devices	
2	Analyze circuits using voltage and current sources	
3	Classifyactive devices based on their types and ratings and plot their characteristic curves	
4	Classifyoptoelectronic devices based on their types and ratings and plot their characteristic curves.	
5	Use the concepts of grounding and shielding while designing PCB, explain the PCB design and fabrication and assembly process	
6	Use EDA tools for designing single sided PCB for simple circuits	
UNIT – I	**Passive Electronic Components**	**(08 Hours)**
	Introduction to the concept of active and passive electronic devices, Types of resistors, construction, ratings and typical applications, Types of capacitors, construction, ratings and typical applications, Types of inductors, construction, ratings and typical applications, Types of transformers, construction, ratings and typical applications, Construction of relays, types and ratings, Analysis of series and parallel resistors and capacitor circuits	
UNIT – II	**Sources**	**(08 Hours)**
	Types of voltage and current sources (AC and DC), Concept of ideal and non-ideal voltage source, Concept of ideal and non-ideal current source, Series and parallel combinations of sources, Loading effect, Dependent voltage and current sources, Electrochemical cells and batteries, Types and characteristics, Regulation concept (Line regulation, load regulation, temperature stability factor)	

UNIT - III	**Diodes and BJT**	**(08 Hours)**
	Classification of material based on band gap theory, Types of semiconductors (p-type and n-type), PN junction diode and its characteristics, Schottky diode, Zener diode, Diode models, Concept of DC and AC load line and ratings of PN junction diode, Introduction to BJT (NPN and PNP) and its construction and working mechanism, BJT configurations and their input and output characteristics, Types and ratings of BJT	
UNIT -IV	**FET and MOSFET**	**(08 Hours)**
	Construction and working mechanism of FET, Input and output characteristics of FET, FET configurations, Ratings of FET, Construction and working of DMOSFET and EMOSFET, Characteristics of DMOSFET and EMOSFET, Configurations and ratings of EMOSFET	
UNIT -V	**Opto-Electronics**	**(08 Hours)**
	Construction and working of LDR and its characteristics, simple application, Construction and working of LED and its characteristics and ratings, Photo-transistor and its characteristics, Introduction to the concept of electrical isolation and its importance, Construction of opto-isolator(opto-coupler) and its ratings, Construction and working of photovoltaic cell and its characteristics and ratings	
UNIT -VI	**PCB (Printed Circuit Board)**	**(08 Hours)**
	Concept of grounding, shielding and its importance, building blocks of PCB (track, pads, fills) and design rules, PCB fabrication and assembly, Introduction to EDA tool for artwork design of a simple single sided PCB Soldering: Types of solder alloys, soldering equipment, specifications of solder alloys	
List of experiments:		

1. Study of resistors, capacitors, and inductors
2. Plot V-I Characteristics of PN Junction Diode
3. Plot V-I Characteristics of Zener Diode
4. Plot Input and Output Characteristics of BJT in CE Configuration
5. Plot Transfer and output characteristics of FET
6. Plot Transfer and output characteristics of EMOSFET
7. Plot characteristics of LDR
8. Plot characteristics of Opto-isolator
9. Study of Relays
Topics for projets based learning*
1.Survey report of types of resistors, capacitors, transformers their form factors, specifications and price
2.Survey report of types of batteries, their form factors, specifications and price
3.Survey report of types of low power relays, their form factors, specifications and price
4.Survey report of types of diodes, BJT, MOSFET, their form factors, specifications and price
5.Build a shunt regulator and measure its line and load regulation
6.Build a full-wave rectifier with capacitor input filter and test it
7.Build a small signal voltage amplifier (BJT) and test it
8.Build a switch using BJT, MOSFET, relay and test it
9.Build a simple day light switch with an LDR, BJT and Relay
10.Build a motion sensor switch
11.Build a fire alarm circuit
12.Implement and test a given circuit on a general purpose PCB

13.Build a simple water level indicator
14.Build a simple temperature indicator
15.Build a LED Light Bulb Circuit
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books/ Reference Books:
1. Passive Components for Circuit Design, Ian Sinclair,1st Edition 2000, ISBN: 9780750649339, Newnes
2Grob's Basic Electronics, Mitchel Schultz,11th Edition,2010, ISBN-13: 978-0-07-351085-9, McGraw Hill
3.Fundamentals of Electronic Devices and Circuits, David A. Bell, 5th Edition,2008, Oxford University Press,
4Microelectronics Circuits, Adel S. Sedra& Kenneth C. Smith,7th Edition, 2015,Oxford University Press
5.Linden’s Handbook of Batteries, Thomas Reddy,4th Editiion,2010, ISBN: 978-0-07-162419-0, McGraw Hill
6.Printed circuit boards: design, fabrication, assembly and testing, Raghbir Singh Khandpur,2006, ISBN 10:0071464204, McGraw Hill
7. The Circuit Designer’s Companion, Peter Wilson, 4th Edition,2017, ISBN: 978-0-08-101764-7, Newnes

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B. Tech. Sem. I: Electronics & Telecommunication Engineering **SUBJECT: - C PROGRAMMING**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits: 04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW: 50 Marks	Credit: 01
		Total Credit: 5

Course Pre-requisites:	
	Flow charts
Course Objectives:	
	• A student will gain a thorough understanding of the fundamentals of C programming. • A student will be able to code, compile, and test C programs. • A Student will be able to solve Problems using C language.
Course Outcomes: After learning this course students will be able to	
1	Apply the basic concepts of programming using C language.
2	Write basic programs using conditional statement.
3	Use 2 D Array in programming
4	Create functions and Pass parameters.
5	Construct structures using Pointers.
6	Apply basic concepts of graphics using C language.

UNIT – I	**Introduction Basic of C**	**(08 Hours)**

	Structure of a C program, identifiers, basic data types and sizes. Constants, variables, arithmetic, relational and logical operators Managing input and output operations, Sample programs.	
UNIT – II	**Conditional Statements and Loops**	**(07 Hours)**
	Decision making within a program, conditions, if statement, if-else statement, loops: while loop, do while, for loop. Nested loops, infinite loops, switch statement, sample programs	
UNIT - III	**Arrays & Strings**	
	Arrays - concepts, declaration, definition, accessing elements, storing elements, Strings and string manipulations, 1-D arrays, 2-D arrays and character arrays, string manipulations, , Array applications: Matrix Operations.	**(08 Hours)**
UNIT -IV	**Functions & Pointers**	**(07 Hours)**
	Basics, parameter passing, storage classes- extern, auto, register, static, scope rules, user defined functions, , recursive functions, Recursive solutions for Fibonacci series, example c programs. Passing arrays & strings to functions.	
UNIT -V	**Pointers and Structures**	**(10 Hours)**
	Derived types- structures- declaration, definition, and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self-referential structures, bit-fields, program applications. Different types of stacks and queues.	

UNIT -VI	**Basic of Graphics**	**(08 Hours)**
	Introduction, what is computer Graphics? Area of Computer Graphics. Graphics programming, initializing the graphics, C Graphical functions, simple programs	

List of Experiments:

1.
   - Write a C program to take user Input and print it on the screen.
   - Write a C program to perform addition or subtraction of two numbers.
   - Write a C program to find whether the number is Odd or Even.
   - Write a C program to find out Prime numbers.
   - Write a C program to find out Fibonacci series.

2.
   - Write C programs to print different patterns.
   - Write a C program to do factorial using recursion.
   - Write a C program to find out Armstrong number

3.
   - Write a C program to sort the array in Ascending & Descending order.
   - Write C programs to perform operations on 2-D arrays.
   - Write a C program to perform different operations on strings.

4.
   - Use of Pointers
   - Write a C program to swap numbers using pointers.

5. Write a C program to show the use of pointers in arrays.
6. Write a C program to use functions using pointers.
7. Write a C program to create student mark sheet using structures.
8. Write a C program to show the use of structure using pointers.
9. Write a program showing functions of Graphics programming
10. Mini Project.
Topics for projets based learning*
1.Employee Record System Project
2. Build Calculator (GUI Optional)
3. Customer Billing System Project:
4. Medical Store Management System Project
5. Currency Converter (GUI Optional)
6. Modern Periodic Table (GUI Optional)
7. Number System Conversion Project
8. Phone book / Contact Management System
9. 100 Years Calender
10. Hospital Management System Project
11. Customer Billing system
12. Tic Tac Toe Game (GUI Optional)
13. Departmental Store Management.
14. Build Rock , Paper & Scissors Game (GUI Optional)
15. Bank Management System
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. Programming in ANSI C – E Balagurusamy (5^{th} Edition-TMH)

2. C Graphics & Projects – By B M Havaldar
Reference Books:
1. Let Us C- Yashwant Kanitkar
2. Computer Graphics – By Hearn & Baker
3. The C Programming Language. 2nd Edition By Brian Kernighan and Dennis Ritchie

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B. Tech. Sem. I: Electronics & Telecommunication Engineering **SUBJECT: -MATLAB FUNDAMENTALS**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 00	End Semester Examination: 00	Credits: 00
Practical: 04	Internal Assessment: 00	
Tutorial: 00	TW: 50 Marks	Credit: 02
		Total Credit: 02

Course Pre-requisites:	
	Mathematics (Class XII) and Linear Algebra and Calculus
Course Objectives:	
1.	To teach basics of MATLAB software and programming.
2.	To teach the students Vectors, Arrays and Strings in programming
3.	To introduce Conditional Statements, Loops and Functions
4.	To teach the students to perform different operations on Matrices in programming.
5.	To introduce MATLAB Simulink.
6.	To introduce MATLAB GUI.
Course Outcomes: After learning this course students will be able to	
1	Use MATLAB for basic programming.

2	Use Vectors, Arrays and Stringsin programming.
3	Apply knowledge of conditional statements, loops, and functions in programming.
4	Use different operations of Matrices in programming.
5	Design different models using MATLAB Simulink.
6	Design GUI for different applications.

List of experiments:

1. Introduction to MATLAB

a) Basics of MATLAB

2. Commands, Variables and Operators.

a) Write a program to perform arithmetic and logical operations on scalar data.

b) Write a program to display sine and cos wave of particular amplitude and frequency.

3. Vectors

a) Write a program to find addition, subtraction, multiplication, transpose, and magnitude of given vector.

b) Write a program to find mean, standard deviation, and variance of given vector.

4. Conditional Statements and Functions

a) Write a program to show use of if-then-else statement and while loop

b) Write a program to import and export data from .csv file.

5. Arrays and Strings

a) Write a program to display data using string.

b) Write a program to compare two given arrays or array elements.

6. Operations on Matrix

a) Write a program to find transpose, determinant, concatenation, and inverse of given matrix.

b) Write a program to solve given linear equation.

7. GUI

a) To introduce basics of GUI

b) To design GUI for any one of the programs mentioned above.

8. Simulink

a) To introduce basics of Simulink

b) Develop a model to differentiate and integrate sine wave using Simulink.

Text Books:

1. MATLAB for Beginners-A Gentle Approach, Peter I. Kattan, 2010, ResearchGate publication
2. Getting started with MATLAB, RudraPratap, 2010, Oxford university press.

Reference Books:

1. A Guide to MATLAB, Brian R. Hunt, Ronald L. Lipsman, Jonathan M. Rosenberg, 3rd Edition, Cambridge University Press.
2. Introduction to MATLAB for Engineers,WilliamJ.Palm, 3rd Edition, McGraw-Hill Education.

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B. Tech. Sem. II: Electronics & Telecommunication Engineering **SUBJECT: - DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 03	End Semester Examination: 60 Marks	Credits: 03
Practical: 00	Internal Assessment: 40 Marks	
Tutorial: 01		Credits: 01
		Total Credit: 04

Course Pre-requisites:	
	Class XII Mathematics, Linear Algebra and calculus
Course Objectives:	
1.	To introduce ordinary differential equations for higher order.
2.	To introduce partial differential equations.
3.	To introduce complex analysis and conformal mapping.
4.	To teach sequences, series, and series expansion.
5.	To introduce ordinary differential equations for higher order.
6.	To introduce partial differential equations.
Course Outcomes: After learning this course students will be able to	
1	Solve higher differential equations by different methods

2	Solve partial differential equations by different methods	
3	Demonstrate the methods of Complex Analysis technique.	
4	Implement the Complex Analysis for potential application	
5	Demonstrate the knowledge of series and sequences.	
6	Solve series expansion problems.	
UNIT – I	**Ordinary linear differential equations**	**(06 Hours)**
	Ordinary linear differential equations of nth order, solution of homogeneous and non-homogeneous equations. Operator method. Methods of undetermined coefficients and variation of parameters, Systems of differential equations. Mass spring system.	
UNIT – II	**Partial Differential Equations**	**(06 Hours)**
	Partial differential equations, variable separable method, complementary function and particular integral, initial and boundary value problems (wave equation,1-D and 2-D heat Equation).	
UNIT - III	**Complex Differentiation and Integration**	**(06 Hours)**
	gebra of Complex Number (Polar and exponential form, Power and roots, Regions in a complex plan), Analytic functions, Cauchy's integral theorem, Cauchy's integral formula, Derivatives of analytic functions, Singularities, Residues, Poles and Zeros of Analytic Functions, The Residue Theorem	

UNIT -IV	**Conformal mapping**	**(06 Hours)**
	G Geometry of analytic functions: conformal mapping, points linear fractional transformations, conformal mapping for other function. Conformal mappings to potential problems: electrostatic fields, use of conformal mapping: modelling, heat problems, fluid flow, Poisson's Integral formula for potentials, General properties of harmonic functions, uniqueness theorem for the Dirichlet problem.	
UNIT -V	**Sequences and Series**	**(06 Hours)**
	Review of sequences, series and convergence tests, Power Series, Power Series Expansions of Analytic Functions, Taylor Series (Taylor's Theorem with Proof), Laurent series (Laurent's Theorem without Proof), Leibnitz's Theorem, Maclaurin's Series	
UNIT -VI	**Series Expansion**	**(06 Hours)**
	Multiplication, Division, Integration and Differentiation of Power Series, methods for solutions of ordinary differential equations. Legendre equation and Legendre polynomials, Bessel equations and Bessel functions of first and second kind. Orthogonal sets of functions	

Topics for projets based learning*
1. Use MATLAB to formulate and solve types of differential equations - Initial value problems and Delay differential equations
2. Use MATLAB to formulate and solve types of differential equations - Boundary value problems and Partial differential equations
3. Ordinary Differential Equation (ODE) solvers in MATLAB, solve initial value problems with a variety of properties
4. Ordinary Differential Equations EULER methods

5. Ordinary Differential Equations Using built-in function
6. Differential Equations in Python
7. Differential Equations with ODE in Python
8. Partial Differential Equations in Python
9. Solving partial differential equations
10.Complex Line Integration
11. Multi dimentional Conformal mapping
12. Sequences & Series using matlab
13.Sequences and Series -circle packing method
14. An End-to-End Project on Time Series Analysis and Forecasting with Python
15.Time Series Analysis in Python
16.Time Series Classification (with Python)
17.Taylor series with Python
18. Program to print binomial expansion series
*Students in a group of 3 to 4 shall complete any one project from the above list
Textbooks/Reference Books
1.'Advanced Engineering Mathematics' by Erwin reyszig
2.'Advanced Engineering Mathematics' by Dennis G. Zill and Warren S. Wright
3.AppliedMathematics (VolumesIandII)byP.N.Wartikar&J.N.Wartikar
4.HigherEngineeringMathematicsbyB.S. Grewal
5.HigherEngineeringMathematicsbyB.V. Ramana
6.AdvancedEngineeringMathematics

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B. Tech. Sem. II: Electronics & Telecommunication Engineering **SUBJECT: - Chemistry of Electronic Materials**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 03	End Semester Examination: 60 Marks	Credits: 03
Practical: 02	Internal Assessment: 40 Marks	
Tutorial:00	TW: 50 Marks	Credit: 01
		Total Credit: 04

Course Pre-requisites:	
	Basic knowledge of chemistry,Electrochemical series, Electrode potential, Primary and secondary cells,Capacitor, insulator, classification, and properties of polymers.
Course Objectives:	
	• To develop the interest among the students regarding chemistry and their applications in engineering • To develop confidence among students about chemistry, how the knowledge of chemistry is applied in technological field. • The student should understand the concepts of chemistry to lay the groundwork for subsequent studies in the field such as E&TC Engineering

Course Outcomes: After learning this course students will be able to	
1	Demonstrate the knowledge of Electrical Insulating Materials with its applications.
2	Demonstrate the knowledge about Dielectric Strength and Insulation Breakdown for various engineering applications.
3	Apply the knowledge of crystallography to study of crystal structure
4	Apply the knowledge Solid Solutions and Two-Phase Solids.
5	Demonstrate the concept of the battery with its applications
6	Demonstrate the concepts of spectroscopy and thermogravimetry for various engineering applications.

UNIT – I	Electronic Materials 1	**(06 Hours)**
	Electrical Insulating Materials: Introduction - Requirements. Classification based on Substances: Gaseous, Liquid and Solid Insulating Materials. Preparation, Properties and Applications of Ceramic Products: White Wares and Glass - Transformer Oil. Electrical Resistivity: Factors influencing Electrical Resistivity of Materials - Composition, Properties and Applications of High Resistivity Materials: Manganin - Constantan - Molybdenum Disilcide – Nichrome.	
UNIT – II	Electronic Materials 2	**(06 Hours)**
	Dielectric Strength and Insulation Breakdown: Dielectric Strength: Definition, Dielectric Breakdown and Partial Discharges: Gases, Dielectric Breakdown: Liquids, Dielectric Breakdown: Solids, Capacitor Dielectric Materials: Typical Capacitor Constructions, Dielectrics: Comparison. Piezoelectricity, Ferroelectricity, and Pyroelectricity: Piezoelectricity: Quartz Oscillators and Filters,Ferroelectricity, and Pyroelectricity Crystals, Introduction to Compound Semiconductors.	
UNIT - III	Electronic Materials 3	
	The Crystalline State: Types of Crystals, Crystal Directions and Planes, Allotropy and Carbon, Crystalline Defects and Their Significance: Point Defects: Vacancies and Impurities, Line Defects: Edge and Screw Dislocations, Planar Defects: Grain Boundaries, Crystal Surfaces and Surface Properties, Stoichiometry, Nonstoichiometric, and Defect Structures, Single- Crystal Czochralski Growth. Glasses and Amorphous Semiconductors: Glasses and Amorphous Solids, Crystalline and amorphous Silicon.	**(06 Hours)**
UNIT -IV	Phase rule and Polymers	**(06 Hours)**
	Solid Solutions and Two-Phase Solids: Isomorphous Solid Solutions: Isomorphous Alloys, Phase Diagrams: Cu–Ni and Other Isomorphous Alloys, Binary Eutectic Phase Diagrams and Pb–Sn Solders. Polymers, Preparation, Properties and Applications of SF6, Epoxy Resin, Conduction Mechanism, Preparation of Conductive Polymers, Polyacetylene, Poly (P- Phenlylene), Polyhetrocyclic Systems, Polyaniline, Poly (Phenylene Sulphide), Poly (1,6-Heptadiyne),	

	Applications.	
UNIT -V	Electrochemistry	**(06 Hours)**
	Introduction, Acids and Bases, Concept of pH and pOH and Numerical Electrode Potential, Electrochemical Cell, Concentration Cell, Reference Electrodes, Overvoltage, Fuel Cells, Construction and Working of - Acid and Alkaline Storage Battery, Dry Cell, Coin Cell Batteries, Ni-Cd Batteries, Ni-MH Batteries, Li-Ion Batteries, Li-Po Batteries.	
UNIT -VI	Instrumental Methods of Analysis	**(06 Hours)**
	Introduction, Absorption of Radiation, Instrumentation and Applications of UV-Visible Spectrophotometer and IR Spectrophotometer. Thermal Methods of Analysis TGA, DTA, DSC, Sensors: Oxygen and Glucose Sensor.	

Term Work:

1. To measure the absorbance of the sample at different wavelengths.
2. Verification of Beer-Lambert's Law.
3. Determination of Viscosity Average Molecular Weight of Polymer
4. Determination of Viscosity of Organic Solvents
5. To find the tensile strength of polymer.
6. To determine the pH value of given solutions using pH meter.
7. To determine pH of soil
8. To find EMF of the cell.
9. To calculate the Equilibrium constant.
10. To predict the spontaneity of the cell reaction.
11. To learn the specific charge/discharge characteristics of a Lithium- ion (Li- ion) battery through experimental testing of a remote triggered Li- ion Battery.
12. To Prepare Phenol formaldehyde/Urea formaldehyde resin.
13. To study set up of Daniel Cell

Topics for projets based learning*
1. To Prepare and for synthesis of the following polymers, a. Bakelite b. Polystyrene c. Epoxy Resin
2. Synthesis properties and applications of polymer.
3. To Prepare one component system with an example
4. To Prepare two component system with an example 5. How to Make a Battery with Metal, Air, and Saltwater 6. Use a Microbial Fuel Cell to Create Electricity from Waste
7. To Prepare fuel cell
8. To prepare lead acid storage battery. 9. To prepare Oxidic Nanomaterials for High Density Storage in Li-ion Batteries
10 Electrochemical forming is a unique additive manufacturing method which uses electrochemical technologies to manufacture, layer-by-layer, parts of complex geometry.
11. The materials chemistry and electrochemistry of the lithium-air battery
12. . Challenges facing all-solid-state batteries
13. The materials chemistry and electrochemistry of lithium and sodium-ion batteries
14 Electroplating- the principles, how different metals can be used and the practical applications.
15. Electroplating, Metal Polishing, Anodizing, Phosphating Metal Finishing
and Powder Coating Projects
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. Polymer Science and technology (2nd Edition), P. Ghosh, Tata McGRAW Hill, 2008.
2. Polymers: Chemistry & Physics of Modern Materials (2nd edition) J.M.G.Cowie, Blackie Academic & Professional, 1994.
3. A Text Book of Engineering Chemistry, Shashi Chawla, Dhanpat Rai & Co, 2004
4. Engineering Chemistry (16th Edition) Jain, Jain, Dhanpat Rai Publishing Company, 2013.
5. Chemical sensors and Biosensors, Fundamentals and applications, Florinel Gabriel Banica, Wiley.

6. Microelectronics Circuits, Adel S. Sedra& Kenneth C. Smith,7th Edition, 2015, ISBN 978–0–19–933913–6,Oxford University Press
Reference Books:
1. Inorganic Chemistry (4th edition), D. F. Shrives and P. W. Atkins, Oxford University, Oxford, 2006.
2. Reactions, Rearrangements and Reagents (4th edition), S. N. Sanyal, Bharti Bhawan (P & D), 2003.
3. Applications of Absorption Spectroscopy of Organic Compounds (4th edition), John R. Dyer, Prentice Hall of India Pvt. Ltd., 1978.

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B. Tech. Sem. II: Electronics & Telecommunication Engineering **SUBJECT: - DIGITAL ELECTRONICS**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits: 04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW& OR: 50 Marks	Credit:01
		Total Credit: 05

Course Pre-requisites:	
	Fundamentals of Number Systems.

Course Objectives:	
1.	To present the Digital fundamentals, Boolean algebra, and its applications in digital systems
2.	To familiarize with the design of various combinational digital circuits using logic gates
3.	To introduce the analysis and design procedures for synchronous and asynchronous sequential circuits
4.	To understand the various semiconductor memories and related technology
5.	To introduce the electronic circuits involved in the making of logic gates

Course Outcomes: After learning this course students will be able to	
1	Demonstrate the knowledge of Digital fundamentals and Boolean algebra.
2	Apply different minimization techniques on Boolean expression and design logic diagram
3	Analyze & design digital combinational circuits such as of multiplexers, demultiplexers, encoder, decoder, and arithmetic circuits

4	Demonstrate the knowledge of operations of basic types of flip-flops & the design of FSM.	
5	Analyze & design digital Sequential circuits such as Shift Registers and Counters	
6	Classify the characteristics of different logic families, PLDs, Semiconductor memories and their applications.	
UNIT – I	**Introduction to Digital Systems**:	**(08 Hours)**
	Introduction to Digital electronics Fundamentals **Number Systems**: Introduction to Number Systems-Decimal, Binary, Octal, Hexadecimal, Conversion of number system, Representation of Negative Numbers,1's complement and 2's complement. **Binary Arithmetic**: Binary addition, Binary subtraction, Subtraction using 1's complement and 2's complement, Binary multiplication, and division, **Digital Codes**: BCD code, Excess-3 code, Gray code, Binary to Excess -3 code conversion and vice versa, ASCII code, EBCIDIC code. **Logic Gates**: Logical Operators, Logic Gates-Basic Gates, Active high and Active low concepts, Universal Gates, and realization of other gates using universal gates, Gate Performance Characteristics and Parameters	
UNIT – II	**Boolean Algebra**:	**(08 Hours)**
	Boolean Expressions and Truth Tables, Rules and laws of Boolean algebra, Demorgan's Theorems, Duality Theorem, Simplification of Boolean functions by Boolean laws, Shannon's Theorem. **Boolean Function minimization Technique**: Introduction: Minterms and sum of minterm form, Maxterm and Product of maxterm form, Reduction technique using Karnaugh maps – 2/3/4/variable K-maps, grouping of variables in K-maps, minimize Boolean expression using K-map and obtain K-map from Boolean expression, Quine Mc Cluskey Method	
UNIT - III	**Combinational Logic Design**	
	Introduction to Combinational Circuits, Adders: Half-Adder and Full-Adder, Subtractors-Half and Full Subtractor; Parallel adders: Ripple Carry and Look-Ahead Carry Adders.	**(08 Hours)**

	BCD adder, BCD subtractor, Parity Checker/Generator, Multiplexer, Demultiplexer, Encoder, Priority Encoder; Decoder, BCD to Seven segment Display Decoder, ALU, Code converters, Magnitude comparators	
UNIT -IV	**Sequential Logic Design**	**(08 Hours)**
	Introduction to Sequential Circuits: 1 Bit Memory Cell, Latches: SR latch, Gated latch,Flip-Flops: Types of Flip Flops -RS, T, D, JK, Triggering of Flip Flops, Master-Salve JK Flip flop, Characteristic table of Flip-flop, excitation table of Flip-flop, Study of timing parameters of flip-flop.	
UNIT -V	**Shift Registers and Counters**:	**(08 Hours)**
	Data transmission in shift resister: SISO, SIPO, PISO, PIPO, Bidirectional shift register, universal shift registers. Counters: synchronous counter and asynchronous counter. **Introduction to FSM**: Moore and Mealy State machine, state machine as a sequential controller. Design of state machines: state table, state assignment, transition/excitation table, excitation maps and equations, logic realization, Effect of clock skew and clock jitter on synchronous designs (Metastability)	
UNIT -VI	**Logic Families and Memory Technology:**	**(08 Hours)**
	Logic Family: Digital IC specification terminology, Logic families: TTL, CMOS, ECL families, Interfacing of TTL to CMOS & CMOS to TTL. **Programmable logic devices**: Study of PROM, PAL, PLAs. Designing combinational circuits using PLDs. **Semiconductor memories:** Classification and characteristics of memory, different types of RAMs, ROMs and their applications	
List of Practicals to be performed in the laboratory		

1. Study of basic gates using TTL, CMOS: 7432, 4011, 4050, 4070,4071,40106 and Universal Gates.
2. K map-based implementation of combinational logic
3. Design and implementation of Half and Full Adder, Half and Full Subtractor
4. Study of four-bit parallel Adder / Subtractor using IC 7
5. Design and implementation of Code Converters (Binary to Gray, Excess 3 to Binary)
6. Design and implementation of Magnitude Comparator
7. Implementation of combinational logic using MUX
8. Study of Decoder and DEMUX
9. Study of 7 segment decoder driver.
10. Study of Flip Flops (SR FF, D FF, JK FF, T FF)
11. Study of Shift Registers
12. Study of Up-Down Counter and Johnson Counter.
13. Study of Static I/O and transfer Characteristic of TTL
Note: The term work shall be the record of minimum eight experiments performed from the above list
Topics for projets based learning*
1.Survey report of basic gates ICs 7432, 4011, 4050, 4070,4071,40106
2. Implement combinational logic Circuit of given Boolean Equation.
3. Implement Half Adder and Half Subtractor.
4. Implement Full Adder using two Half Adders
5. Build 4-bit parallel Adder / Subtractor using IC.
6. Build Code Converters: Binary to Gray
7. Build Code Converters: Excess 3 to Binary)
8. Implement Two Bit Magnitude Comparator using IC 7485
9. Implement given combinational logic using MUX
10. Implement 7 segment decoder driver using IC 7447.
11. Build a Decade counter and Up-Down Counter.
12. Build a Shift Registers: SISO and SIPO
13. Implement the Johnson Counter and Ring Counter.

14.Survey Report on Static I/O and transfer Characteristic of TTL and CMOS.
15. Implement given Boolean Function using PLA.
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. R.P. Jain, ―Modern digital electronics‖, 3rd edition, 12threprint Tata McGraw Hill Publication
2. Anand Kumar, ―Fundamentals of digital circuits‖ 1st edition, Prentice Hall of India, 2001
3. P.Raja ,- Digital Electronics , Second Edition,Scitech Publication (India) Pvt.Ltd.
Reference Books:
1. A.P. Malvino, D.P. Leach 'Digital Principles & Applications'' –Vith Edition-Tata Mc Graw Hill, Publication.
2. J.F.Wakerly "Digital Design: Principles and Practices", 3rd edition, 4th reprint, Pearson Education, 2

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B. Tech. Sem. II: Electronics & Telecommunication Engineering **SUBJECT: - SEMICONDUCTOR DEVICES AND CIRCUITS-I**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits: 04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW & PR: 50 Marks	Credit: 01
		Total Credit: 5

Course Pre-requisites:	
	Elementary Electronics, EDA Tool Practice

Course Objectives:	
1.	To introduce the methods of analysis, design, and simulation of diode circuits
2.	To introduce the methods of analysis, design, and simulation of BJT biasing circuits
3.	To introducemethods to analyze and design and simulate BJT amplifier circuits
4.	To introduce methods to analyze and design and simulate JFET circuits
5.	To introduce methods to analyze and design and simulate MOSFET circuits
6.	To introduce the concept ofcurrent mirror and transistorized voltage regulator circuits

Course Outcomes: After learning this course students will be able to	
1	Analyze and design the diode circuits
2	Analyze and design the BJT biasing circuits

3	Analyze and design the BJT amplifier circuits	
4	Analyze and design the JFET circuits	
5	Analyze and design the MOSFET circuits	
6	Analyze and design the current mirror and transistorized voltage regulator circuits	
UNIT – I	**DIODE CIRCUITS**	**(08 Hours)**
	Analysis and design of Rectifier circuits (HWR, FWR, Bridge, Dual Complementary), Capacitor input filter, Clippers, Clampers, Voltage Multipliers, Special diodes (Zener diodes, Schottky diodes, Gold-diffused diodes), Switching circuits, Simple shunt regulator using Zener diode (analysis and design)	
UNIT – II	**BJT CIRCUITS I**	**(08 Hours)**
	Need of biasing circuits, Analysis, and design of BJT biasing circuits like fixed bias, collector to base bias, voltage divider bias, split-supply bias, Concept of DC load line, Concept of stability factor, Derivation of stability factor	
UNIT - III	**BJT CIRCUITS II**	**(08 Hours)**
	Concept of AC load line, BJT as two-port networks, BJT Models small signal models (h-parameter, Ebers-Moll, hybrid –pi and T), Analysis of CE, CB, CC Amplifiers (Derivation of Zi, Zo, Av, Ai and Ap), Frequency response of BJTamplifiers,Single stage CE voltage amplifier design, large signal BJT model, BJT as switch, power BJT	
UNIT -IV	**JFET CIRCUITS**	**(08 Hours)**

	Analysis and design of JFET biasing (Fixed bias, Self-bias, Voltage divider bias), JFET models, Analysis of CS, CD, CG Amplifiers, Frequency response of JFET amplifiers, Single stage CS amplifier design, FET as switch.	
UNIT -V	**MOSFET CIRCUITS (8 Hours)**	**(08 Hours)**
	EMOSFET biasing (Fixed bias, negotiated bias/Voltage divide bias), DC load line,MOSFET models, Analysis of MOSFET amplifiers, Single stage CS amplifier design, Frequency response of MOSFET amplifiers,MOSFET as switch, Power MOSFET	
UNIT -VI	**OTHER TRANSISTOR CIRCUITS**	**(08 Hours)**
	Concept of current mirror, Analysis of Widlar current source (BJT and MOSFET), Wilson current mirror (BJT and MOSFET),Gilbert gain cell,Series pass transistor voltage regulator,Variable output voltage regulator	

List of experiments:

1. Observe and measure outputs for rectifier circuits
2. Observe and measure outputs clipper, clamper, voltage multiplier circuits
3. Construct BJT biasing circuits (Fixed, Collector to base bias circuit, Voltage divider bias circuit and verify the Q-point.
4. Measure and plot the frequency response of single stage CE voltage amplifier
5. Construct FET biasing circuits (Fixed, self-bias circuit, Voltage divider bias circuit and verify the Q-point.
6. Measure and plot the frequency response of single stage JFET CS voltage amplifier

7. Construct MOSFET biasing circuits (Fixed, Voltage divider bias circuit and verify the Q-point.
8. Measure and plot the frequency response of single stage MOSFET CS voltage amplifier
9. Construct BJT and MOSFET switch circuits and compare the performance (power dissipation, transient response)
10. Measure and plot regulation characteristics of shunt regulator, series pass transistorized voltage regulator
Topics for projets based learning*
1.Build a voltage quadrupler circuit
2. Build a low current, regulated power supply
3. Build a diode, BJT tester
4. Latching burglar alarm
5. Moisture detector
6. Voltage controlled variable gain amplifier
7. Wind shield wiper control
8. Metal detector
9. Car battery charger
10. Under-voltage/Over-voltage indicator
11. Crystal oscillator
12. DC Flasher with adjustable ON/OFF times
13. Emergency Light
14. Simple intercom
15. Water level indicator with alarm
*Students in a group of 3 to 4 shall complete any one project from the above list
Reference Books:
1. Fundamentals of Electronic Devices and Circuits, David A. Bell, 5th Edition,2008, ISBN:0195425235, 9780195425239, Oxford University Press.
2. Microelectronics Circuits, Adel S. Sedra& Kenneth C. Smith,7th Edition, 2015, ISBN 978–0–19–933913–6, Oxford University

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B. Tech. Sem. II: Electronics & Telecommunication Engineering **SUBJECT: - PYTHON PROGRAMMING**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits: 04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW: 50 Marks	Credits :01
		Total Credits :5

Course Pre-requisites:	
	Basic programming.
Course Objectives:	
	• This course will introduce the concepts of Python language as software development tool. • To gain practical experience in Python programming including fundamental concepts, OOPs, Exception handling, Graphics.
Course Outcomes: After learning this course students will be able to	
1	Apply the basic concepts of Python programming.
2	Write basic programs using control statements.
3	Use exception handling in Python programs.
4	Apply object-oriented programming concepts in Python.
5	Write Python program for simple applications using existing libraries.

6	Write simple graphics programs.	
UNIT – I	**Python Basics**	**(08 Hours)**
	Python Introduction, Python Installation, Relational operators, Bit-wise operators, Logical operators Python Data Types - Numbers (Integer, Floating Point, Complex Numbers), Strings, Lists, Tuples, Dictionaries, List comprehensions, Python Control Statements	
UNIT – II	**Python Core**	**(08 Hours)**
	Python Modules & Functions, Lambda, Scope, Python File Handling, Python Regular Expressions, Sequence Types, Input and output, Recursion, Flow Control, Immutable and Mutable Objects	
UNIT - III	**Python Exception Handling**	**(08 Hours)**
	Meaning of Exception, Exception Hierarchy Diagram, Types of Exception- Checked Exception, Unchecked Exception, Exception Handling -TRY, CATCH, FINALLY, Raising an Exception, User Defined Exceptions	
UNIT -IV	**OOPS, UML & OOAD**	**(08 Hours)**
	Object Oriented Programming (OOPs) - Class & Object, Abstraction, Inheritance, Polymorphism, Encapsulation, Object Oriented (OO) Modelling, Object Oriented Analysis & Design (OOAD)	

UNIT -V	**Python Multi-Threading**	**(08 Hours)**
	Threads in Python (a) Kernel Threads (b) User Space Threads or User Threads, Advantages of Threading, Thread States: Life Cycle of a Thread, Thread & Threading Modules, Forking & Synchronizing Threads,Networking	
UNIT -VI	**Python Packages and Graphics**	**(08 Hours)**
	Numpy: Introduction, data-types, arrays, arrays manipulation, plotting, testing and debugging, Sharing Data using Sockets, Simple applications of python, Scipy, TKinter	

Term Work: Any 8 of below given list

1. Evaluate any given expression involving arithmetic operators.
2. Evaluate any given expression involving logical operators.
3. Develop python functions to produce given patterns such as diamond, pyramid, triangles.
4. Usage of different functions present in “math” module.
5. Write a function that takes two numbers as input parameters and returns their least common multiple.
6. Write a function that takes two numbers as input parameters and returns their greatest common divisor.
7. Write a program that takes a sentence as an input and displays the number of words in the sentence.
8. Ways to sort list of dictionaries by values in Python – Using lambda function.
9. Write program using “matplotlib” module.
10. Write program using “NUMPY” module.
11. Write program using “Scipy” module.

12. Write program using “TKinter” module.
Topics for projets based learning*
1. Create a Tic-tac-toe game (GUI optional)
2. Build a password encryptor with Hashing.
3. Build Product Price Comparison using webscraping.
4. Create a google image downloader
5. Create a Snake & Ladders game (GUI optional)
6. Build a contact book using indexing
7. Build What’s the word game
8. Build Rock, Paper & Scissors game
9. mp3 file organizer - rebuild a music library's structure from mp3 tag data, and reorganize them in folders. Use Multithreading concepts
10. Create an FTP server
11. Build a functional calculator (GUI optional)
12. Python Email Automation
13. Create a Currency converter (GUI optional)
14. Face Detection using Cv2
15. Biometric Fingerprint detection
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1.Sheetal Taneja,NaveenKumar,PythonProgramming,A modular approach,Pearson publication
Reference Books:
1. Learning Python 5th Edition, Oreilly Publication
2. Beginning Python: From Novic to professional, by Magnus Lie Hetland, Third Edition, Appress Publication
3. Learning with Python by Allen Downey, Jeffrey Elkner, Chris Meyers, Dreamtech Publication

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B. Tech. Sem. II: Electronics & Telecommunication Engineering **SUBJECT: - COMPUTER AIDED DRAFTING**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 00	End Semester Examination: 00	Credits:00
Practical: 04	Internal Assessment: 00	
Tutorial: 00	TW: 50 Marks	Credit: 02
		Total Credit: 02

Course Pre-requisites:	
	Mathematics (Class XII)

Course Objectives:	
1.	To teach the studentsFundamentals of engineering drawing and curves
2.	To introduce the students Isometric views and projection
3.	To teach the studentsProjections of points, lines, planes & solids
4.	To introduce the students Use of CAD tools.

Course Outcomes: After learning this course students will be able to	
1	Apply dimensioning methods and drawing of engineering curves.
2	Draw orthographic projections using Istangle and IIIrdangle projection Methods*.
3	Draw Isometric views from given orthographic projections*.

4	Draw projection of Lines, its traces and projections of planes*.	
5	Createprojection of different solids*.	
6	Develop lateral surfaces of solids*.	
*Using CAD tools		
UNIT – I	**Lines and Dimensioning in Engineering Drawing and Engineering Curves**	
	Different types of lines used in drawing practice, Dimensioning–linear, angular, aligned system, unidirectional system, parallel dimensioning, chain dimensioning, location dimension and size dimension. Ellipse by Arcs of Circles method, Concentric circles method. Involutes of a circle,Cycloid, Archimedean Spiral, Helix on cone & cylinder. Introduction to Auto CAD commands.	
UNIT – II	**Orthographic Projection**	
	Basicprinciples of orthographic projection (First and Third angle method). Orthographic projection of objects by first angle projection method only.Procedurefor preparing scaled drawing, sectional views,and types of cutting planes and their representation, hatching of sections. (Also using AutoCAD commands)	
UNIT - III	**Isometric Projections**	
	Isometric view, Isometric scale to draw Isometric projection, Non-Isometriclines, and construction of Isometric view from given orthographic views and to construct Isometric view.	

	(Also using AutoCAD commands)	
UNIT -IV	**Projections of Points & Lines**	
	Projections of points, projections of lines, lines inclined to one reference plane, Lines inclined to both reference planes. (Lines in First Quadrant Only) Traces of lines. (Also using AutoCAD commands)	
UNIT -V	**Projections of Planes**	
	Projections of Planes, Angle between two planes, Distance of a point from a given plane, Inclination of the plane with HP, VP. (Also using AutoCAD commands)	
UNIT -VI	**Projections of Solids**	
	Projection of prism,pyramid, cone, and cylinder by rotation method. (Also using AutoCAD commands)	

List of sheets:

1. Types of lines, Dimensioning practice, free-hand lettering, 1stand 3rdangle methods symbol.
2. Engineering curves.
3. Orthographic Projections.
4. Isometric views.

5. Projections of Points and Lines and planes.
6. Projection of Solids.
7. Enclosure design
Term work: Term work shall consist of half imperial size or A2 size (594 mm x 420 mm) sheets. All sheets should complete in drawing hall manually and sheet no 2-7 also completed using AutoCAD with printout onA2 size papers.
Text Books/Reference Books:
3. “Elementary Engineering Drawing”, N. D. Bhatt, CharotarPublishing house, Anand India,
4. “Text Bookon Engineering Drawing”, K. L. Narayana&P. Kannaiah, Scitech Publications, Chennai.
5. “Fundamentals of Engineering Drawing”, Warren J. Luzzader, Prentice Hall of India, New Delhi,
6. “Engineering Drawing and Graphics”, Venugopal K., New Age International publishers.
7. "Engineering Drawing",M. B. Shah and B.C. Rana,1st Ed, Pearson Education, 2005
8. "Engineering Drawing (Geometrical Drawing)", P. S. Gill, 10thEdition, S. K. KatariaandSons, 2005
9. "Engineering Drawing", P. J. Shah, C. Jamnadasand Co.,1stEdition,1988

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B. Tech. Sem. III: Electronics & Telecommunication Engineering **SUBJECT: - ADVANCED MATHEMATICS FOR ELECTRONICS**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 03	End Semester Examination: 60 Marks	Credits: 03
Practical: 00	Internal Assessment: 40 Marks	
Tutorial: 01		Credit:01
		Total Credits: 04

Course Pre-requisites:	
	Class XII Mathematics, Linear Algebra and calculus, Differential equation, and complex analysis

Course Objectives:	
1.	To introduce the concept of Fourier series.
2.	To introduce Transforms like Fourier Transform, Laplace Transform and Z Transform.
3.	To teach vector analysis.
4.	To introduce optimization and graph theory.
5.	To teach probability and statistics.

Course Outcomes: After learning this course students will be able to	
1	Apply Fourier series for solving engineering problems**.**
2	Solve numerical problems involving Fourier Transform**.**

3	Demonstrate the knowledge of Laplace Transform and Z Transforms**.**	
4	Apply the concept of optimization and graph theory**.**	
5	Applyvector analysis for engineering problems**.**	
6	Solve numerical problems based on probability and statistics**.**	
UNIT – I	**Fourier Series**	**(06 Hours)**
	Definition, Euler's formulae, Conditions for a Fourier expansion, Functions having points of discontinuity, change of interval, expansions of odd and even periodic functions, Half range series. application to difference equations and Markov chains, Fourier series and KL expansion, Fourier series with an emphasis on the application of solving engineering problems, Develop Fourier series expansion of a function over the given interval.	
UNIT – II	**Fourier Transform**	**(06 Hours)**
	PaFourier transforms, Fourier transform of random process, Fourier sine and cosine transforms, Inverse Fourier, Sine and Cosine Transforms, complex form of Fourier integral, Finite Fourier sine and cosine transforms. Properties of Fourier transform.	
UNIT - III	**Laplace Transform & Z Transform**	**(06 Hours)**
	Laplace Transform:Definition, transforms of elementary functions, properties of Laplace transforms, transforms of derivatives, Properties of Laplace transforms, transforms of integral,	

	periodic functions, Inverse Laplace transforms, Inverse Laplace transforms by using partial fractions, Properties of LT. Z Transform: Definition, properties of z transform, Z Transform of basic sequences, Z transform of some standard discrete function inverse Z transform	
UNIT -IV	**Optimization and graphs**	**(06 Hours)**
	Basics of optimization, Unconstrained optimization: method of steepest descent, linear programming, simplex method, and difficulties. G Graphs and digraphs, shortest path problems, complexities, Bellman's principle, Dijkstra's Algorithm, shortest spanning trees: greedy algorithm, Prim's algorithm, flows in networks, maximum flow: Ford-Fulkerson algorithm	
UNIT -V	**Vector Analysis**	**(06 Hours)**
	Coordinate system, inter-conversion of coordinate systems, Vectors in plane and space, vector operations, gradient, divergence and curl, Gauss's, Green's and Stokes' theorems.	
UNIT -VI	**Probability and Statistics**	**(06 Hours)**
	Mean, median, mode, standard deviation, combinatorial probability, probability distributions, binomial distribution, Poisson distribution, exponential distribution, normal distribution, joint and conditional probability, relation of joint and conditional probability, higher order stats	

Topics for projets based learning*
1. Energy Flow in an Ecosystem: Graphical model
2. Plane Geometry and Vectors
3. Bipartite graph
4. Trellis (graph)
5. Seven Bridges of Königsberg
6. Three-cottage problem
7. Shortest path problem
8. A system of electric charges has a charge density $\rho(x,y,z)$ and produces an electrostatic field $E(x,y,z)$ at points (x,y,z) in space. Gauss' Law states that $\iint \Sigma E \cdot d\sigma = 4\pi \iiint S \rho dV$ for any closed surface Σ which encloses the charges, with S being the solid region enclosed by Σ. Show that $\nabla \cdot E = 4\pi\rho$. This is one of Maxwell's Equations
9. Show that the gradient of a real-valued function $F(\rho,\theta,\varphi)F(\rho,\theta,\varphi)$ in spherical coordinates is:
10. Applications of Vector Fields: in Mechanics
11. Applications of Vector Fields: Electric and Magnetic fields
12. Applications of Vector Fields: Fluids motions
13. Applications of Vector Fields: Heat transfer
14. Routing problems (e.g. Hamiltonian paths, travelling salesman problem)
15. Graph colorings (4-color theorem, chromatic polynomial)
*Students in a group of 3 to 4 shall complete any one project from the above list
Textbooks/Reference Books
1.'Advanced Engineering Mathematics' by Erwin reyszig
2.'Advanced Engineering Mathematics' by Dennis G. Zill and Warren S. Wright
3.AppliedMathematics (VolumesIandII)byP.N.Wartikar&J.N.Wartikar
4.HigherEngineeringMathematicsbyB.S. Grewal

5.HigherEngineeringMathematicsbyB.V. Ramana
6.AdvancedEngineeringMathematics

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<table>
<tr><td colspan="3">B. Tech. Sem. III: Electronics & Telecommunication Engineering
SUBJECT: - SEMICONDUCTOR DEVICES AND CIRCUITS II</td></tr>
<tr><td><u>TEACHING SCHEME:</u></td><td><u>EXAMINATION SCHEME:</u></td><td><u>CREDITS ALLOTTED:</u></td></tr>
<tr><td>Theory: 04</td><td>End Semester Examination: 60 Marks</td><td>Credits: 04</td></tr>
<tr><td>Practical: 02</td><td>Internal Assessment: 40 Marks</td><td></td></tr>
<tr><td>Tutorial: 00</td><td>TW &PR: 50 Marks</td><td>Credit: 01</td></tr>
<tr><td colspan="2"></td><td>Total Credit: 5</td></tr>
<tr><td colspan="3">Course Pre-requisites:</td></tr>
<tr><td></td><td colspan="2">Network theory-Current divider rule, Voltage divider rule, KVL, KCL, Network theorems, h-parameters, passive elements and their response (initial final conditions), Semiconductor theory, semiconductor devices like diodes, BJT, FET, MOSFET, Biasing methods, Single stage amplifier-design and analysis</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td colspan="3">Course Objectives:</td></tr>
<tr><td></td><td colspan="2">The objective of this course is to cover performance evaluation of various amplifiers by
Introducing a concept of the multistage amplifiers, parameter evaluation and related design aspects of multistage amplifiers with the help of derivations.
Teaching a concept of the feedback in the amplifiers, feedback topologies with the help of derivations and their advantages and disadvantages.
Gauging the efficiencies of various types of power amplifiers with the help of derivations.
Teaching a concept and design of the RC and LC oscillators with the help of derivations.
Introducing a concept and types of the differential amplifiers, current mirrors.
Introducing a concept and types of the tuning amplifiers.</td></tr>
<tr><td colspan="3"></td></tr>
</table>

Course Outcomes: After learning this course students will be able to		
1	Analyze and designdiscrete multistage amplifier.	
2	Analyze and design negative feedback amplifier.	
3	Classify and analyze discrete power amplifiers.	
4	Analyze and design discrete oscillator circuits.	
5	Analyze various types of the differential amplifiers.	
6	Analyze the effect of tuning in the amplifiers, and the applications where the tuning amplifiers are useful.	
UNIT – I	**Multistage Amplifiers**	**(08 Hours)**
	Need of the Multistage amplifiers, Types of Multistage Amplifiers-Cascade and Cascade, Cascade-Coupling methods, Frequency response, Parameter evaluation - Ri, Ro, Av, Ai & Bandwidth for general multistage amplifier, Choice of the transistor configuration in cascade amplifier, Analysis & design of direct coupled, RC coupled (Low frequency, high frequency, and medium frequency analysis), transformer coupled (Low frequency, high frequency and medium frequency analysis) amplifier. Darlington Amplifier, Design of Cascade amplifier	
UNIT – II	**Negative feedback Amplifiers**	**(08 Hours)**
	Types of basic Amplifiers, Concept and types of feedback, Transfer gain with feedback, Negative feedback topologies with their block Schematics, Effect of negative feedback on Input impedance; Output impedance; Gain and Bandwidth with derivation, Analysis of one circuit for each feedback topology for input impedance, output impedance, gain and bandwidth.	

UNIT - III	**Power Amplifiers**	**(08 Hours)**
	Need of Power amplifiers, classification; applications; advantages of power amplifiers - Class A, Class B, Class C, class D and Class AB. Operation of - Class A with resistive load; Transformer coupled class A Amplifier; Class B Push – pull; Class AB Complementary symmetry and Quasi – complementary. Efficiency analysis for Class A transformer coupled amplifier, Class B push – pull amplifier. Comparison of efficiencies of other configurations. Distortion in amplifiers; concept of Total Harmonic Distortion (THD).	
UNIT -IV	**Oscillators**	**(08 Hours)**
	Concept of Positive feedback, Condition, and principle of oscillations (Barkhausen criterion), Classification of oscillators, Design analysis of RC and LC oscillators, RC oscillators: Phase shift, Wien bridge Oscillators; LC Oscillators: Hartley, Colpitt's and Clap; Piezo-electric effect in crystals and Crystal Oscillator.	
UNIT -V	**Differential Amplifiers**	**(08 Hours)**
	Limitations of CE amplifier, Split supply biasing, Differential amplifier configurations, Dual Input, balanced output differential amplifier, Dual input, unbalanced output differential amplifier, Single input, balanced output differential amplifier, Single input, unbalanced output differential amplifier, FET differential amplifiers, Constant current bias, Current mirrors (revision), Differential mode gains, common mode gain, CMRR calculation, Derivation for output voltage, input and output impedances	

UNIT -VI	**Tuned Amplifiers**	**(08 Hours)**
	Introduction, Q-factor, small signal tuned amplifiers, Effect of cascading Single tuned amplifiers on Bandwidth, Effect of cascading Double tuned amplifiers on Bandwidth, Stagger tuned Amplifiers, Comparison of Tuned amplifiers, large signal tuned amplifiers, Stability of Tuned amplifiers, Neutralization	

Term Work: Any 8 of below given list
1. To find the gain and bandwidth of a 2-stage CE RC coupled amplifier.
2. To find the gain and bandwidth of a 2-stage transformer coupled amplifier.
3. To find the gain of a direct coupled amplifier.
4. To find the gain and bandwidth of a voltage series negative feedback amplifier.
5. To find the gain and bandwidth of a voltage shunt negative feedback amplifier.
6. To find the gain and bandwidth of a currentseries negative feedback amplifier.
7. To find the gain and bandwidth of a current shunt negative feedback amplifier.
8. To study the response of a Class A direct coupled/ transformer coupled amplifier.
9. To study the response of a Class B power amplifier.
10. To find the oscillations frequency of the RC amplifiers-RC phase shift/ Wien bridge oscillator.
11. To find the oscillations frequency of LC amplifiers-Colpitt's Oscillator/Hartley Oscillator.
12. To plot frequency response of tuned amplifiers.
Topics for projets based learning*
1.Prepare survey report on types of multistage amplifiers.

2. Build and analyze the 2-stage RC coupled amplifier.
3. Build and analyze the 2-stage transformer coupled amplifier.
4. Build and analyze the 2-stage direct coupled amplifier.
5. Prepare survey report on types of negative feedback amplifiers.
6. Build and analyze 2-stage voltage series negative feedback amplifier.
7. Build and analyze single stage current series negative feedback amplifier.
8. Build and analyze single stage voltage shunt negative feedback amplifier.
9. Build and analyze 2-stage current shunt negative feedback amplifier.
10. Prepare survey report on types of power amplifiers.
11. Implement and analyze class A direct coupled power amplifier.
12. Implement and analyze class B push pull power amplifiers.
13. Prepare survey report on types of oscillators.
14. Implement RC phase shift oscillator and verify it for oscillations frequency.
15. Prepare survey report on types of differential amplifier.
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. S. Salivahanan and N Suresh Kumar, 'Electronic devices and circuits', Mc Graw Hill Education India Private Limited, Third Edition.
Reference Books:
1. Ramakant A.Gayakwad “Op-amps and Linear Integrated Circuit Technology”Fourth edition
2. Adel S. Sedra, Kenneth C. Smith “Microelectronic Circuits” Oxford series in Electrical and computer engineering

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B. Tech. Sem. III: Electronics & Telecommunication Engineering
SUBJECT: - SIGNALS AND LINEAR SYSTEMS

TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits: 04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW: 25 Marks	Credit: 01
		Total Credit: 05

Course Pre-requisites:

	Linear algebra,calculus, MATLAB fundamentals,Differential equations, and complex analysis

Course Objectives:

1.	To teach the basic concepts of signals.
2	To introduce the basic concepts of systems analysis
3	To introduce the tools in the time and frequency domain.
4	To provide knowledge of correlation function and sampling.

Course Outcomes: After learning this course students will be able to

1	Characterize and analyze the properties of signals.
2	Classify the systems and analyze in time domain using convolution.
3	Apply Fourier transform for analysis of LTI systems.

4	Apply Laplace transform for analysis of LTI systems.	
5	Apply discrete transforms for analysis of LTI systems.	
6	Evaluate the effects of sampling on signal and describe the auto correlation and cross correlation between signals.	
UNIT – I	**Introduction to signals**	**(08 Hours)**
	Definition of signals, classification of signals: continuous time signals & discrete time signals, even & odd signals, periodic & non-periodic, deterministic & non-deterministic, energy & power, elementary signals: unit impulse, unit step, unit ramp, exponential & sinusoidal, basic operations on signals.	
UNIT – II	**Classification of systems**	**(08 Hours)**
	Definition, Classification of System, System Interconnections, state space analysis, Linear & non -linear, Time-Invariant & Time variant, causal & non-causal, static & dynamic, stable & unstable systems, stability & impulse response of systems to standard signals.	
UNIT - III	**Continuous Time System Analysis**	**(08 Hours)**
	Response of LTI Systems to exponential signals, periodic signals. Derivation Fourier series, Discrete time Fourier series and properties, Fourier Transforms, Duality and Parseval's theorem, Fourier analysis examples: Output of LTI Systems Described by Differential, convolution with FT , unit step response of RC circuit, filtering, FT of Gaussian Pulse, Example of the brain waves.	
UNIT -IV	**Laplace Transform and Application**	**(08 Hours)**
	Review of Laplace transform and properties, Concept of ROC and properties of ROC, pole	

	zero concepts. Transfer function and condition of stability, Application of Laplace transforms to the LTI system analysis, Convolution with LT, Inversion using duality, Laplace Transform of electrical Circuit, example of control system, calculation of harmonic vibration of the beam, Mathematical models of physical system- Electrical & Mechanical System	
UNIT -V	**Discrete Transforms and Applications**	**(08 Hours)**
	Z-Transform: The Region of Convergence for the Z-Transform, Application of Z-Transform to the LTI system analysis. Discrete time Fourier transform, Properties of DTFT, Fast Fourier transform algorithm, Use of FFT in Windows Media Player.	
UNIT -VI	**Correlation and Spectral Density**	**(08 Hours)**
	Definition of Correlation and Spectral Density, correlogram, analogy between correlation, covariance and convolution, conceptual basis, auto-correlation, cross correlation, energy/power spectral density, properties of correlation and spectral density, inter relation between correlation and spectral density, Sampling theorem & its proof, aliasing, reconstruction of sampled signals, interpolation.	
<u>Term Work:</u> Any 8 of below given list		
1. Perform the operations on signals 2. Perform the convolution of signals using formula using MATLAB.		
3. Analyze the synthesis of signals using Fourier Series.		
4. Find the Fourier Transform using MATLAB.		
5. Find the Laplace Transform using MATLAB.		

6. Find the Z-Transform using MATLAB.
7. Find the autocorrelation of sine sequence x[n] with frequency 50Hz and sampling frequency 200Hz, using MATLAB.
8. Find the cross correlation for different signals.
9. Find the Inverse Fourier Transform using MATLAB.
10. Find the Inverse Laplace transform using MATLAB.
11. Find the inverse Z Transform using MATLAB.
12. Find the circular convolution using MATLAB.
Topics for projets based learning*
1. Signals In Natural Domain
2. Signal operations for navigation/obstacle detection
3. Speech production
4. Speech hearing
5. LTI Systems – Eigenfunctions, System Described by differential Equation, Homogenous and Particular Solution
6. LTI Systems-Convolution applications,
7. Periodic Convolution applications,
8. BIBO Stability applications
9. z–Transform Applications– Impulse Response of LTI System Described by Difference Equation
10. Complex Exponential Fourier Series and Trigonometric Fourier Series of Periodic Triangular Wave, Periodic Convolution
11. Real life example on DTFT – Sampling
12. Group/ Phase Delay for LTI systems
13. Implement DFT in Matrix form
14. Implement IDFT in Matrix form
15. FAST FOURIER TRANSFORM ANALYZER
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. Roberts M. J., Signals & Systems, TMH.
2. Oppenheim, Wilsely&Nawab, Signals & Systems, MGH.
Reference Books:

1. B.P.Lathi, Signal Processing & Linear Systems, Berkeley Cambridge, 1998 Edition.

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<table>
<tr><td colspan="3">B. Tech. Sem. III: Electronics & Telecommunication Engineering
SUBJECT: - NETWORK ANALYSIS AND SYNTHESIS</td></tr>
<tr><td><u>TEACHING SCHEME:</u></td><td><u>EXAMINATION SCHEME:</u></td><td><u>CREDITS ALLOTTED:</u></td></tr>
<tr><td>Theory: 04</td><td>End Semester Examination: 60 Marks</td><td>Credits: 04</td></tr>
<tr><td>Practical: 02</td><td>Internal Assessment: 40 Marks</td><td></td></tr>
<tr><td>Tutorial: 00</td><td>TW & PR: 50 Marks</td><td>Credit: 01</td></tr>
<tr><td colspan="2"></td><td>Total Credits: 5</td></tr>
<tr><td colspan="3">Course Pre-requisites:</td></tr>
<tr><td></td><td colspan="2">Knowledge of KCL and KVL Laws from ‘Electrical Technology’,Linear Differential Equations, Systems of Linear Equations and complex numbers from ‘Differential Equations and Complex Analysis’</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td colspan="3">Course Objectives:</td></tr>
<tr><td></td><td colspan="2">The objective of this course is to cover various methods to find the network parameters as listed below:
To teach how to find network parameters (voltages, currents, power) in a given passive circuit by the use of methods- MeshAnalysis, Node Analysis and Network Theorems.
To teach how to find voltages and currents in a given circuit by formulating the network equilibrium equations by the use of graph theory.
To teach how to find the transient response of the series RLC circuits by the use of homogeneous and non-homogeneous equations.
To introduce the resonance phenomenon, curves and related parameters in a given series and a parallel resonant circuit with the help of derivations.
To introduce the two port network parameters, their interrelationships, and interconnections with the help of derivations.</td></tr>
</table>

	• To teach how to design a constant K prototype low pass, high pass, band pass and a band stop passive filters for different bandwidths by using filter topologies.	
Course Outcomes: After learning this course students will be able to		
1	Analyze passive circuits using Mesh Analysis, Node Analysis and Network Theorems.	
2	Apply graph theory by formulating the network equilibrium equations for circuit analysis.	
3	Perform Transient Analysis of the Series Reactive Circuits	
4	Sketch the resonance curves for a given series and parallel resonant circuits.	
5	Compute two port parameters for a given network	
6	Design constant-k prototype low pass, high pass, band pass and band stop passive filters.	
UNIT – I	**DC circuit Analysis and Network Theorems**	**(08 Hours)**
	KCL, KVL, Source Transformation, Source Shifting, Mesh Analysis, Node Analysis, Super Mesh, Super Node, Network Theorems- Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem, Reciprocity Theorem	
UNIT – II	**Formulation of network equilibrium equations using Graph Theory**	**(08 Hours)**
	Network Graph, tree, co-tree & loop, Incidence Matrix, Tie-set matrix, Cut-set matrix, Formulation of the equilibrium equations in the matrix form, Solution of the resistive and non-resistive networks, Principle of Duality	
UNIT - III	**Transient Analysis of the Series Reactive Circuits**	**(08 Hours)**

	Initial Conditions in the networks, A procedure for evaluating initial conditions, the step response in RC, RL, RLC circuits using classical method and using Laplace Transform for driven and undriven circuits, Time specifications of RLC circuits, Concept of the natural frequency and damping frequency, Zeta.	
UNIT -IV	**Resonance in Series and Parallel RLC Circuits**	**(08 Hours)**
	Resonant condition, Quality factor, Resonant frequency, impedance at resonance, voltage and current variation with frequency, bandwidth, selectivity, magnification factor for series and parallel resonant circuits. Effect of Generator resistance on bandwidth and Selectivity, Comparison of series and parallel resonant circuits, Applications of resonant circuits	
UNIT -V	**Two Port Networks**	**(08 Hours)**
	Concept of Two port network, Z, Y, H, ABCD and other parameters, Relationships between two-port network parameters, Reciprocity and Symmetry conditions, Interconnections of two-ports, Analysis of some circuits using two port network parameters theory.	
UNIT -VI	**Passive Filter Analysis**	**(08 Hours)**
	Filter Fundamentals, Electrical Properties-Image impedance, Characteristic impedance, Propagation constant, Constant K prototype for LPF, HPF, BPF and BSF, m-derived LPF, HPF, Terminating half sections, Composite filters, Applications of passive filters.	

Term Work: Any 8 of below given list
1. To verify Thevenin's and Norton's Theorem for a given circuit.
2. To verify Superposition and Reciprocity Theorem for a given circuit.
3. To find the resonant frequency of a series RLC circuit.
4. To find the resonant frequency of a parallel RLC circuit.
5. To find the Z parameters of a given two port network.
6. To find the Y parameters of a given two port network.
7. To find the H parameters of a given two port network.
8. To find the ABCD parameters of a given two port network.
9. To find the cut-off frequency and to plot the frequency response of a constant-k LPF.
10. To find the cut-off frequency and to plot the response of a constant-k HPF.
11. To find the cut-off frequencies and to plot the frequency response of a constant-k BPF.
12. To find the cut-off frequencies and to plot the frequency response of a constant-k BSF.
Topics for projets based learning*
1.Build and analyze resistive circuit for current usage.
2. Build and analyze resistive circuit for voltage usage.
3. Build and analyze resistive circuit for power usage.
4. Implement the series RL circuit and verify the initial and final conditions of it.
5. Implement the series RC circuit and verify the initial and final conditions of it.
6. Build and verify series resonance circuit.
7. Build and verify parallel resonance circuit.
8. Verify Z parameters for unknown circuit.
9. Verify Y parameters for unknown circuit.

10. Verify H parameters for unknown circuit.
11. Verify ABCD parameters for unknown circuit.
12. Design and implement prototype Low pass filter and verify its bandwidth.
13. Design and implement prototype High pass filter and verify its bandwidth.
14. Design and implement prototype Band pass filter and verify its bandwidth.
15. Design and implement prototype Band stop filter and verify its bandwidth.
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. D. Roy Choudhury, 'Network and Systems', New Age International Publishers, Second Edition.
Reference Books:
1. Franklin F. Kuo, 'Network Analysis and Synthesis', John Wiley & Sons (Second Edition)
2. M. E. Van Valkenburg, 'Network Analysis', PHI (3rd Edition)
3. John D. Ryder, 'Networks, Lines and Fields', PHI Learning Pvt. Ltd., Second Edition

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B. Tech. Sem. III: Electronics & Telecommunication Engineering **SUBJECT: - DATABASE MANAGEMENT SYSTEMS**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 03	End Semester Examination: 60 Marks	Credits: 03
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW: 25 Marks	Credit: 01
		Total Credits: 04

Course Pre-requisites:	
	Python Programming

Course Objectives:	
1	To provide a strong formal foundation in database concepts, technology, and practice
2	To give systematic database design approaches covering conceptual design, logical design, and an overview of physical design
3	To have good understanding of different type of databases.
4	To learn a powerful, flexible, and scalable general-purpose database to handle big data

Course Outcomes: After learning this course students will be able to	
1	Design E-R Model for given requirements and convert the same into database tables.
2	Apply BCNF Algorithm for Decomposition

3	Use SQL for query processing.	
4	Use algorithms to solve scheduling conflict	
5	Apply Concurrency algorithm in distributed database	
6	Use NOSQL in database creation.	
UNIT – I	**Introduction to Databases**	**(06 Hours)**
	Introduction to Database Management Systems, Purpose of Database Systems, Database-System Applications, View of Data, Database Languages, Database System Structure, Data Models, Database Design and ER Model: Entity, Attributes, Relationships, Constraints, Keys, Design Process, Entity Relationship Model, ER Diagram, Design Issues, Extended E-R Features, converting E-R & EER diagram into tables, Introduction to normalization.	
UNIT – II	**Relational Database Design**	**(06 Hours)**
	Relational Model: Basic concepts, Attributes and Domains, CODD's Rules, Relational Integrity: Domain, Referential Integrities, Enterprise Constraints, Database Design: Features of Good Relational Designs, Normalization, Atomic Domains and First Normal Form, Decomposition using Functional Dependencies, Algorithms for Decomposition, 2NF, 3NF, BCNF, Modeling Temporal Data	
UNIT - III	**SQL AND PL/SQL**	
	SQL: Characteristics and advantages, SQL Data Types and Literals, DDL, DML, DCL, TCL, SQL Operators, Tables: Creating, Modifying, Deleting, Views: Creating, Dropping, Updating using Views, Indexes, SQL DML Queries: SELECT Query and clauses, Set Operations, Predicates and Joins, Set membership, Tuple Variables, Set comparison, Ordering of Tuples, Aggregate Functions, Nested Queries, Database Modification using SQL Insert, Update and Delete Queries. PL/SQL: concept of Stored Procedures & Functions, Cursors, Triggers, Assertions, roles and privileges, Embedded SQL, Dynamic SQL.	**(06 Hours)**

UNIT -IV	**Database Transactions and Query Processing**	**(06 Hours)**
	Basic concept of a Transaction, Transaction Management, Properties of Transactions, Concept of Schedule, Serial Schedule, Serializability: Conflict and View, Cascaded Aborts, Recoverable and Non-recoverable Schedules, Concurrency Control: Need, Locking Methods, Deadlocks, Timestamping Methods, Recovery methods: Shadow-Paging and Log-Based Recovery, Checkpoints, Query Processing, Query Optimization, Performance Tuning	
UNIT -V	**Parallel and Distributed Databases**	**(06 Hours)**
	Introduction to Database Architectures: Multi-user DBMS Architectures, Case study- Oracle Architecture. Parallel Databases: Speedup and Scale up, Architectures of Parallel Databases. Distributed Databases: Architecture of Distributed Databases, Distributed Database Design, Distributed Data Storage, Distributed Transaction: Basics, Failure modes, Commit Protocols, Concurrency Control in Distributed Database. Cloud database examples.	
UNIT -VI	NoSQL Database	**(06 Hours)**
	Introduction to NoSQL Database, Types, and examples of NoSQL Database- Key value store, document store, graph, Performance, Structured verses unstructured data, Distributed Database Model, CAP theorem and BASE Properties, Comparative study of SQL and NoSQL, NoSQL Data Models, Case Study- unstructured data from social media. Introduction to Big Data, HADOOP: HDFS, MapReduce. JSON	
List of Experiments:		
1. Write a query to display all the columns from salesman table. First create a Salesman table.		
2. Design and Develop SQL DDL statements which demonstrate the use of SQL objects such as Table, View, Index, Sequence, Synonym		
3. Design at least 10 SQL queries for suitable database application using SQL DML statements: Insert, Select, Update, Delete with operators, functions, and set operator.		

4. Design at least 10 SQL queries for suitable database application using SQL DML statements: all types of Join, Sub-Query and View.

5. Unnamed PL/SQL code block: Use of Control structure and Exception handling is mandatory.

Write a PL/SQL block of code for the following requirements: -

1. Schema:

1.Borrower(Rollin, Name, Date of Issue, NameofBook, Status)

2. Fine(Roll.no,Date,Amt)

- Accept roll.no & name of book from user.
- Check the number of days (from date of issue), if days are between 15 to 30 then fine amount will be Rs 5per day.
- If no. of days>30, per day fine will be Rs 50 per day & for days less than 30, Rs. 5 perday.
- After submitting the book, status will change from I to R.
- If condition of fine is true, then details will be stored into fine table.

Frame the problem statement for writing PL/SQL block in line with above statement.

6. Cursors: (All types: Implicit, Explicit, Cursor FOR Loop, Parameterized Cursor) Write a PL/SQL block of code using parameterized Cursor, that will merge the data available in the newly created table Rollcall with the data available in the table Rollcall. If the data in the first table already exist in the second table, then that data should be skipped. **Frame the separate problem statement for writing PL/SQL block to implement all types of Cursors in line with above statement. The problem statement should clearly state the requirements.**

7. PL/SQL Stored Procedure and Stored Function. Write a Stored Procedure namely proc_Grade for the categorization of student. If marks scored by students in examination is <=1500 and marks>=990 then student will be placed in distinction category if marks scored are between 989 and900 category is first class, if marks 899 and 825 category is Higher Second Class Write a PL/SQL block for using procedure created with above requirement. Stud_Marks(name, total_marks) Result (Roll,Name, Class) Frame the separate problem statement for writing PL/SQL Stored Procedure and function, inline with above statement. The problem statement should clearly state the requirements

8. PL/SQL Stored Procedure and Stored Function. Write a Stored Procedure namely proc_Grade for the categorization of student. If marks scored by students in examination is <=1500 and marks>=990 then student will be placed in distinction category if marks scored are between 989 and900 category is first class, if marks 899 and 825 category is Higher Second Class Write a PL/SQL block for using procedure created with above requirement. Stud Marks (name, total marks) Result (Roll, Name, Class) Frame the separate problem

statement for writing PL/SQL Stored Procedure and function, in line with above statement. The problem statement should clearly state the requirements
9. Write a program to implement Mogo DB database connectivity with python Implement Database navigation operations (add, delete, edit etc.) using ODBC/JDBC.
10. Implement MYSQL/Oracle database connectivity with python Implement Database navigation operations (add, delete, edit,) using ODBC/JDBC
11. **Mini Project:**
Topics for projets based learning*
1.Library Management System An online library management system offers a user-friendly way of issuing books and viewing different books and titles available under a category. This type of Management Information System (MIS) can be easily developed. And SQL queries enable quick retrieval of the required information.
2. Centralized College Database A college has academic departments, such as the Department of English, Department of Mathematics, Department of History, and so on. And each department offers a variety of courses. Now, an instructor can teach more than one course. Let's say a professor takes a class on Statistics and on Calculus.
3. Student Database Management Similarly, you can do a student record-keeping project. The database would contain general student information (such as name, address, contact information, admission year, courses, etc.), attendance file, marks or result file, fee file, scholarship file, etc. An automated student database streamlines the university administration process to a considerable degree.
4. Online Retail Application Database As e-commerce experiences remarkable growth around the world, online retail application databases are among the most popular SQL project ideas.
5.Inventory Control Management Inventory control is the process of ensuring that a business maintains an adequate stock of materials and products to meet customer

demands without delay
6. Hospital Management System It is a web-based system or software that enables you to manage the functioning of a hospital or any other medical setup. It creates a systematic and standardized record of patients, doctors, and rooms, which can be controlled only by the administrator.
7. Railway System Database In this database system, you need to model different train stations, railway tracks between connecting stations, the train details (a unique number for each train), rail routes and schedule of the trains, and passenger booking information.
8. Payroll Management System It is one of the most preferred SQL database project ideas due to its extensive usage across industries. An organization's salary management system calculates the monthly pay, taxes, and social security of its employees.
9. An SMS-based Remote Server Monitoring System Such systems are particularly beneficial for large corporate organizations having massive data centers and multiple servers. Since these servers host many applications, it becomes tricky to monitor their functionality. Usually, when a server is down or has crashed, the clients inform the organization about it.
10. Blood Donation Database This database would store interrelated data on patients, blood donors, and blood banks.
11. Art Gallery Management Database If you are running an art store, you can also organize and manage all your customer information, including names, addresses, the amount spent, liking and interests.
12. Cooking Recipe Portal This is another application of SQL databases in the creative field. You can model a web portal where a stored procedure will display your cooking recipes under different categories.

13. Carbon Emissions Calculator

Lately, environmental conservation has been receiving a lot of attention globally. You can also contribute to the cause by developing a web application that measures the carbon footprint of buildings.

14. A Voice-based Transport Enquiry System

This innovative tool helps you save time while travelling. You would have noticed long queues outside the transport controller's office at public transport terminals. This is where commuters make inquiries about the different types of transport facilities available. In this scenario, technology-enabled transport enquiry systems can result in huge savings of time and effort. You can develop an automated system for bus stands, railway stations, and airports that can receive voice commands and answer in a voice-based format.

15. Pharmacy Management System

Pharmacy Management System is the process of ensuring that a business maintains an adequate stock of medicines and tablets to meet customer demands without delay

*Students in a group of 3 to 4 shall complete any one project from the above list

Text Books:

1. Silberschatz A., Korth H., Sudarshan S., "Database System Concepts", McGraw Hill Publishers, ISBN 0-07-120413-X, 6th edition
2. Connally T, Begg C., "Database Systems", Pearson Education, ISBN 81-7808-861-4
3. Pramod J. Sadalage and Martin Fowler, "NoSQL Distilled", Addison Wesley, ISBN10: 0321826620, ISBN-13: 978-0321826626

Reference Books:

1. C J Date, "An Introduction to Database Systems", Addison-Wesley, ISBN: 0201144719
2. S.K.Singh, "Database Systems : Concepts, Design and Application", Pearson, Education, ISBN 978-81-317-6092-5
3. Kristina Chodorow, Michael Dirolf, "MangoDB: The Definitive Guide",O'Reilly Publications, ISBN: 978-1-449-34468-9.
4. Adam Fowler, "NoSQL For Dummies", John Wiley & Sons, ISBN-1118905628
5. Kevin Roebuck, "Storing and Managing Big Data - NoSQL, HADOOP and More", Emereopty Limited, ISBN: 1743045743, 9781743045749
6. Joy A. Kreibich, "Using SQLite", O'REILLY, ISBN: 13:978-93-5110-934-1
7. Garrett Grolemund, "Hands-on Programming with R", O'REILLY, ISBN : 13:978-93- 5110-728-6

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B. Tech. Sem. III: Electronics & Telecommunication Engineering **SUBJECT: EDA TOOL PRACTICES**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 00	End Semester Examination: 00	Credits: 00
Practical: 02	Internal Assessment: 00	
Tutorial: 00	TW: 50 Marks	Credit: 01
		Total Credit: 01

Course Pre-requisites:	
	Elementary Electronics, Electrical Technology.
Course Objectives:	
1	To introduce the students to transient analysis of electronic circuits using simulation software (EDA tool)
2	To teach the students to carry out AC analysis of amplifiers using simulation software (EDA tool)
3	To introduce the students to simulation tools for basic analog electronic circuits
4	To introduce the students to simulation tools for basic digital electronic circuits
5	To teach the students to use virtual instruments in an EDA tool
6	To train the students to troubleshoot basic circuits with an EDA tool
Course Outcomes: After learning this course students will be able to	
1	Perform Transient Analysis of simple circuits using EDA tool.
2	Perform AC Analysis of simple circuits using EDA tool.

3	Use an EDA tool for simulating basic analog electronic circuits.
4	Use an EDA tool for simulating basic digital electronic circuits.
5	Use virtual instruments in an EDA tool for analyzing and testing basic electrical and electronic circuits.
6	Use EDA tool for troubleshooting basic circuits.

List of experiments:

1. Study of an EDA tool, concept of simulation, different types of analyses, simulation errors
2. Study and use virtual instruments, signal, and power sources
3. Verify Basic circuit laws and theorems using MULTISIM
4. Construct diode circuits and simulate the same
5. Construct and analyze BJT biasing circuits
6. Construct single stage CE amplifier circuit and carry out transient and AC analysis
7. Implement Boolean equations and implement the same using basic logic gates
8. Implement circuits with multiplexers and decoders
9. Troubleshooting a given circuit using EDA tool

Reference Books:

4. Circuit Analysis with Multisim, David Báez-López Félix E. Guerrero-Castro, Morgan & Claypool Publishers.
5. Advanced Circuit Simulation Using Multisim Workbench, David Báez-López Félix E. Guerrero-Castro, Morgan & Claypool Publishers

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B. Tech. Sem. III: Electronics & Telecommunication Engineering
SUBJECT: - PCB DESIGN AND SOLDERING

TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 00	End Semester Examination: 00	Credits: 00
Practical: 04	Internal Assessment: 00	
Tutorial: 00	TW & OR: 50 Marks	Credit:02
		Total Credit: 02

Course Pre-requisites:

	Elementary Electronics

Course Objectives:

1	To introduce the basic building blocks for PCB artwork design
2	To train the student to create simple PCB artwork design using an PCB design tool
3	To expose the students to soldering process and tools
4	To train the students to make reliable solder joints
5	To train the students to de-solder the solder joints
6	To teach the art of inspecting solder joints

Course Outcomes: After learning this course students will be able to

1	Demonstrate the knowledge of selecting proper PCB primitives (track width, pad size, hole size, clearance between pads and tracks,

	footprints)
2	Use PCB design software for simple single sided PCB artwork design
3	Identify and select appropriate soldering tools for the soldering job
4	Use solder iron for soldering through hole components
5	Use solder iron and de-solder pump /wick for de-soldering through hole components
6	Perform electrical (continuity) and visual inspection for solder joints

List of experiments:

1. Design a simple (only discrete components) single sided PCB using PCB design software (PCB artwork design flow)
2. Design a single sided PCB using PCB design software for a circuit with IC components
3. Design a double-sided PCB using PCB design software
4. Study and use of tools like solder iron (types and temperature profile), wire-strippers, cutters
5. Study of solder alloys, flux and rosin
6. Solder basic electronic components like resistors, capacitors, IC bases (through hole)
7. Use de-solder pump/wick for de-soldering components
8. Carry out electrical continuity test and visual inspection for a soldered board

Reference Books:

1. Getting Started with Soldering: A Hands-On Guide to Making Electrical and Mechanical Connections, Marc de Vinck, Maker Media, Inc, 2017
2. Soldering in electronics assembly, MIKE JUDD, Keith Brindley, Newnes,1999

3. Printed Circuits Handbook, Clyde F. Coombs, Jr.,McGraw-Hill, 2008
4. User Manual for the selected PCB Design Software
5. Getting Started with Soldering: A Hands-On Guide to Making Electrical and Mechanical Connections, Marc de Vinck, Maker Media, Inc, 2017

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B. Tech. Sem. III: Electronics & Telecommunication Engineering **SUBJECT: - NETWORKING**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 00	End Semester Examination: 00	Credits: 00
Practical: 00	Internal Assessment: 00	
Tutorial: 00	TW & OR: 50 Marks	Credit: 02
		Total Credit: 02

Course Pre-requisites:	
The Students should have knowledge of	
1.	Understanding of personal computers and operating systems

Course Objectives:	
1	To explain the fundamental concepts of networking
2	To educate with the architecture, protocols, and networking
3	To update the trends in innovation approach towards development of high-speed networks
4	To analyze the challenges involved in developing TCP/IP suite
5	To compare wired and wireless real networks
6	To explain network security system

Course Outcomes: After learning this course students will be able to	
1	Design, install, and troubleshoot networks

2	Identify the protocol in networking
3	Analyze the required technical competencies for traffic management to embark on growing career as Network Engineer/ Network Administrator
4	Demonstrate the knowledge of TCP and its application scenarios
5	Compare different constraints in wired and wireless domain
6	Identify the systems, protocols, and mechanisms to support network security

UNIT – I	**Network& Service**	
	Approaches to Network design, Network topologies and design constraints, Transmission media – unguided and guided, OSI Reference Model; TCP/ IP protocol suite, Application Layer Protocols and TCP/IP. Peer-to-peer protocols, Service Models, ARQ Protocols and reliable data transfer service, sliding Window Flow Control.	
UNIT – II	**Medium Access Control Protocol**	
	Multiple access communication, Random access scheduling approaches to medium access control, Delay performance of MAC and channelization schemes, LAN Access methods, Introduction to LAN, MAN, WAN Standards, FDDI, WLAN, Hubs, Bridges and Switches Ethernet networking.	
UNIT - III	**Packet Switching Networks**	
	Network Services and Internal Network Operation, Packet Network Topology, Routing in packet Networks, shortest path Algorithms, and Introduction to traffic management & QoS.	

UNIT -IV	**TCP/IP Architecture**	
	Medium Access control (MAC) sub layer: MAC protocols: ALOHA, Slotted ALOHA, The Internet Protocol, IP addressing and subnetting, Limitations of IPv4 and Introduction to IPv6, User Datagram protocol, Transmission Control Protocol, Introduction to Internet Routing Protocols.	
UNIT -V	**Wireless Routing Protocols and Wired Connectivity**	
	Introduction to radio transmissions, Packet radio Routing Internet based mobile ad-hoc networking, communication strategies, routing algorithms Destination sequenced Distance Vector (DSDV), Dynamic source Routing (DSR),Ad-hoc On demand Distance Vector(AODV) &Temporarily Ordered Routing algorithm (TORA), Quality of service. Introduction to optical network, SONET / SDH, Broadcast and select WDM Networks	
UNIT -VI	**Network Security &Software Defined Networks**	
	Introduction to security, Security approaches, Principles of security, Types of Security attacks, Cryptography: plain text and cipher text, substitution techniques, encryption, and decryption, Software Defined Network: Comparison between SDN and traditional networks, SDN controller, Switch design, Switch Protocols, Control Overhead & Handoff algorithms.	
List of Experiments:		
1. Connecting two or more computers using RJ45		

2. Implementation of bus topology in MATLAB/ NS-2.
3. Implementation of star topology in MATLAB/ NS-2.
4. Simulation of sliding window protocolsMATLAB/ NS-2.
5. Describe functions of OSI layers and its architecture.
6. Explain TCP / IP protocol suite.
7. Explain cryptography, symmetric-key algorithms.
8. Simulation of basic optical network using Optisystem.
Text Books:
1. Computer Networks - Andrew S Tanenbaum, 4th Edition, Pearson Education
2. Data Communications and Networking - Behrouz A. Forouzan, Fifth Edition TMH, 2013
3. William Stallings, High speed Networks TCP/IP & ATM Design Principles, PH, NY
Reference Books:
1. Computer Networking: A Top-Down Approach Featuring the Internet, James F. Kurose, K. W. Ross, 3rd Edition, Pearson Education
2. Rottinghous, John W., and James F. Ransome, Cloud Computing: Implementation, Management and Security, CRC Press, 2017.

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B. Tech. Sem. IV: Electronics & Telecommunication Engineering **SUBJECT: - CONTROL SYSTEMS AND APPLICATIONS**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits: 04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW: 25 Marks	Credit: 01
		Total Credit: 05

Course Pre-requisites:

The Students should have knowledge of

1.	Basic knowledge of signals.
2.	Basic mathematical tools like Laplace transform
3.	Basic knowledge of software like MATLAB

Course Objectives:

- To provide in depth knowledge of the various types of control systems and determination of transfer function using different methods.
- To analyze the first order and second order system in time domain.
- To introduce the concept of different types of controllers and compensators.
- To analyze the control system in frequency domain.

	• To analyze the digital control systems in time domain. • To provide state variable analysis.	
Course Outcomes: After learning this course students will be able to		
1	Identify various control systems and determine the 'Transfer Function' of a system using block diagram reduction technique and signal flow graph.	
2	Determine the time response for different system, the errors in various control systems; evaluate the stability of a system using Routh's Stability Criterion and analysis graphical technique such as root locus.	
3	Demonstrate the knowledge of control actions such as Proportional (P), Integral (I), Derivative (D), PI, PID and compensators.	
4	Determine frequency response and different graphical methods like Bode plot and polar plot.	
5	Calculate the time response for digital control systems and design digital control system.	
6	Implement the state variables for state variable model for linear as well as digital control systems.	
UNIT – I	**Introduction to Control System**	**(08 Hours)**
	Introduction to analog as well as digital control system, Classification of Control System, control problem, Feedback and Non-feedback Systems, Transfer Function, Block diagram and signal flow graph analysis, Pulse transfer function, Sampled Signal Flow Graph.	
UNIT – II	**Time Domain Analysis**	**(08 Hours)**
	Time response of first order & second order system using standard test signal, steady state errors	

	and error constants, Root locus techniques- Basic concept, rules of root locus, application of root locus techniques for control system, Hurwitz and Routh stability criteria.	
UNIT - III	**Controllers and Compensators**	**(08 Hours)**
	Effect of Poles and Zeros on the System Stability, Types of Compensators, Lead, Lag, Lead-Lag Compensators design, Control actions – On/Off, P, PI, PD, PID. PLC Architecture, Introduction to Ladder Diagram, Examples of ladder diagram.	
UNIT -IV	**Frequency Domain Analysis**	**(08 Hours)**
	Relationship between time & frequency response, Polar plots, Bode plot, stability in frequency domain, Nyquist stability criterion.	
UNIT -V	**Digital control systems**	**(08 Hours)**
	Time Response of discrete time systems: Time response specifications, Steady state error, error constants, time response for 1st order and 2nd order systems. Design of sampled data control system: Root locus technique, Bode plot, Nyquist stability criteria, lead compensator design using Bode plot, lead compensator design using Bode plot, lead compensator design using Bode plot.	
UNIT -VI	**State variable analysis**	**(08 Hours)**
	State variable representation-Conversion of state variable models to transfer functions-Conversion of transfer functions to state variable models-Solution of state equations-Concepts of	

	Controllability and Observability-Stability of linear systems-Equivalence between transfer functionand state variable representations-State variable analysis of digital control system-Digitalcontroldesign using state feedback.	

Term Work: Any 8 of below given list
1. Unit Step and Impulse response of the Transfer function using MATLAB.
2. Transient response of second order system using MATLAB
3. To draw Root Locus theoretically (analog and digital) and verify it using MATLAB.
4. To draw Bode plot theoretically (analog and digital) and verify it using MATLAB.
5. Magnitude and phase plot of Lead network (analog and digital).
6. Magnitude and phase plot of Lag network (analog and digital).
7. To study architecture of PLC.
8. Ladder diagram example using Virtual Lab
9. Implementation of DOL Starter Virtual Lab
10. Implementation of On-Delay Timer Virtual Lab
11. Implementation of Off-Delay Timer Virtual Lab
12. Implementation of Up-Down Counter Virtual Lab
13. Implementation of PLC Arithmetic Instructions Virtual Lab
14. Implementation of PID Controller Virtual Lab

Topics for projets based learning*
1. Maintaining constant speed (cruise control) and constant temperature (climate control) and maintaining pressure
2. Engine control, steering control, suspension control
3. Control skidding (antiskid system)
4. Automatic warehousing
5. Inventory control
6. Automation of farming
7. Commercial rail transportation
8. Biomedical CS
9. Design and Experimentation of Cable-Driven Platform Stabilization and Control Systems
10. Minimization of Energy Consumption in Underfloor Heating Systems
11. Automatic Water Pump Controller
12. Design, Analysis and Testing of a Flapping Wing Miniature Air Vehicle
13. Design Cognitive mobile robot model
14. PLC Based Performance Analysis Of Range Sensors For A Real-Time Power Plant Coal Level Sensing System.
15. Mine Water Level Fuzzy Control System Design Based On PLC.
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. I.J. Nagrath, M.Gopal “Control Systems Engineering”, 5th Edition, New Age International Publication
2. Schaum’s Series book “Feedback Control Systems”.
3. Les Fenical “Control Systems”, 1st Edition, Cengage Learning India.
4. R. Anandanatarajan, P. Ramesh Babu, “Control Systems Engineering”, Scitech Publications
Reference Books:
1. Norman S. Nise “Control Systems Engineering”, 4th edition, Wiley edition.
2. Samarjeet Ghosh, “Control Systems Theory & Applications”, 1st edition, Pearsoneducation.
3. S.K. Bhattacharya, “Control Systems Engineering”, 1st edition, Pearson education.

4. Hackworth, “Programmable Logic Controller”, 1st edition, Pearson education.

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B. Tech. Sem. IV: Electronics & Telecommunication Engineering **SUBJECT: - INTEGRATED CIRCUITS AND APPLICATION**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits: 04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial:00	TW & PR: 50 Marks	Credit: 01
		Total Credit: 5

Course Pre-requisites:	
	SDC-I, SDC-2, Electronics Network Theory

Course Objectives:	
1.	To introduce the OPAMP and its internal building blocks
2.	To provide the basics of analysis and design of linear and nonlinear applications of Op-Amp
3.	To introduce the students to design of active filters
4.	To introduce the students to analysis and design of OPAMP based waveform generators
5.	To introduce the Timer IC 555 and its applications
6.	To introduce PLL, Three terminal voltage regulators and ADC/DAC and their applications

Course Outcomes: After learning this course students will be able to	
1	Visualize the internal blocks of a typical OPAMP IC and interpret the OPAMP parameters
2	Analyze and design linear and nonlinear applications of OP-AMP.

3	Analyze and design first and second order active filters using OP-AMP..	
4	Analyze and design Waveform Generators using OP-AMP.	
5	Design of multivibrators using Timer IC 555	
6	Demonstrate knowledge of Phase Locked Loop IC 565 and its application and design linear power supply using three terminal voltage regulators, classify ADC and DAC devices	
UNIT – I	**OPAMP Internals**	**(08 Hours)**
	Amplifier types (voltage, current, transconductance, trans resistance), Limitations of CE amplifiers, Block diagram of OPAMP, Differential amplifier with and without constant current tail (review), Level Shifter, Complementary Symmetry Output power amplifier, Frequency compensation, Ideal and practical characteristics of OPAMP, Parameters of practical OPAMP, Offset voltage balancing.	
UNIT – II	**Linear Applications of OPAMP-I**	**(08 Hours)**
	DC and AC inverting amplifier, DC and AC Non-Inverting Amplifier, DC and AC Voltage Follower circuit, Summing Amplifier, Difference Amplifier, Instrumentation Amplifier, I-V and V-I converters	
UNIT - III	**Linear Applications of OPAMP-II**	**(08 Hours)**
	Integrator, Differentiator, Active Filters, Log, and anti-log amplifiers	
UNIT -IV	**Non-Linear Applications of OPAMP**	**(08 Hours)**
	Comparator and Schmitt Trigger circuit, Window detector, Precision rectifiers, Peak detector,	

	Sample and Hold circuit	
UNIT -V	**Waveform Generators**	**(08 Hours)**
	Positive Feedback and Barkhausen criteria, Wein bridge oscillator, RC Phase shift oscillator, Colpitts oscillator, Hartley oscillator, square wave generator, Triangular wave generator, IC 555 astable and monostable circuits	
UNIT -VI	**Voltage Regulators, PLL and Mixed Signal Circuits**	**(08 Hours)**
	Three terminal IC voltage regulators, Voltage Controlled Oscillator and Phase Locked Loop, Parameters of DAC, Digital-to-Analog Converters (Binary weighted, R-2R ladder network type), Analog to Digital Converters (Flash, Successive Approximation, Integrating) Parameters of ADC, Introduction to sigma-delta ADC.	

List of experiments:

1. Design, build and test DC inverting, non-inverting, and voltage follower circuits
2. Design, build and test AC inverting, non-inverting and voltage follower circuits, plot frequency response
3. Design, build and test inverting, non-inverting summing amplifier circuits
4. Design, build and test integrator circuit and plot frequency response
5. Design, build and test differentiator circuit and plot frequency response
6. Design, build and test 1st order active LPF and HPF and plot frequency responses
7. Design, build and test Wein bridge oscillator
8. Design, build and test RC phase shift oscillator
9. Design, build and test astable multivibrator using IC555

10. Measure line and load regulation of three terminal regulator
Topics for projets based learning*
1.Audio Mixer
2. Stereo Pre-amplifier
3. Graphic Equalizer
4. Burglar alarm
5. Tachometer
6. Universal Battery charger
7. Function Generator
8. Fixed voltage regulated power supply
9. Variable output voltage regulated power supply
10. Dual polarity regulated power supply
11. Electronic stethoscope
12. Digitally selectable precision attenuator
13. Bridge amplifier for stereo
14. Bar graph battery voltage indicator
15. Touch sensitive switch
*Students in a group of 3 to 4 shall complete any one project from the above list
Textbooks:
1. Operational Amplifiers and Linear ICs, David A. Bell, 3rd Edition,2008, ISBN:0195696131, 9780195696131, Oxford University Press
2. Design with Operational Amplifiers and Analog Integrated Circuits, Sergio Franco, 4th Edition, McGraw-Hill

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B. Tech. Sem. IV: Electronics & Telecommunication Engineering **SUBJECT: - ELECTROMAGNETICS AND TRANSMISSION LINE**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 03	End Semester Examination: 60 Marks	Credits: 03
Practical: 00	Internal Assessment: 40 Marks	
Tutorial: 01		Credits:01
		Total Credit: 04

Course Pre-requisites:	
	Fundamentals of Vector Analysis and Mathematical Calculus
Course Objectives:	
	• To analyze basic Electrostatic laws such as Coulomb's law and Gauss law • To compute boundary conditions with electrostatic parameters • To analyze basic Magnetostatic laws such as Biot-Savart's Law and Ampere's Law • To evaluate Maxwell's equation • To demonstrate wave propagation through different media • To examine transmission Line and impedance matching techniques
Course Outcomes: After learning this course students will be able to	
1	Analyze electric field in different field distributions

2	Identify the Electrostatic parameters	
3	Analyze magnetostatic field in different field distributions	
4	Evaluate time varying Electric and Magnetic Fields	
5	Characterize wave equation	
6	Compute Transmission Line and its applications	
UNIT – I	**Electrostatic-I**	**(06 Hours)**
	Coulomb's law, Electrostatic Field Intensity, Calculation of Electric field for: infinite line, surface, volume charge distribution, Electric flux density, Concept of Divergence, Gauss Law, Application of Gauss's law for: point, infinite line, infinite sheet, uniformly charged sphere.	
UNIT – II	**Electrostatic-II**	**(06 Hours)**
	Electric Potential, Relation between Electric Field and Potential, Energy Density, Resistance, Capacitance, Boundary Condition	
UNIT - III	**Magnetostatics**	**(06 Hours)**
	Biot-Savart's Law, Application of Biot-Savart's Law, Stoke's Theorem, Ampere's Law, Application of Ampere's Law, Forces due to Magnetic Field, Boundary Conditions, Inductor, and Inductance. Standard inductance configurations: Toroid, Solenoid. Materials in magnetic fields.	

UNIT -IV	**Time Varying Fields and Maxwell's Equation**	**(06 Hours)**
	Faraday's Law, Transformer and Motional Electromotive Forces, Displacement Current, Maxwell's Equation in both differential form and integral form.	
UNIT -V	**Wave Propagation/ Uniform Plane Wave**	**(06 Hours)**
	Wave Propagation in Lossy Dielectrics, Plane Waves in Lossless Dielectrics, Plane Waves in Free Space, Plane Waves in Good Conductors, Power and Poynting Vector, Reflection of a Plane Wave at Normal Incidence.	
UNIT -VI	**Transmission Lines and Impedance Matching Techniques**	**(06 Hours)**
	Transmission Line Parameters, Transmission Line Equations, Input Impedance, Standing Wave Ratio and Power, Smith Chart, Stub Matching Technique, QWT, Single Stub Matching, Double Stub Matching, EMC-EMI, Types of EMC.	

List of Tutorials:

1. Application of Stoke's theorem.
2. Application of Gauss's law
3. Energy stored in capacitor.
4. Application of Poission's and Laplace's equations.
5. Boundary conditions for magnetic fields.
6. Poynting theorem and their applications.

7. Applications of Smith Chart.
8. Simulation on Electromagnetic Interference and Compatibility
Topics for projets based learning*
1.Design Electrostatic Speakers using the concept of Electrostatic Forces and Energy
2. Study the Faraday Cage
3. Build Lightning Rod
4. Study and survey on Xerography – Electrostatic Imaging
5. Design any Electrostatic Filters
6. Design a gauge that is sensitive to the fluid level in the capacitive gauge.
7. Calculate characteristic impedance and propagation speed of a coaxial cable based on measured dimensions
8. Design a metal detecting device based on mutual inductance
9. Design a non-contact probe that can detect the presence and polarity of a static (or slowly varying) electric field in air
10. Design a non-contact AC current meter
11. Study and survey on Heart Defibrillators
12. Study and survey on Hard Disk Reading and writing process
13. Design Metal detectors
14. Study and survey on Magnetic Resonance Imaging (MRI)
15. Design Magnetic Brakes
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1.Matthew N. O. Sadiku, “Principles of Electromagnetics”, 4th Edition, Oxford University Press.
Reference Books:
1. John D. Kraus “Electromagnetic”, McGraw Hill.
2. William Hyte “Electromagnetic Engineering”, McGraw Hill
3. Edminister J.A, Electromagnetics, Tata McGraw-Hill.

4. R.K Shevgaonkar, Electromagnetic waves,Tata McGraw-Hill.
5. S Salivahanan& S Karthie, “electromagnetic Field Theory” Vikas Publishing House Ltd.

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B. Tech. Sem. IV: Electronics & Telecommunication Engineering **SUBJECT: - ANALOG COMMUNICATION**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 04	End Semester Examination: 60 Marks	Credits: 04
Practical: 02	Internal Assessment: 40 Marks	
Tutorial:00	TW & OR: 50 Marks	Credit: 01
		Total Credit: 5

Course Pre-requisites:	
	Signals and Linear Systems.

Course Objectives:	
1.	To introduce essential components of communication system.
2.	To teach the students DSB-FC modulation and demodulation and its mathematical background
3.	To teach the students DSB-SC & SSB modulation and demodulation and its mathematical background
4.	To teach the students frequency modulation and demodulation and its mathematical background
5.	To introduce the students working of radio receivers.
6.	To introduce the studentsanalog to digital conversion technique in communication system

Course Outcomes: After learning this course students will be able to	
1	Identify the basic components and effect of noise on communication system
2	Demonstrate the knowledge of DSB-FC modulation and demodulation and its mathematical background

3	Demonstrate the knowledge of DSB-SC & SSB modulation and demodulation and its mathematical background	
4	Demonstrate the knowledge of frequency modulation and demodulation and its mathematical background	
5	Identify components of communication receiver system.	
6	Demonstrate the knowledge of Pulse Modulation technique	
UNIT – I	**Principles of Communication Systems**	**(08 Hours)**
	Review of signals and systems, Frequency domain of signals, Block schematic of communication system, base band signals, RF bands, Necessity of modulation, Types ofchannels, Noise types - Internal & External, Noise Calculations, Signal to Noise ratio, Noise figure, Noise Temperature	
UNIT – II	**Amplitude Modulation-I**	**(08 Hours)**
	Amplitude Modulation principles, Representation of AM, Frequency spectrum & BW, Modulation index, % modulation, Power relations in AM, Trapezoidal patterns-, high- and low-level AM transmitters, DSB-FC Generation-linear and non-linear modulator, Linear modulators-low- and high-level linear modulators, Non-linear modulators- square law modulator and switching modulator, DSB-FC Demodulation- square law detector and envelope/diode detector.	
UNIT - III	**Amplitude Modulation-II**	**(08 Hours)**
	DSB-SC Principles, DSB-SC Generation Methods: Multiplier modulator, linear modulator, non-linear modulator and switching modulator, DSB-SC Demodulation-synchronous and coherent detection, SSB Principles, SSB Generation Methods: Filter method, phase shift method &the	

	third method,SSB Demodulation, Comparison of AM,DSB-SC and SSB, Independent sideband system (ISB), Vestigial sideband (VSB).	
UNIT -IV	**Frequency Modulation**	**(08 Hours)**
	Angle Modulation, Principles, mathematical analysis of FM, frequency deviation and percentage modulation, modulation index, deviation ratio, Bessel function,BW requirements, Narrow band & wide band FM, Pre-emphasis and de-emphasis, FM modulators - Direct & Indirect modulator, Direct modulator- varactor diode modulator, reactance modulator-frequency stabilized reactance modulator, Indirect modulator- Armstrong method, FM demodulators - Direct & Indirect detector, Types of direct detectors, Indirect detector-phase locked loop.	
UNIT -V	**Radio Receivers**	**(08 Hours)**
	Block diagram of AM receiver- TRF and Super heterodyne receiver,FM receiver, receiverperformance and measurement parameters: Sensitivity, Selectivity, fidelity, Image Frequency Rejection, Automatic Gain Control (AGC)- simple and delayed AGC, IF Amplifiers, Tracking- Two point and three-point tracking, Mixers-separately excited mixers and self-excited mixers.	
UNIT -VI	**Pulse Modulation**	**(08 Hours)**
	Sampling process, Sampling Theorem,Nyquist criteria, Sampling types: Natural & flat top sampling, aliasing error and aperture effect, Pulse Modulation-PAM modulator & demodulator, PWM modulator& demodulator, PPM modulator& demodulator, Comparison of PAM,PWM and	

	PPM, Multiplexing, TDM- transmitter and receiver, FDM- transmitter and receiver.	

List of experiments:

1. Write a MATLAB program for generation of AM signal
2. Write a MATLAB program for generation of DSB-SC signal
3. Write a MATLAB program for generation of FM signal
4. To perform Amplitude Modulation and Demodulation.
5. To performDSB-SC Modulation & Demodulation.
6. To performFrequency Modulation and Demodulation
7. To perform sampling and Reconstruction of a signal.
8. To performPulse Amplitude Modulation (PAM.)
9. To performPulse Width Modulation (PWM)
10. To performPulse Position Modulation (PPM)

Topics for projets based learning*

1. Survey report on types of noise and its impact on communication system
2. Survey report on types of AM modulators and demodulators
3. Build simple AM transmitter system using linear modulator
4. Build simple AM transmitter system using non-linear modulator
5. Build simple AM receiver system
6. Survey report on types of FM modulators and demodulators

7. Build simple FM transmitter system using direct modulator
8. Build simple FM transmitter system using indirect modulator
9. Build simple FM receiver system using direct demodulator
10. Build simple FM receiver system using indirect demodulator
11. Build a circuit for sampling and seconstruction of a signal.
12. Build the Pulse Amplitude Modulation circuit
13. Build the Pulse Width Modulation circuit
14. Build the Pulse Position Modulation circuit
15. Build the Pulse Position demodulation circuit
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. Electronics Communication System, George Kennedy, 4th Edition, Tata McGraw HillPublication.
2. Modern Digital and analog Communication System, B.P.Lathi, Oxford University press.
Reference Books:
1. Principles of Communication Systems,Taub&Schilling,Tata McGraw-Hill Publication.
2. Communication Systems, Simon Haykin, 4th Edition, John Wiley & Sons.
3. Electronics Communications, Dennis Roddy, John Coolen, 4th Edition- PearsonEducation.

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B. Tech. Sem. IV: Electronics & Telecommunication Engineering **SUBJECT: - DATA SCIENCE**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 03	End Semester Examination: 60 Marks	Credits: 03
Practical: 02	Internal Assessment: 40 Marks	
Tutorial: 00	TW: 25 Marks	Credits: 01
		Total Credits: 04

Course Pre-requisites:

	Python Programming and DBMS.

Course Objectives:

	• To acquire in-depth understanding of the fundamental concepts in data modeling, data analysis, statistics, machine learning techniques. • To strengthen the analytical and problem-solving skill through developing real time Use cases. • To gain practical experience in programming tools for data sciences, database systems, machine learning and Visualization tools. • To empower students with tools and techniques for handling, managing, analyzing and interpreting data.

Course Outcomes: After learning this course students will be able to

1	Develop a schema design, perform ETL operations with normalized techniques.
2	Visualize the data and detect anomalies with the help of statistical methods.
3	Implement ANOVA test, Regression & Dimensionality Reduction Techniques.

4	Model different machine learning algorithms and draw predictive outcomes.	
5	Develop an interactive and functional Dashboard using Power BI.	
6	Visualize the data using Power BI	
UNIT – I	**Fundamentals of Data Analysis using MySQL**	**(06 Hours)**
	Introduction to Data Science, DBMS approach to analytics, ER Diagram and Schema design, Normalization techniques, data cleaning and transforming – Extract, Transform & Load.	
UNIT – II	**Data Analysis and Visualization with Excel, Python**	**(06 Hours)**
	with Excel: Descriptive statistics, Outlier detection, Visualization: Box plot, Line chart, Pie chart, Bar charts, Histogram. **With Python:** Pandas and Numpy, Data modelling and transforming, dealing with null values, different data types, preparing data for the model, Visualization with Matplotlib, Seaborn.	
UNIT - III	**Advanced Statistics**	**(06 Hours)**
	Analysis of Variance (ANOVA), Regression Analysis: linear regression, multiple linear, and non-linear regression, Dimension Reduction Techniques.	
UNIT -IV	**Machine Learning-I**	**(06 Hours)**
	Introduction to Supervised and Unsupervised Learning, Clustering, Decision Trees, Random Forest, Multiple Linear Regression, Logistic Regression, Linear Discriminant Analysis	

UNIT -V	**Machine Learning-II**	**(06 Hours)**
	Time Series Forecasting: Introduction to Time Series, Correlation, Forecasting, Autoregressive models; Model Validation, Handling Unstructured Data.	
UNIT -VI	**Data visualization using Power BI**	**(06 Hours)**
	Introduction to Power BI, Basic charts and dashboard, Descriptive Statistics, Dimensions and Measures, Visual analytics: Storytelling through data, Dashboard design & principles.	

Term Work: Any 8 of below given list

1. SQL - Northwind Trader Database: Schema Design, Normalization & Cleaning.
2. Northwind Trader Database: Querying.
3. Statistics & Visualization with Excel.
4. Handling data using Python Pandas – Load (Multiple sources such as – Excel, SQL, CSV, URL), Transform.
5. Exploratory Data Analysis & Visualization using Python.
6. Machine Learning [Supervised] – Regression (Linear, Logistic & Multi-Linear.
7. Machine Learning [Supervised] – Classification (Logistic Regression, Decision Tree & Random Forest, KNN, K Mean Clustering, SVM).
8. Machine Learning [Time series] – ECG Analysis.
9. Machine Learning – Titanic Dataset Analysis (EDA)-1 .
10. Machine Learning – Titanic Dataset Analysis (Visualization & Prediction)-2.

11. Power BI – Input & Transforming Data.
12. Power BI – Creating Visuals & Reports.
13. Power BI – Dashboard.
Topics for projets based learning*
1. Design/Model a database without normalizing from scratch and create an E-R diagram as schema. Apply normalization techniques to previous created tables and perform Data Wrangling & Data Cleaning.
2. Implement an Email automation system using SQL & Python.
3. Create a Spotify Music Analysis visualization using Python pandas.
4. Create a Crypto currency Analysis visualization using Python pandas.
5. Build a Netflix like Movie recommendation model using Machine Learning.
6. Build a Song recommendation model using Machine Learning.
7. Build a Book recommendation model using Machine Learning.
8. Create a Credit Card Fraud Detection system using Machine Learning Algorithms.
9. Create a cheque clearance model using Machine Learning Algorithm.
10. Twitter Sentiment Analysis.
11. Uber Dataset Time Series Analysis.
12. Build a dynamic functional ChatBot using reddit conversations as dataset.
13. Build a Machine Learning Model with Health Care Data.
14. Create an interactive Super Store Dataset using PowerBI.
15. Create a Dashboard on Covid Vaccine Tracker using PowerBI.
*Students in a group of 3 to 4 shall complete any one project from the above list
Text Books:
1. Introduction to Machine Learning with Python: A Guide for Data Scientists by Andreas C. Mueller, Sarah Guido, O′Reilly Publication.

2. Practical Statistics for Data Scientists by Peter Bruce, Andrew Bruce, O′Reilly Publication.
3. Microsoft Power BI Quick Start Guide: Build dashboards and visualizations to make your data come to life, by Devin Knight , Brian Knight, Packt Publishing.

Reference Books:

1. Python Machine Learning By Example: The easiest way to get into machine learning, by Yuxi (Hayden) Liu, Packt Publishing.
2.Mastering Microsoft Power BI: Expert techniques for effective data analytics and business intelligence, by Brett Powell, Packt Publishing.

Bharati Vidyapeeth
(Deemed to be University)
College of Engineering, Pune

B. Tech. Sem. IV: Electronics & Telecommunication Engineering **SUBJECT: - ADVANCED COMPUTER PROGRAMMING**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 00	End Semester Examination: 00	Credits: 00
Practical: 04	Internal Assessment: 00	
Tutorial: 00	TW & OR: 50 Marks	Credit: 02
		Total Credit: 02

Course Pre-requisites:	
1.	C programming.

Course Objectives:	
	1. To introduce the basic building blocks for JAVA programming 2. To teach the concept of multithreading and exception handling. 3. To teach the lambda functions. 4. To train the student to use java script. 5. To train the student to use HTML.

Course Outcomes: After learning this course students will be able to	
1	Demonstrate the knowledge of basic programming in JAVA.
2	Implement the concept of multithreading and exception handling.

3	Use the lambda functions.
4	Implement the concept of JavaScript.
5	Implement the concept ofHTML.
6	Design webpage using JavaScript and HTML.

Term Work: Any 16 of below given list

1. Introduction to basics of JAVA and JAVA installation.
2. WAP to implement static and non-static members and their execution control flow.
3. WAP to implement wrapper class.
4. WAP to implement flow control statements, looping statements and arrays.
5. WAP to implement:
    a. Inheritance
    b. Abstraction
6. WAP to implement:
    a. Polymorphism
    b. Encapsulation
7. WAP to implement exception handling and assertions.
8. WAP to implement multithreading.
9. WAP to implement callable and future.
10. WAP to implement string handling.

11. WAP to implement IO streams.
12. WAP to implement collection Array List.
13. WAP to implement collection LinkedList.
14. WAP to implement lambda functions with predicates.
15. WAP to implement lambda functions with streams.
16. WAP to implement annotations.
17. WAP to implement the basics of HTML
18. WAP to implement the basics of java script
19. WAP to implement handling of events and errors, debugging with java scripts.
20. A mini-project to create Web Pages using HTML and JavaScript.
Text Books:
1. Programming with Java: A Primer, 3E by E Balagurusamy, Tata McGraw Hill Publishing Company.
Reference Books:
1. Java Complete Reference, Herbert Schildt, McGraw Hill Publishing Company
2. Java: How to Program by Deitel and Deitel
3. Ivan Bayross, "Web Enabled Commercial Applications Development Using HTML, DHTML, JavaScript, Perl – CGI", BPB Publication.

Bharati Vidyapeeth
(Deemed to be University)
College of Engineering, Pune

B. Tech. Sem. IV: Electronics & Telecommunication Engineering
SUBJECT: - SENSOR MODELLING AND SIMULATION LABORATORY

TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 00	End Semester Examination: 00	Credits: 00
Practical: 02	Internal Assessment: 00	
Tutorial: 00	TW & OR: 50 Marks	Credit: 01
		Total Credit: 1

Course Pre-requisites:

	signals and systems and control systems.

Course Objectives:

1.	To introduce the transducers and sensors which will help direct measurement of electronic, electrical, and communication parameters.

Course Outcomes: After learning this course students will be able to

1	Characterize the temperature sensors.
2	Simulate the performance of a bio-sensor.
3	Measurement of level in a tank using capacitive type level probe.
4	Characterize the LVDT
5	Design an orifice plate for a typical application.

6	Simulate the performance of a chemical sensor.
7	Characterize the strain gauge sensor.

List of Practicals to be performed in the laboratory

1. To learn the various static and dynamic characteristics of measurement systems.
2. Characterize the temperature sensor (RTD) on virtual lab
3. Measurement of level in a tank using capacitive type level probe on virtual lab
4. Characterize and analyze the working of the LVDT.
5. Characterize the strain gauge sensor.
6. To measure and study of Pressure indicator With Pressure Output in percentage
7. To measure and study of Flow Indicator with Flow rate, Totalizer
8. To measure and study of Level Indicator with MM, CM and percentage
9. To study Inductive rotor position sensor with four inductive coils using MATLAB
10. To study Electrothermal converter using MATLAB.
11. To study Rotary transformer for measurement of angle of rotation using MATLAB
12. To study Exponential light-emitting diode with optical power output port using MATLAB

Text Books&Reference Books:

1. H. S. Kalsi, “Digital Instrumentation”, Tata McGraw Hill
2. Clyde F. Coombs “Electronic Instrumentation Handbook” McGraw Hill
3. Cooper Helfric, “Electronic Instrumentation & Measurement Techniques”, Prentice Hall Publication

Bharati Vidyapeeth
(Deemed to be University)
College of Engineering, Pune

B. Tech. Sem. IV: Electronics & Telecommunication Engineering **SUBJECT: - Calibration and Repair of Lab Equipments**		
TEACHING SCHEME:	**EXAMINATION SCHEME:**	**CREDITS ALLOTTED:**
Theory: 00	End Semester Examination: 00	Credits: 00
Practical: 00	Internal Assessment: 00	
Tutorial: 00	TW & OR: 50 Marks	Credit: 02
		Total Credits: 2

Course Pre-requisites:	
	Fundamentals of Electrical Engineering,Basic Electronics,Digital Electronics

Course Objectives:	
	• To teach the student to use and measurement of Lab Equipment's. • To teach measurement characteristics of Lab Equipment's • To provide the basics knowledge of analysis and design of Lab Equipment's. • To train the students for troubleshoot Lab Equipment's. • To train the students for repair Lab Equipment's. • To train the students for calibrate Lab Equipment's.

Course Outcomes: After learning this course students will be able to	
1	Identity and detect fault in power supply.
2	Analyze and repair True RMS meter and DMM.
3	Analyze and repair of Energy meter

4	Identify and detect fault in Different Indicators.
5	Identify and repair different faults in function generator and Oscilloscope.
6	Measure and Repair Electrosmog Meter.

Term Work:

1. Troubleshoot and Repair of power supply.
2. Troubleshoot and Repair megger digital.
3. Troubleshoot and Repair Digital Multi-Meter.
4. Troubleshoot and Repair True RMS meter.
5. Troubleshoot and Calibrate 1 phase and 3 phase Energy meter.
6. Troubleshoot and Calibrate Pressure indicator.
7. Troubleshoot and Calibrate Flow Indicator.
8. Troubleshoot and Calibrate Level Indicator.
9. Troubleshoot and Repair function generator
10. Troubleshoot and Repair CRO and DSO
11. Troubleshoot and Repair ELECTROSMOG Meter

Text Books:

6. "Troubleshooting Electronic Equipment" by R. Khandpur
7. "How to Diagnose and Fix Everything Electronic" , Second Edition by Michael Jay Geier

Reference Books:

1. H. S. Kalsi, "Digital Instrumentation", Tata McGraw Hill

2. Clyde F. Coombs “Electronic Instrumentation Handbook” McGraw Hill
3. Cooper Helfric, “Electronic Instrumentation & Measurement Techniques”, PrenticeHall Publication

Revised Rules
Structure and contents of
Detailed Syllabus

For

Bachelor of Architecture (B. Arch) 2015 CBCS COURSE (Amended in 2018)

To be implemented from 2018-19

Bharati Vidyapeeth (Deemed to be University)
College of Architecture, Pune

Table of Contents

Rules of Structure for First To Fifth Year B. Arch

Rule No.1: Eligibility for Admission

Eligibility Criteria: Students seeking admission to First year of Bachelors Degree Course in Architecture must fulfill the eligibility criteria laid down by Council of Architecture and the University as applicable from time to time.

Rule No.2: Duration and stages of the course (as per Council of Architecture)

- The architecture course shall be of minimum duration of 5 academic years/ 10 semesters of approximately 18 working weeks each inclusive of 90 days of practical training in IX semester in a professional's office.
- The 5 years Bachelors Degree Course in Architecture shall be conducted in two stages.
- The First stage of the course shall be the first 3 academic years or 6 semesters of institutional academic studies. The First stage shall be completed within the stipulated time as prescribed by the Council of Architecture.
- The Second stage of the course shall be of 2 academic years/ 4 semesters including 90 days (15-18 weeks) of practical training.
- A candidate will be eligible to register as an architect under the Architects Act, 1972 only after successful completion of both the stages.

Rule No.3: Scheme of Assessment

A candidate to be eligible for the degree of Bachelor of Architecture will be required to appear for and pass all examinations as under:

Stage I

- Semester I Examination in Architecture (First Year Sem I)
- Semester II Examination in Architecture (First Year Sem II)
- Semester III Examination in Architecture (Second Year Sem III)
- Semester IV Examination in Architecture (Second Year Sem IV)
- Semester V Examination in Architecture (Third Year Sem V)
- Semester VI Examination in Architecture (Third Year Sem VI)

Stage II

- Semester VII Examination in Architecture (Fourth YearSem VII)
- Semester VIII Examination in Architecture (Fourth YearSem VIII)
- Semester IX Examination in Architecture (Final YearSem IX)
- Semester X Examination in Architecture(Final YearSem X)

-

Rule No. 4: Granting of Academic Term

Each semester shall comprise of Eighteen weeks (Minimum 90 working days).

The candidate will be permitted to appear for semester examination only if he/she has,

- 75% attendance in each course that constitute a head of passing, prescribed by the university.
- Satisfactory completion of the 100% term work prescribed for each course.
- Satisfactory conduct as a bonafide student

The Principal/ Director of the institution shall have the right to withhold the student from appearing for examination of a specific course if the above requirements are not fulfilled.

Rule No. 5: Progression Requisite

As general rule a student shall be allowed to keep the next year of study of the course if he/she has a backlog of not more than "**Six heads of passing**" in the preceding year. Furthermore,

- A student shall be allowed to get admitted to Second Year B. Arch. course if he/she has a backlog of not more than **six heads** of passing at First year B. Arch (semester I and II considered together).
- A student shall be allowed to get admitted to Third Year B. Arch course, if he/she has cleared all the subjects of passing at First year B.Arch and if he/she has a backlog of not more than **six heads** of passing at Second Year B.Arch (semester III and IV considered together).
- A student shall be allowed to get admitted to Fourth Year B.Arch course if he/she has cleared all the subjects of passing at Second Year B.Arch (Semester III and IV considered together.) and if he/she has a backlog of not more than **six heads** of passing at Third Year B.Arch (semester V and VI considered together)
- A student shall be allowed to get admitted to Final Year B.Arch course if he/she has cleared all the subjects of passing at Third Year B. Arch (Semester V and VI considered together), and if he/she has a backlog of not more than **six heads** of passing at fourth Year B.Arch (semester VII and VIII considered together)

Rule No 6: Examinations

6.1. Conduct of Examinations

The university examinations for all the 10 semesters shall be conducted at the end of each semester by the University.

***6.2. Pattern of Examination*:** The evaluation scheme for B.Arch comprises of;

University Examination (UE)

Internal Assessment (IA)

6.2.1: ***University Examination***

UE will be conducted by the University and will be based on the entire syllabus. Assessment would be undertaken by internal examiner and external examiner jointly in equal weightage. Oral will be based on sessional work produced by the student covering entire syllabus.

The nature of assessment will vary depending upon the subject and its delivery and whether it is studio-based or theory based. Refer to detailed syllabus on the format of UE for individual subjects.

6.2.2: ***Internal Assessment***

IA will be conducted by the Institution imparting B.Arch course. IA will be done by the teacher teaching the course through a continuous assessment system that is spread through the duration of course. The attendance will have weight age of 10 marks and 25 marks for IA of 40 marks and 100 marks respectively. For remaining at least **two** and a maximum **four** of the below components can be used for continuous assessment.

Individual faculty member shall have the flexibility to design the continuous assessment in a manner so as to evaluate students' capabilities across knowledge, skills and attitudes. IA may be undertaken through any or combination of the methods stated below:

- Seminar presentation
- Written Test /Open Book
- Reviews
- Essays
- Short answer questions
- Study of best practices /precedent study/field study
- Multiple choice questions/Quiz
- Projects/group projects/Dissertation
- Reflective Practical assignments
- Drawing Portfolios
- Report writings
- Learning logs/diaries

The faculty shall announce in advance the units based on which continuous assessment shall be conducted. This progressive assessment for the IA must be communicated by the Institute to the university as per the schedule declared by the university. Detailed records of continuous

assessment shall be maintained by the Institute. The student does not have facility of grade improvement, if he/she passes at IA in a course.

6.3: Assessment of Term work

- In respect of term work "due date" shall be fixed for the completion of each assignment and the same shall be collected on the due date.
- At the end of the semester term work shall be assessed jointly by the internal and external examiners from amongst the panel approved by the University.
- Performance of a candidate in viva-voce shall be assessed on basis of the depth of understanding of the principles involved.
- Students may use computers for preparing term work where nature of work is unique to an individual and stress is on content rather than skill. For common form of work, drawing and reports/notes shall be manually prepared.
- An examiner for any of the subjects of examinations shall have a minimum of 3 years teaching/ professional experience in his/her field of study.

Rule No. 7: Credits

- The credits are defined in terms of the student-time spent in hours which are divided into two parts such as face to face instruction and Notional (lectures and studio).
- The total credits to be earned by the student to achieve B.Arch degree will be 300credits.

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X
Credits	30	30	30	30	30	30	30	30	30	30

- Where, one credit is equal to 1hour of Lectures and 1 hour of Studio.
- Note: If a student secure D grade in either or both IA and UE for a particular course credits earned by the student for that courses shall be zero

Rule No.8: Criteria for Passing

To pass in every semester examination and earn the assigned credits, a candidate must obtain minimum 40% marks in each head of passing.

a) For all courses, Both UE and IA constitute separate heads of passing. In order to pass in such courses and earn the assigned credits

The student must obtain minimum grade point of 5.0(40% marks) at UE and also minimum grade point of 5.0 (40%) marks at IA.

Or

If he/she fails in IA, the student passes in the course provided he/she obtains a minimum of 25% in IA and grade point average(GPA) for course is at least 6.0(50%in aggregate).the GPA for a course will be calculated only if student passes at UE.

b) A student who fails at UE in a course has to reappear only at UE as a backlog candidate and clear the head of passing. Similarly, a student who fails in a course at IA has to reappear only at IA as a backlog and clear heads of passing.
c) Students with backlog in IA will have to present themselves and their work for progressive marking throughout the semester for which they intend to appear.

Rule No.9: Grading system

9.1: Conversion of Marks to Grade points and Grades.

The marks shall be converted to grade points and grades as given in table below.

Range of marks (out of 100)	Grade Point	Grade
80≤Marks ≤100	10	O
70≤Marks <80	9	A+
60≤ $Marks < 70$	8	A
55≤Marks <60	7	B+
50 ≤Marks <55	6	B
40≤Marks <50	5	C
Marks <40	0	D

9.2: Performance

The performance of a student will be evaluated in terms of two indices, viz

a) Semester Grade Point average (SGPA)which is grade point average for all the semester
b) Cumulative Grade point average (CGPA) which is the grade point average for all the completed semesters at any point.

9.3: Semester Grade point average (SGPA)

SGPA measures the cumulative performance of a learner in all courses in a particular semester. SGPA is calculated by the formula

$$SGPA = \frac{\sum C_k \times GP_K}{\sum C_k}$$

Where C_k is the credit-value assigned to a course and $GP_K$is a GPA obtained by the learner in the course.

The SGPA shall be calculated up to two decimal place accuracy.

9.4: Cumulative Grade point average (CGPA)

CGPA measures the cumulative performance of a learner in all courses since his/her enrolment. CGPA is calculated by the formula

$$CGPA = \frac{\sum C_k \times GP_K}{\sum C_k}$$

Where C_k is the credit-value assigned to a course and GP_K is a GPA obtained by the learner in the course.

The CGPA shall be calculated up to two decimal place accuracy.

The CGPA calculated after the minimum credits specified for the programme are earned will be the final result.

9.5: Award of Honours

A student who has completed the minimum credits specified for the programme shall be declared to have passed in the programme. The final result will be in terms of letter grade only and is based on the CGPA of all courses studied and passed. The criteria for the award of honours are as given in table below

Range of CGPA	Final Grade	Letter Grade
9.50≤CGPA ≤10.00	O	Outstanding
9.00≤CGPA ≤9.49	A+	Excellent
8.00≤CGPA ≤8.99	A	Very Good
7.00≤CGPA ≤7.99	B+	Good
6.00≤CGPA ≤6.99	B	Average
5.00≤CGPA ≤5.99	C	Satisfactory
CGPA Below 5.00	F	Fail

Rule No.10: Introduction of this Curriculum

The new curriculum for the degree course in architecture B.Arch will be introduced from Academic Session 2015 -2016

- First year B.Arch Course from June 2015
- Second year B.Arch Course from June 2016
- Third year B.Arch Course from June 2017
- Fourth year B.Arch Course from June 2018
- Final year B.Arch Course From June 2019

Rule No 11: Completion

Completion of only Stage-I, shall not qualify the candidates for registration as an architect. Degree of Bachelors in architecture shall be awarded only after successful completion of stage II.

Registration as an architect by council of architecture will only be given as per the prevailing rule of Council of Architecture, India.

Degree Requirements

Earned credits: A candidate who has successfully completed all the Core courses and elective courses, not less than minimum number of credits prescribed shall be eligible to receive the degree.

Rule No.12: Subject Code

Code used for serial numbers of the subjects in the structure for B.Arch course shall be as follows (from left, five digit/alphabet code)

- First alphabet for faculty of engineering-K
- Second digit for Board of Studies of architecture
- Third digit representing the year of the course in architecture
- Fourth and Fifth digits representing number of that subject in the course structure of that particular year

Structure and Contents

For

B.Arch 2015 CBCS course (Amended in 2018)

Bharati Vidyapeeth (Deemed to be University)
College of Architecture, Pune

Structure & Examination Pattern of First Year B.Arch

Semester-I									**Total Duration-30hrs /week** **Total Credits-30**		
Subject code	Subject	Teaching Scheme (in hours/week)			Examination Scheme (marks)				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8101	Architectural Design–I	2	4	6	40	-	60	100	2	4	6
K8102	Building construction and Material-I	2	4	6	40	-	60	100	2	4	6
K8103	Theory of structures-I	3	-	3	40		60	100	3	-	3
K8104	Creativity and Communication-I	2	2	4	40	-	60	100	2	2	4
K8104	Architecture drawings and graphics-I	2	4	6	40	60	-	100	2	4	6
K8106	Workshop - Model making	1	4	5	100	-	-	100	1	4	5
	Total	**12**	**18**	**30**	**300**	**60**	**240**	**600**	**12**	**18**	**30**

Notations: L-Lectures, S-Studio
IA: Internal Assessment; UE: University Examination

Semester-II									**Total Duration-30hrs/week** **Total Credits-30**		
Subject code	Subject	Teaching Scheme (in hours/week)			Examination Scheme (marks)				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8107	Architectural Design-II	2	4	6	40	-	60	100	2	4	6
K8108	Building construction and Material-II	2	3	5	40	-	60	100	2	3	5
K8109	Theory of structures-II	2	-	2	40	-	60	100	2	-	2
K8110	Creativity and Communication-II	1	3	4	40	-	60	100	1	3	4
K8111	Architecture drawings and graphics-II	1	4	5	40	60	-	100	1	4	5
K8112	History of Architecture –I	3	-	3	40	60	-	100	3	-	3
K8113	Climatology and Climate Responsive Architecture	1	2	3	40	-	60	100	1	2	3
K8114	Workshop - Model making and Building Appraisal	-	2	2	100	-	-	100	-	2	2
		12	**18**	**30**	**380**	**120**	**300**	**800**	**12**	**18**	**30**

Structure & Examination Pattern of Second Year B.Arch

Semester-III								**Total Duration-30hrs/week Total Credits-30**			
Subject code	Subject	Teaching Scheme No.of hours			Examination Scheme No. of Marks				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8201	Architectural Design -III	1	5	6	40	-	60	100	1	5	6
K8202	Building construction and Material-III	1	5	6	40	-	60	100	1	5	6
K8203	Theory of structures-III	2	-	2	40	-	60	100	2	-	2
K8204	Creativity and Communication-III	1	2	3	40	-	60	100	1	2	3
K8205	Architecture drawings and graphics-III	1	4	5	40	-	60	100	1	4	5
K8206	History of Architecture-II	3	-	3	40	60	-	100	3	-	3
K8207	Building Services -I	2	1	3	40	60	-	100	2	1	3
K8208	Elective-I	1	1	2	100	-	-	100	1	1	2
	Total	**14**	**16**	**30**	**380**	**120**	**300**	**800**	**14**	**16**	**30**

Elective I **:**Traditional Building Science/Vernacular architecture and Settlements/Environmental studies/Photography, etc.

Notations: L-Lectures, S-Studio

IA: Internal Assessment; UE: University Examination

Semester-IV								**Total Duration-30 hrs/week Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8209	Architectural Design-IV	1	5	6	40	-	60	100	1	5	6
K8210	Building construction and Material-IV	1	5	6	40	-	60	100	1	5	6
K8211	Theory of structures-IV	2	-	2	40	-	60	100	2	-	2
K8212	Computer aided Design and Drawings	1	3	4	40	-	60	100	1	3	4
K8213	History of Architecture-III	3	-	3	40	60	-	100	3	-	3
K8214	Surveying and leveling	1	3	4	40	-	60	100	1	3	4
K8215	Building services-II	2	1	3	40	60	-	100	2	1	3
K8216	Elective-II	1	1	2	100	-	-	100	1	1	2
	Total	**14**	**16**	**30**	**380**	**120**	**300**	**800**	**14**	**16**	**30**

Elective II:Seminar –I/Passive Design Principles/Animations/Communication Skills; etc.

Structure & Examination Pattern of Third Year B.Arch

Semester-V					**Total Duration-30hrs/week Total Credits-30**						
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8301	Architectural Design-V	1	7	8	40	-	60	100	1	7	8
K8302	Building construction and Material-V	1	5	6	40	-	60	100	1	5	6
K8303	Theory of structures-V	2	-	2	40	-	60	100	2	-	2
K8304	Working drawing-I	1	4	5	40	-	60	100	1	4	5
K8305	History of Architecture-IV	3	-	3	40	-	60	100	3	-	3
K8306	Specification writing	2	-	2	40	60	-	100	2	-	2
K8307	Building services-III	2	-	2	40	60	-	100	2	-	2
K8308	Elective-III	1	1	2	100	-	-	100	1	1	2
	Total	**13**	**17**	**30**	**380**	**120**	**300**	**800**	**13**	**17**	**30**

Elective III: Architecture Journalism/Appropriate Technology/Barrier-free Architecture/Seminar-II, etc.
Notations: L-Lectures, S-Studio
IA: Internal Assessment; UE: University Examination

Semester-VI					**Total Duration-30hrs/week Total Credits-30**						
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8309	Architectural Design-VI	1	7	8	40	-	60	100	1	7	8
K8310	Building construction and Material-VI	1	5	6	40	-	60	100	1	5	6
K8311	Theory of structures-VI	2	-	2	40	-	60	100	2	-	2
K8312	Working drawing-II	1	3	4	40	-	60	100	1	3	4
K8313	Landscape Architecture	1	2	3	40	-	60	100	1	2	3
K8314	Estimation and Costing	2	1	3	40	60	-	100	2	1	3
K8315	Building services-IV	2	-	2	40	60	-	100	2	-	2
K8316	Elective-IV	1	1	2	100	-	-	100	1	1	2
	Total	**13**	**17**	**30**	**380**	**120**	**300**	**800**	**13**	**17**	**30**

Elective IV: Green Materials/Theatre and set design/Visual Communication/Advanced Building Material, etc

Structure & Examination Pattern of Fourth Year B.Arch

Semester-VII								**Total Duration- 30hrs/week** **Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8401	Architectural Design-VII	1	9	10	40	-	60	100	1	9	10
K8402	Building construction and Material-VII	1	3	4	40	60	-	100	1	3	4
K8403	Theory of structures-VII	2	-	2	40	-	60	100	2	-	2
K8404	Interior Design I	1	3	4	40	-	60	100	1	3	4
K8405	Advance Landscape Architecture	1	2	3	40	-	60	100	1	2	3
K8406	Urban planning I	1	2	3	40	60	-	100	1	2	3
K8407	Building services-V	2	-	2	40	-	60	100	2	-	2
K8408	Elective-V	1	1	2	100	-	-	100	1	1	2
	Total	**10**	**20**	**30**	**380**	**-**	**420**	**800**	**10**	**20**	**30**

Elective V :Sustainable Architecture/Industrial architecture/Disaster management/Housings, etc
Notations: L-Lectures, S-Studio
IA: Internal Assessment; UE: University Examination

Semester-VIII								**Total Duration- 30hrs/week** **Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8409	Architectural Design-VIII	1	9	10	40	-	60	100	1	9	10
K8410	Building construction and Material-VIII	1	3	4	40	60	-	100	1	3	4
K8411	Vocabulary and Repertoire	1	2	3	40	-	60	100	1	2	3
K8412	Interior Design -II	1	3	4	40	-	60	100	1	3	4
K8413	Urban planning- II	1	2	3	40	60	-	100	1	2	3
K8414	Research Skills	1	3	4	40	-	60	100	1	3	4
K8415	Elective-VI	1	1	2	100	-	-	100	1	1	2
	Total	**10**	**20**	**30**	**340**	**-**	**360**	**700**	**07**	**23**	**30**

Elective VI : Conservation /Digital Architecture /Architectural software/ Real Estate Management , etc

Structure & Examination Pattern of Fifth Year B.Arch

Semester-IX: Practical Training								**Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme **				Credits		
K8501	Practical Training	L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
					40		60	100			
		-	-	-					-	-	30

Notations: L-Lectures, S-Studio
IA: Internal Assessment; UE: University Examination

Note 1: For practical training, a student is expected to work for standard office timings i.e. @ 8 hours a day and minimum five days per week. Student has to undergo minimum 15 -18 weeks (90 work days) of training per semester. The credit requirement for practical training as per circular No.265, pt.II.8 is 24. Since a student will spend the entire semester learning at an office as an intern he/she will be given the 30 credits which are consistent with the 30 credits that are allotted to all other semesters.
Note 2: The work from practical training will be assessed after the student completes the internship in this semester.
Note 3: Validity of training shall be only for a year after completion of training.

Semester-X								**Total Duration-30hrs/week** **Total Credits-30**			
Subject code	Subject	Teaching Scheme			Examination Scheme				Credits		
		L	S	Total	I.A	U.E		Total	L	S	Total
						Paper	Oral				
K8502	Architecture Design Project	2	14	16	40	-	60	100	2	14	16
K8503	Capstone project	1	5	6	40	-	60	100	1	5	6
K8504	Professional Practice	2	2	4	40	60	-	100	2	2	4
K8505	Self Study	1	3	4	100	-	-	100	1	3	4
	Total	**06**	**24**	**30**	**220**	**60**	**120**	**400**	**06**	**24**	**30**

Semester – I

Architectural Design -I

Subject Code	**K8101**	**Semester -I**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To acquire knowledge about elements of design and principles of design.
2	To explore and understand fundamentals of design central to architecture and space design.
3	To understand design as a composite process of elements, principles and fundamentals of design.

A. **Learning Outcomes:** Student will be able to	
1	explore elements of design, principles of design and fundamentals of design
2	assimilate the above three to understand comprehensive design process
3	learn and analyze built and/or non-built spaces with respect to above elements

Units	**Contents**
Unit I	**Elements, Principles and Fundamentals of Design** Introduction to - different Elements of design, - Principles of design and - Fundamentals of Design
Unit II	**Design Process: Function** - Introduction to 'human dimensions' (anthropometry, modes of measurement) - Introduction to function and circulation of various building types - Demonstration the relationship of the above two with elements and principals of design (form, organization, movement, openings, linkages, etc)
Unit III	**Design Process: Structure** - Introduction to different structural systems - Introduction to components of structure - Introduction to structural behavior of different materials
Unit IV	**Design Process : Context** - Introduction to buildings and climate - Introduction to building and site - Introduction to building and orientation - Analyze and demonstrate relationship of context with elements and principles of design

Learning Resources	
Text Books:	1. ChingF. D. K. (2007), *Architecture: form, space, and order*, New Jersey, Canada, John Wiley and sons. 2. Pramar V. S.(1997),*Design Fundamentals in Architecture*,New York, U.S.A., Somaiya Publications
Reference Books:	1. Editors of Phaidon Press (2004), *ThePhaidon Atlas of Contemporary World Architecture*, Phaidon Press; Comprehensive Edition. 2. Pandya Y., VastuShilpa Foundation, (2013),*Elements of space making*, India, New Jersey, Mapin Publishing. 3. Salvadori M., & Robert H., (1975),*Structure in architecture: the building of*

	buildings,Cornell University,Prentice-Hall. 4. Gropius W., (1962), *Scope ofTotal Architecture,* New York, Collier book
Websites:	Drawing Guidelines – Shaping Space http://www.riai.ie/downloads/education/pdf/ss_guidelines/drawing_guidelines.pdf
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment (Any 3)	
1	Analysis and study of design principles and elements using different kinds of examples of built and/or non-built spaces with help of sketches, photographs, drawings etc.
2	Study of structural systems, components of structures in built spaces.
3	Analysis of relationship between building and climate, building and site and orientation with the help of built and/or non-built environment with the help of sketches, photographs, drawings, etc.
4	Photo documentation and study of use of materials for various design components and design considerations.

Building Construction and Materials-I

Subject Code	**K8102**	**Semester-I**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To understand the properties, characteristics, strength, processing and application of materials
2	To understand the different components of masonry construction

Learning outcomes: Student will be able to	
1	Explore materials, properties characteristics, methods of preservation, treatment andmethods of construction and uses of different materials
2	Describe in detail the method of construction of superstructure with various masonry
3	Discuss different material used for fencing as well as for gates.
Units	**Contents**
Unit I	**Introduction** - Building construction as subject and its relevance to architectural design. - Introduction to various components of building from foundation to roof. - Basic structural systems load bearing and framed structure
Unit II	**Study of Materials** Properties, various types, market form available, standard sizes, cost, application in buildings resource use, defects and strengths of each material - Bricks and stones - Cement, Sand , aggregates - Mortar, Plaster, Pointing - Lime
Unit III	**Superstructure Masonry** - Fundamentals, principal of load bearing construction for medium rise structures using Brick, stone, Concrete Blocks, solid Blocks, Hollow Blocks, Cavity Block etc. - Introduction to various types and junctions of brick bond and types of stone masonry
Unit IV	**Fencing And Entrance Gate** - Fencing and compound wall construction in different materials like Barbed wire, Chain link, Wire mesh, R.C.C. Grills, M.S. Grills etc. - Constructional details of an entrance gate in a compound wall of following types: Sliding Gate, Entrance gate side hung with floor channel, Entrance gate side hung with wicket gate

Learning Resources	
Text Books:	1. Rangwala S. C.(2007)*Engineering Materials*. Gujarat, Charotar, Publishing House. 2. Duggal S.K.(2009)*Building materials.* New Delhi, New Age International.
Reference Books:	1. Varghese P.C.(2005)*Building Materials.* New Delhi, Prentice Hall of India put Ltd. 2. Duggal S.K.(1997)*Building materials.* New Delhi, Oxford and IBH

	publishing Co, put, Ltd 3. Spencke R. F.and Cook D.J.(1983)*Building Materials in Developing Countries*. New York,John Wiley and sons
Websites:	**www.shannonmasonryconstruction.com**
Journals:	Construction and building materials -journal- else vier (www.journals.elsevier.com/construction-and-building-materials/) Journal of building construction and planning research (**www.scirp.org/journal/jbcpr/**)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation.(Min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different designs in masonry construction and fencing designs for prescribed projects.(Under discretion of the subject faculty)

Theory of Structure -I

Subject Code	**K8103**	**Semester-I**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand basic structural concepts
2	To understand behavior of different materials
3	To understand fundamentals of structure

Learning Outcomes: student will be able to	
1	Develop understanding of basic requirements of stability, strength of materials
2	Develop understanding of behaviour of basic structural elements
3	Understand importance of basic structural elements in structural systems.

Units	**Contents**
Unit I	**Introduction** Introduction to basic structural elements like column/post, beam, slab, load bearing walls. The load transfer mechanism. Introduction to dead load and live load. Simple calculation of dead load of one way slab and beam if their dimensions are known, in order to know how much load is transferred from each element
Unit II	**Supports** - Types Of Supports And Load Transfer To The Supporting Element : Explain beams as a system in equilibrium and explain conditions of equilibrium (Σfx, Σfy and Σm =0) - Types of supports:roller hinged and fixed supports. Explain in which practical connection we idealize it as hinge/ roller/ fixed. (theory only) - Type of beams: simply supported, cantilever and overhanged beam. Calculating the reaction they transfer to the support. (calculation should include udl and point load standard cases - UDL over entire span - Point load at centre and eccentric - UDL near one support - Shear force and Bending Moment and its importance
Unit III	**Properties Of Section** - Centre of gravity – its importance - How to find CG of standard T, Channel, I, angle section and combination of such sections
Unit IV	**Moment of Inertia** - Moment of inertia – its importance - MI formulae of standard sections. Calculations for rectangle and circle, T, Channel, angle and I section using parallel axis theorem. - Section modulus and radius of gyration – definition.

Learning Resources	
Text Books:	1. Mario Salvadori.(1980).*Why buildings stand up:The strength of architecture*.McGraw-Hill 2. Dongre A.P.(2011).*Strength of*

	*Materials.*Pune/Hyderabad,ScitechPublications
	3. Deo S.S.(2013).*Engineering Mechanics.*Pune,NiraliPrakashan 4. Deo S.S.(2013).*Strength of Materials.*Pune,NiraliPrakashan 5. S B Junnarkar& Dr. H J Shah,(2012).*Mechanics of Structures Vol. I & II.*Anand,CharotarPublishing
Reference Books:	1. Beer and Johnston,(2008).*Mechanics of Materials.*New Delhi,Tata McGraw-Hill 2. Khurmi R.S.(2014).*Strength of Materials.*New Delhi,S.Chand& Company Ltd 3. Nash W.A.(1994)International edition*Strength of materials - III rd edition, (theory and problems).*Singapore,McGraw-Hill book co. 4. Timoshenko Stephen.(2002).*Strength of materials part I &II(elementary theory and problems) IIIrd ed.*New Delhi,CBS Publishers
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Calculate the load transferred on the supporting beam/ column for simply supported cantilever and overhang beam. (find reactions)
2	Study of various cross sections such T, C,L, I and O as various structural elements. Calculations of T,C, L ,I and o sections
3	Photo Documentation : various type of beams, various type of supports, various types of loads, various types of cross sections
4	Making models : various type of beams, various type of supports, various types of loads, various types of cross sections

Creativity &Communication -I

Subject Code	**K8104**	**Semester -I**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To understand elements of design and principles of design as a basic creative activity.
2	To study/analyze principles of organizations.
3	To develop artistic and architectural vocabulary for effective verbal and written communication.
4	To appreciate visual art forms like sculpture, paintings, calligraphy, caricatures etc.

Learning Outcomes: Student will be able to	
1	Explore basic elements of design and their expressions artistically
2	Explore principles of design and their expressions artistically
3	Understand and explore principles of organizations
4	Understand and develop artistic and architectural vocabulary

Units	**Contents**
Unit I	**Elements of Design** - Introduction to Elements of design - Interpretation of points, lines and planes - Expressions through colors, textures and light
Unit II	**Principles of Design** - Introduction to Principles of Design - Theory on Lateral Thinking and exercise on generation of alternatives - Explorations of Principles of Design through 2D compositions
Unit III	**Organization** - Introduction to Organization - Explorations of Organization through 3D compositions
Unit IV	- Introduction to Visual arts (painting, sculpture, calligraphy etc.) - Understanding attributes of elements of visual and architectural aesthetics - Visual Arts appraisal
Unit V	**Verbal and Written Communication** - Exploration of different ways of verbal and written communication

Learning Resources	
Text Books:	1. Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and Sons 2. Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons
Reference Books:	1. Yatin Pandya (2014) *Elements of Space Making*, Ahmedabad, Mapin Publishing 2. ShirishVasantBapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books 3. Barry A Berkus (2000) *Architecture, Art – Parallels and Connections*, Australia, Watson-Guptill Publications 4. Bacon E.N. (1974) *Design of Cities*, England, Penguin Books

	5. Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press 6. Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing 7. Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami Book*, United Kingdom, Acropolis Books 8. Thompson I (1999) *Frank Lloyd Wright: A Visual Encyclopedia*, London, Grange Book Plc 9. Edward De Bono (1990) *Lateral Thinking*, London, Penguin Books
Websites:	www.artinarch.org www.edwdebono.com
Journals	

Assessment		**Marks**
IA	**Internal Assessment**	40
	Refer To 'Rule number 6, sub point 6.2.2.'	
UE	**University Examination**	60
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
Drawing portfolio consisting of relevant exercises including	
1	Self Portrait
2	Exercise on inter-relation of emotions and their expressions though lines and colors – in the form on thumb sketches or series of expressions explaining a story line OR creating a graphic strip explain a story OR creating a graphical story board for a concept
3	Exploration of textures in form of 3D models
4	Analysis of effects of different lighting conditions in architecture
5	Exploration of different generations of alternatives through modules
6	Exploration of Principles of Design based on 2D compositions of modules
7	Exploration of Vertical and Horizontal Planes based on modules to understand anthropometry
8	Exploration of Organization through 3D composition with solids like cubes, cuboids, pyramids, cones, cylinders, spheres etc.
9	Group work on Appreciation of Visual Arts
10	Exercise on verbal and written communication in the form of compilation of an architect's works and seminar presentation of the same or newspaper article etc.

Architectural Drawings and Graphics-I

Subject Code	**K8105**	**Semester -I**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To understand visualization principles of various objects related to architecture.
2	To enable students to present in graphical form all building elements and free hand sketching.

Learning Outcomes: student will be able to	
1	Develop skills in free hand sketching
2	Represent different forms, building elements and materials
3	Visualize and represent in Two-Dimension And Three-Dimension Graphic communication

Units	**Contents**
Unit I	**Basic skills of drafting** - Lettering: Freehand architectural lettering. - Lines: Concept and types of lines, Dimension lines. - Drafting convention. - Study of Scales.
Unit II	**Geometry** - Geometrical constructions
Unit III	**Represent 3D objects in 2 D** - Definition, Meaning & concept. - Projection of points, lines, planes and solids through orthographic projections to understand 2D building representation. **Sections** - To represent the building through sections
Unit IV	**Three dimensional representation** - Existing building views through sketching

Learning Resources	
Text Books:	1. F. D K. Ching (2009) *Architectural Graphics*,New Jersey, John and Wiley and Sons 2. Hugh C. Browing (1996) *The Principles of Architectural Drafting*, New York, Watson-Guptill Publications 3. N.D.Bhatt (2012) *Engineering Drawing*,Gujrat, Charator Publishing House. 4. Rangwala(1991)*Civil Engineering Drawing*, Gujarat, Charator Publishing House
Reference Books:	1. Calvin F. Schmid, Stanton E. Schmid, (1954) *Handbook on Graphic Presentation*, New York, The Ronald Press Company 2. David Littlefield (2012) *Matric Handbook*, London and New York, Routledge Taylor and Francis Group. 3. Sleeper R.(2000)*Architectural Graphic Standards*, New York, John Wiely and Sons.
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
UE	**University Examination**	**60**
	Theory paper of 03 hours	

Workshop –Model Making

Subject Code	**K8106**	**Semester -I**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To equip students with the basic skills necessary to represent their ideas in a model format using simple materials like paper, thermocol, hardwood, Metals, glass fiber etc.
2	To familiarize students with cutting, drilling, grinding, slotting, shaping, bending and measuring instruments, filing, scraping and fitting etc.; processes used in making models.

Learning Outcomes: student will be able to	
1	Develop skills in making 2D and 3Dmodels.
2	Apply carpentry instruments and their uses.
3	Understand the importance of model making as a tool to represent ideas and visualize objects/ elements/structures in architecture.

Units	**Contents**
Unit I	**Introduction to types of model** - Block models, detailed model, Construction Model and interior, Models etc.
Unit II	**Introduction to various materials** - Experimentation with these materials for different geometries and scales of models
Unit III	**Tools in model making** - Development of the skill to use the tools with precision to obtain desired results in model making.
Unit IV	**Exploration of Building materials** - Hands on approach

Learning Resources	
Text Books:	1. Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press 2. Nick Bunn (2010) *Architectural Model Making*, London, Laurence KingPublishing. 3. Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami Book*, United Kingdom, Acropolis Books 4. Alexander Schilling, (2008)*Basics Model Building*, BostenBerlin,Birkhauser publishers for Architecture
Reference Books:	1. ShirishVasantBapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books. 2. Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons. 3. Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and Son
Websites:	www.artinarch.org
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	There is no 'University Examination' for this subjects	

Assignments	
1	Model making-design projects.
2	Model-Construction details.
3	Model -Creative Arts and crafts

Semester – II

Architectural Design -II

Subject Code	**K8107**	**Semester -II**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To develop communication and representation skills
2	To document spaces in graphic form
3	To explore concepts of space design with a focus on function and anthropometry

Learning Outcomes: Student will be able to	
1	Develop skills to understand and represent design ideas through graphic communication.
2	Learn to measure, document and represent spaces.
3	Understand and demonstrate a simple design responding to functional requirements and appropriate scale.

Units	**Contents**
Unit I	**Measured Drawing** - Introduction and demonstration of modes of measurements and methods of documentation of built and/or non built spaces - Introduction and demonstration of different methods of representation
Unit II	**Analysis** - Study of function, circulation, scale and modes of measurement with respect to a specific activity.
Unit III	**Design Demonstration** - Design of single activity spaces reflecting understanding of the above.

Learning Resources	
Text Books:	
Reference Books:	1. Batley C., (1948), *The design development of Indian architecture*, J. Tiranti, ltd. 2. ChingF. D. K. (2007), *Architecture: form, space, and order*, New Jersey, Canada, John Wiley and sons. 3. Editors of Phaidon Press (2004), *ThePhaidon Atlas of Contemporary World Architecture*, Phaidon Press; Comprehensive Edition. 4. Pandya Y., VastuShilpa Foundation, (2013),*Elements of space making*, India, New Jersey, Mapin Publishing. 5. Thakkar J., & Morrison S., (2008)*Matra, Ways of Measuring Vernacular Built Forms of Himachal Pradesh*, Ahmedabad, India, SID Research Cell 6. Radford W. A., (1921), *Architectural Details and Measured Drawings of Houses of the Twenties*, Courier Corporation. 7. Chitham R, (1980), *Measured Drawing for Architects*, originally from the University of Michigan, Architectural Press.
Websites:	Drawing Guidelines – Shaping Space http://www.riai.ie/downloads/education/pdf/ss_guidelines/drawing_guidelines.pdf Pandya Y. & Tiwari. S., (nd), *An Ethnographic and Collaborative Model of Inquiry: Activity Centre Project in India*, Chapter 2, fromhttp://www.springer.com/978-981-4585-10-1
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Measured drawing of any structure relevant to the topic - Drawing Portfolio
2	Design of single activity unit with a demand of knowledge of function, circulation and anthropometry (e.g. Canteen, bus-stop, play school, library, clinic, boutique, etc.) – Drawing portfolio. Models to understand and explain the Designed Spaces.
3	Photo documentation and analysis of related / similar designed spaces.

Building Construction and Materials-II

Subject Code	**K8108**	**Semester -I**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To involve students in a number of drawing exercises that will analyze the various building components in a simple load bearing structure.
2	To inform properties and characteristics of timber, its conversion, preservation and uses
3	To make students aware of various market forms of timber, their production, properties and application in the building industry

Learning Outcomes: Student will be able to	
1	Understand the different construction practices adapted for the various components of doors and windows to specific material in which it's made.
2	Understand the concept of opening and its construction techniques

Units	**Contents**
Unit I	**Door, Windows and Openings** - Introduction to various hardware used for doors, window - Terminology and construction aspects of door ,windowand opening
Unit II	**Spanning Of Opening** - lintel and arch construction - Terminology of arch construction and load transfer - Construction and formwork for lintel and arch - Spanning of opening using brick and stone for various types of arches like flat, segmental, semi circular etc. - Spanning of opening using brick, stone, timber, built-up sections for lintel construction
Unit III	**Doors** - Design considerations, single and double shutters, party glazed and partly paneled shutters - Glazed, Paneled and Flush doors in wood. Types of Flush doors. - Ledged, braced and battened and framed door. (Introduction) - Sliding and sliding- folding door in T.W. and Aluminum. - Steel Door Construction - Pressed sheet shutter - Box section frame and paneled shutter - Rolling shutter - Collapsible gates - Safety or Grilled doors
Unit IV	**Windows** - Underline principles for appropriate selection and application of different type of wooden windows &steel windows. - Paneled, fixed and partly and fully glazed and louvered, centrally pivoted, top hung windows, Side hung windows in wood. - Bay windows in wood - Steel window using 'Z' section - Steel window using Box section & of proprietary nature

Unit V	**Study of Materials** - Timber and Bamboo - Various timber joints - Hollow concrete block - Reinforced Brick work

Learning Resources	
Text Books:	1. Rangwala S. C.(2007)*Engineering Materials*. Gujarat,Charotar, Publishing House. 2. Duggal S.K.(2009)*Building materials.* New Delhi, New Age International.
Reference Books:	1. Don A. Watson, (1972) *Construction Materials and Processes*, New York, McGraw Hill. 2. WB Mackey, (1981) *Building construction, Vol 1,2*.UK, Longman UK. 3. Francisa D.K. Ching(2000)*Building Construction Illustrated.*NewYork,John Wiley & Sons.
Websites:	http://www.slideshare.net/parteeks9/doors-windows-12082151(doors n windows)
Journals:	The open construction and Building Technology journal (benthamopen.com/tobctj/home)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination** Assignments or portfolios based on entire syllabus as mentioned below.	**60**

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation.(min.4 drawings.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different designs in door and window construction and opening designs for prescribed projects (Under discretion of the subject faculty).

Theory of Structures-II

Subject Code	**K8109**	**Semester -II**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand forces acting on members
2	To understand properties and behaviour of different materials
3	To understand shear and bending stresses

B. **Learning Outcomes:** Student will be able to	
1	Develop understanding of stresses and strains on members.
2	Develop understanding of properties of basic structural materials.
3	Understand importance of consideration of shear forces.

Units	**Contents**
Unit I	**Stress and Strain** - What is stress (axial, bending and shear), strain. - Calculation of axial stress, strain for composite material like RCC.
Unit II	**Bending Stress** - Calculation of bending stress using formulae for standard sections. T,C, L and I - What is combination of axial and bending stress,for a masonry column and base of retaining wall for stability.
Unit III	**Shear Stress Calculation** - Calculation of shear stress using formulae for standard sections. T, C, L and I.
Unit IV	**Elastic constants and stresses** - Structural properties: Elasticity, maximum Permissible Tensile/compressive stress, bending stress and shear stress for various materials like timber, masonry, concrete and steel. Explain the difference between behaviour of a ductile material like steel and brittle material like concrete subjected to tensile force. (stress-strain curve and Hooke's law).

Learning Resources	
Text Books:	
Reference Books:	1. Khurmi R.S.(2014)*Strength of Materials.* New Delhi, S.Chand& Company Ltd. 2. Nash W.A.(1994)International edition *Strength of materials - III rd edition, (theory and problems).*Singapore, McGraw-Hill book company. 3. Timoshenko Stephen.(2002)*Strength of materials part I. (elementary theory and problems) IIIrd ed.* New Delhi, CBS Publishers..Timoshenko Stephen.(2002)*Strength of materials part II (elementary theory and problems) IIIrded.*NewDelhi,CBS Publishers. 4. Bansal R. K.(2014) *A text book of strength of materials*. 5. Singhal S.B.&Narayan.R. *Materials and structures (vol-I) Strength of materials.* New Delhi, R.Chand& Company Ltd. 6. Warnock F.V. *Strength of Materials with ED.* London, Sir Isaac Pitman & Sons.Ltd.

	7. RamamruthamS.Narayan.R. (2009)*Theory of Structures.* New Delhi, Dhanpatrai Publications P.Ltd. 8. RamamruthamS.Narayan.R.(2014)*Theory of Structures (for Engineering Degree ,Diploma).*New Delhi, Dhanpatrai Publications P.Ltd.
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
U.E.	Refer To 'Rule number 6, sub point 6.2.2.'	
	University Examination	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Numerical problems on calculation of axial stress and strain in composite elements.
2	Numerical problems on calculation of bending stress in beams and columns.
3	Numerical problems on calculation of combined stresses
	Photo Documentation: structural damages due to excessive stresses, identifying the reasons of damages.

Creativity &Communication-II

Subject Code	**K8110**	**Semester -II**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To understand volume and form.
2	To study/analyze scale and proportions
3	To appreciate performing art forms like films, theatre, dance etc

Learning Outcomes: student will be able to	
1	Explore volume and form as basic elements of design
2	Understand scale and proportion and their impact on spaces
3	Appreciate performing arts

Units	**Contents**
Unit I	**Volume and Form** - Introduction to Attributes of Form and Space - Understanding derivatives of form - Volumetric Study of Spaces – positive and negative spaces
Unit II	**Scale and Proportion** - Theory on Scale and Proportion - Exploration of Scale and Proportion through 2D and 3D mediums
Unit III	**Performing Arts Appraisal** - Introduction to Performing arts (films, theatre, dance etc.) - Understanding attribute of elements of performing arts
Unit IV	**Communication through performing art** Exploration of different ways of communication through performing art

Learning Resources	
Text Books:	
Reference Books:	1. Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and Sons 2. Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons 3. Yatin Pandya (2014) *Elements of Space Making*, Ahmedabad, Mapin Publishing 4. ShirishVasantBapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books 5. Barry A Berkus (2000) *Architecture, Art – Parallels and Connections*, Australia, Watson-Guptill Publications 6. Bacon E.N. (1974) *Design of Cities*, England, Penguin Books 7. Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press 8. Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing 9. Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami Book*, United Kingdom, Acropolis Books 10. Thompson I (1999) *Frank Lloyd Wright: A Visual Encyclopedia*,

	London, Grange Book Plc 11. Edward De Bono (1990) *Lateral Thinking*, London, Penguin Books
Websites:	www.artinarch.org www.edwdebono.com
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
Drawing portfolio consisting of relevant exercises including	
1	Understanding Volume as an element of design and exploration of positive and negative spaces in a volume or 3D composition
2	Exercise on exploration of derivatives of form
3	Understanding theory of scale and proportions and representing the same through study of anthropometry of spaces
4	Group work on Documentary/ Film as Performing Arts appraisal

Architectural Drawings and Graphics-II

Subject Code	**K8111**	**Semester -II**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To develop perception and presentation of different forms and their spatial dimension.
2	To develop rendering techniques and presentation skill

Learning Outcomes: Student will be able to	
1	Visualize three Dimensional representations of complex objects and to relate the graphics content with Architectural Design.
2	Explore Rendering technique skills with various media, incorporating scio-graphy and creating three-dimensional effects.

Units	**Contents**
Unit I	**Three dimensional representation** - Isometric, axonometric and oblique view of solid composition and building.
Unit II	**Interpenetration of solids** - Interpenetration of various solids and its relation in building design.
Unit III	**Presentation of drawings** - Rendering technique with various media.
Unit IV	**Sciography** - Introduction of sciography. - Representation of Shade and shadows in plans and elevations.

Learning Resources	
Text Books:	1. Calvin F. Schmid, Stanton E. Schmid, (1954) *Handbook on Graphic Presentation*, New York, The Ronald Press Company 2. F. D K. Ching (2009) *Architectural Graphics*,New Jersey, John and Wiley and Sons. 3. Francis DK Ching (1989) *Drawing A Creative Process*, Van Nostrad Reinhold 4. Hugh C. Browing (1996) *The Principles of Architectural Drafting*, New York, Watson-Guptill Publications. 5. .N.D.Bhatt(2012) *Engineering Drawing*, Gujarat, Charator Publishing House
Reference Books:	1. Calvin F. Schmid, Stanton E. Schmid, (1954) *Handbook on Graphic Presentation*, New York, The Ronald Press Company 2. David littlefield (2012)*Matric Handbook*, London and New York,RoutledgeTaylor and Francis Group.
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper of 03 hours	**60**

History of Architecture-I

Subject Code	**K8112**	**Semester -II**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand development of architecture as a process of contextual and cultural evolution rather than simply as a product.
2	To acknowledge and interpret from history, best design guidelines which respond aptly to the vernacular character of that place, the lifestyle of the users and building traditions of that time.
3	To gain knowledge of the development of architectural form with reference to Technology, style and character.

Learning Outcomes: Student will be able to	
1	Discuss Geography, Politics, Economy, Social Systems, Religion, Paintings and Sculptures and its influence on Architecture at different periods of time.
2	Explore cultures and civilizations and settlements across the world

Units	**Contents**
Unit I	**Pre-historic** - Housing forms in the initial phase: Cave shelters- at Lascaux, Terra Amata - Community structures: Menhir, dolmen, gallery and passage graves, Stonehenge, Ggantija Malta
Unit II	**River Valley Civilizations** - Yellow River - Indus River - Nile River - Tigris River
Unit III	**Vedic Architecture** - Vedic culture and town planning layouts, Vedic Village, City Planning in later Vedic period, Building materials and construction techniques. **Buddhist Phase** - Major typologies – Stambha, Stupa, Chaitya, Vihara. - Development of Chaitya arch - Lomas Rishi, AshokanStambhas, The Great Stupa at Sanchi, Chaitya Hall at Karli, Viharas at Ajanta
Unit IV	**Greek Civilization** - History, evolution and characteristics Elements of special attributes: Classical Orders, Optical corrections – Acropolis, City of Athens - Major typologies - Temples, Theatres, Agora, Stoa, Council Halls
Unit V	**Roman Civilization** - History, evolution and characteristics Elements of special attributes: - Arches, lintels, bridges, aqueducts, Roman engineering skills - Major typologies - Temples- Pantheon, Basillica at Trajan, Amphitheatre, Hippodrome, Circus, Palaces, Thermae at Carcalla

Learning Resources	
Text Books:	
Reference Books:	1. Sir Banister Fletcher, (1999) *A History of Architecture,Indian Edition*. Delhi, CBS Publications. 2. Spiro Kostof , (1985) *A History of Architecture: Setting and Ritual.* London, Oxford University Press. 3. Leland M Roth ,(1994) *Understanding Architecture: Its Elements, History and Meaning*. Craftsman House; 4. Pier Luigi Nervi, General Editor, (1972) *History of World Architecture – Series*. New York, Harry N. Abrams Inc. Pub. 5. Burns, Ralph, Lerner, Meacham, (1991) *World Civilizations*. First Indian Edition, Delhi, Goyl Saab Publishers and Distributors. 6. Roger Smith, (1987) *An Illustrated history of Architectural Styles*. 7. Omega Books Ltd. 8. SebastianoSerlio,(1982) *The five books on architecture*. New York, Dover Publication Inc. 9. Percy Brown,(1983) *Indian Architecture (Hindu And Buddhist)*. Bombay, Taraporevala and Sons. 10. Denis Montagnon, (2001) *Rome* . ISBN 3-8228-5870-6. Germany, TashchenGmnH 11. Satish Grover, (2003) *The Architecture of India (Buddhist and Hindu Period).* New Delhi, Vikas Publishing Housing Pvt. Ltd.
Websites:	www.ancient.eu/Roman_Architecture/ www.slideshare.net/mfresnillo/roman-architecture-398210 www.slideshare.net/mfresnillo/greek-architecture architecture.pppst.com/greek.htm msroseclass.weebly.com/uploads/2/5/9/.../ms_rose_greek_architecture.pp. http://www.slideshare.net/kabithamadhu/vedic-age
Journals:	JSAH-Society of Architectural Historians (www.sah.org/publications-and-research/jsah) Architectural Heritage-Edinburgh University Press (www.euppublishing.com/journal/arch) Architectural History (journal.eahn.org/)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To ‘Rule number 6, sub point 6.2.2.’	
U.E.	**University Examination**	**60**
	Theory paper	

Climatology and Climate Responsive Architecture

Subject Code	**K8113**	**Semester -II**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand climate and its impact on architectural design.
2	To understand co-relation between climate and other environmental parameters and built form at individual and settlement level
3	To understand the use of surrounding environment as one of the strategic design parameters.

C. **Learning Outcomes:** Student will be able to-	
1	Familiarize with climatological influences on built environment and comfort conditions for inhabitants.
2	Explore design principles in different climatic zones

Units	**Content**
Unit I	**Basic Climatology** - Introduction: To climate, weather, earth, sun relationship. Global, Macro and Micro climate. Importance of climate in architecture. - Elements of climate: Temperature, rainfall, humidity, wind, solar radiation etc.
Unit II	**Basic Climatology** - Human Comfort: - Human heat balance and comfort, thermal comfort and means of thermal comfort, heat stress, effective temperature, bioclimatic chart, subjective variables - Thermal Comfort Indices - Active & Passive means of thermal control: Degree of control
Unit III	**Basic Climatology** - Structural control : Shadow formation, sun control and shading devices - Ventilation & Air movement: Study of ventilation & its functions in buildings, air flow through buildings, position & size of opening
Unit IV	**Climate Responsive Architecture** - Study of nature of climate, its physiological objectives and design criteria's and discomfort indices. Planning of internal and external spaces, surface treatments and openings etc. for various climatic zones - Case Study of a contemporary or traditional shelter in the given climate - Study of traditional /vernacular architecture from various climatic zones (Hot and Dry; Warm and Humid; Composite; Cold –Dry, Cold-wet) - Study of effect of orientation, topography, vegetation, form, building material and surfaces on building design in response to climate

Learning Resources	
Text Books:	1. Koenigsberger, Ingersoll,Mayhew, Szokolay, (1996) Manual of Tropical Housing and Building - Climatic Design, Orient Longman Limited
Reference Books:	2. G. Z. Brown and Mark Dekay, John Wiley and Sons,(2001) Sun, Wind and Light, 2nd Edition, New York

	3. Baruch Givoni,(1976) Man, Climate and Architecture, U. K., Applied science Publishers, 2nd Edition 4. T. N. Sheshadri,(2001) Climatological and Solar Data for India, Meerat, SaritaPrakashan A. Krishan,(2001), Climate Responsive Architecture, Tata Mcgraw Hill
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Case study of a climate responsive building
2	Study of shading devices in a building.
3	Performance of openings for light and ventilation
4	Site-Analysis (Climatic context) considering various climatic elements.

Workshop-Model Making and Building Appraisal

Subject Code	**K8114**	**Semester -II**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand appreciation in architecture.
2	To understand how to read a building.

Learning Outcomes: Student will be able to	
1	Explain building using architecture language.
2	Analyses components of the building.
3	Represent same building in model format.
4	Apply model making as a tool of expression.

Units	**Contents**
Unit I	**Aspects of appraisal** - Aesthetics, Technical, Financial, Economic, Environmental and anthropological appraisals.
Unit II	**Art consciousness** - Aesthetics, perception, symbolism, expression, style, fashion, appropriateness and values.
Unit III	**Building Appraisal** - Understanding the meaning of appreciation and its normative criteria such as Form, space, site, function, structure etc.
Unit IV	**Analysing design** - Identification of place, Basic and modifying elements of architecture, geometries, Themes in Spatial organization - Appreciation of designer skills, theories of perception and variability of perception.
Unit V	**Model Making**

Learning Resources	
Text Books:	1. Simon Unwin (2009**).** *Analysing Architecturethird edition**,** revised and enlarged.* USA and Canada by Routledge
Reference Books:	1. Corol Davidson cragoe(2008).*How to read building: A crash course in architectural styles.*NewYork,Rizzoli. 2. John Mittendrorf and Dave Dodson (2015).*The art of readingbuilding*.USA.Penwell Cooperation. 3. Corol Davidson cragoe(2008).*How to read building: A crash course in architecture Ne*w York, Herbert press Ltd
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Assignment	
1	Building appraisal Essay/report with sketches /Photographs
2	Model of a structure

Semester – III

Architectural Design -III

Subject Code	**K8201**	**Semester -III**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To study and explore properties and behavior of different structural materials
2	To introduce students to a design process with a focus on materials and structural systems
3	To develop capacity of third dimensional thinking in students
4	To understand the process of multi activity space designing

Learning Outcomes: students will be able to	
1	Make appropriate choice of material based on the requirements of the design project
2	Explore properties of a particular material to its fullest.
3	visualize and think in third dimension and translate it into two dimensional design
4	synthesize and reflect analytical understanding of multi activity spaces into Architectural Design

Units	**Contents**
Unit I	**Exposure to Materials** - Introduction and knowledge of different materials and innovative structural systems
Unit II	**Exploration of Forms** - Exploration of innovative forms of structures based on the behavior of materials
Unit III	**Design Demonstration** - Introduction to a complex multi activity space design - Demonstrating the best use of the studied material/s in this space

Learning Resources	
Text Books:	
Reference Books	1. ChingF. D. K. (2007), *Architecture: form, space, and order*, New Jersey, Canada, John Wiley and sons. 2. Editors of Phaidon Press (2004), *ThePhaidon Atlas of Contemporary World Architecture*, Phaidon Press; Comprehensive Edition. 3. Salvadori M., & Robert H., (1975),*Structure in architecture: the building of buildings*,Cornell University,Prentice-Hall 4. Shankar P., (2014) *Himalayan Cities: Settlement Patterns, Public Places and Architecture*, New Delhi, India, USA, Canada, Niyogi Books.
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**

	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Analysis of different materials and structural systems through research and market surveys
2	Experimentation with models to explore properties, strengths, weaknesses, possibilities of different configurations of chosen materials (application of lateral thinking process)
3	Drawing portfolio for design of a complex multi activity space design (e.g., bungalow of some celebrity or professional, a small neighborhood shopping, primary health clinic, departmental store, small scale community housing, etc.

Building Construction and Materials-III

Subject Code	**K8202**	**Semester-III**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To involve students in a number of drawing exercises that will analyze the Various building components in a simple framed structure.
2	To inform the properties and characteristics of different roofing and flooring materials

Learning outcomes: Student will be able to	
1	Understand the construction techniques of different building components like staircase and roof.
2	Acquire the knowledge of different flooring materials and its construction techniques.

Units	**Contents**
Unit I	**Staircase** - Design Consideration - Principles and components of staircase - Types of staircases - Staircase in Timber, steel and stone
Unit II	**Roof** - Timber Roofs: General idea of various forms in timber for different spans. General information of timber trusses, fixing of Mangalore tiles. - Steel roofing: Simple ridge roof trusses for various spans, design consideration, advantages, Connections of various members supported on RCC column, Brick piers, fixing of G.I. and A.C. and Aluminum sheets, gutter types, wind bracing etc. - Steel North light Roofing system: Connections, Gutters, paneled glazing etc. - Steel Monitor roofs: on steel Stanchions, Connections, Gutters, paneled glazing etc. - R.C.C. roofing types: Flat slabs (one way and two ways), vaults, domes, Grid slabs. - Masonry vaults and domes
Unit III	**Floors** - Specialized timber flooring for: - Dance halls, Sports halls etc. - Parquet flooring details. - General idea of timber floors in relation to spans, load transmission, Jack arch and composite floors. - Flooring & paving materials such, IPS Finish, Mosaic Tiles, and Plain Cement Tiles. Natural stones like Shahabad, Tandoor, Kota, Kadappa, Marble,Granite, etc. - Glazed and Ceramic Tiles, PVC Rubber, Linolium, Carpet etc

Unit IV	**Study of Materials** - Roofing materials. - Different flooring materials. - Importance of water proofing, its need in building construction. - Traditional and modern systems of water proofing and various water proofing materials available in the market

Text Books:	1. Rangwala S. C.(2007)*Engineering Materials*. Gujarat,Charotar, Publishing House. 2. Duggal S.K.(2009)*Building materials.* New Delhi, New Age International.
Reference Books:	1. Don A. Watson,(1972)*Construction Materials and Processes,* New York, McGraw Hill. 2. WB Mackey,(1981)*Building construction, Vol 3,4*.UK, Longman UK.
Websites:	www.slideshare.net/mohdasrimohdhasim/superstructure-construction
Journals:	Journal of construction engineering, technology stmjournals.com/index.php?journal=jocetm) Master builder -construction magazine, construction news(www.masterbuilder,co,in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different design in staircase for prescribed projects. (Under discretion of the subject faculty

Theory of Structure -III

Subject Code	**K8203**	**Semester-I**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand types-indeterminate and analysis of structures
2	To understand behavior of different structural elements

Learning Outcomes: Student will be able to	
1	develop understanding of basic requirements of framed structure
2	develop understanding of behaviour of basic structural elements
3	understand importance of basic structural elements in structural systems

Units	**Contents**
Unit I	**Shear force and bending moment diagram** - Simply supported beams, cantilever beams and overhang beams for simple combinations of the cases mentioned in segment 1.
Unit II	**Deflection in beams** - Using formulae for standard cases simply supported and cantilevers reaction of propped cantilever. Maximum and zero deflection conditions for simply supported and cantilever beams. Factors affecting deflection. Importance of deflection in design of structural elements.(no complicated problems with double integration
Unit III	**Introduction to arches** - Two hinged and three hinged. Differentiate between beam and arch action. (no problems) - Suspension structures: their behaviour and sample analysis. (no problems)
Unit IV	**Fixed beams** - Concept of fixity and end moments using formulae.Deflected shape and placement of steel. (no analysis) - Continuous beams Concept of continuity and moments using co-efficients from IS 456, concept of distribution of moments based on stiffness only explanation (no analysis by moment distribution method)

Learning Resources	
Text Books:	1. Dongre A.P. (2011)*Strength of Materials.*Pune/Hyderabad,Scitech Publications. 2. Deo S.S.(2013)*Strength of Materials.*Pune,NiraliPrakashan. 3. S B Junnarkar and Dr. H J Shah.(2012)*Mechanics of Structures Vol. I & II.*Anand,Charotar Publishing house.
Reference Books:	1. Parikh Janak P. (2002)*Understanding the concept of structural design and analysis.*Anand,Charotar Publishing house. 2. PanditG.S.Gupta S.P.(2002)*Structural analysis a matrix approach.*New Delhi, 3. Tata McGraw-Hill Publishing company limited. 4. Varghese P.C.(2001)*Limit state design of reinforced concrete.*New Delhi,Prentice-Hall of India.
Websites:	

Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Problems of SFD, BMD
2	Deflection (limited to the standard load cases mentioned in segment 1) deflection problems using formulae, study of behavior of Arches, suspension bridges
3	Behavior of fixed and continuous beams.
	Making models of fixed beam, continuous beams, arches, suspension bridges, tensile structures, deflection of long span structures.

Creativity & Communication -III

Subject Code	**K8204**	**Semester -III**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To enhance creative skills with different techniques and sources of inspiration.
2	To enhance digital communication skills.

Learning Outcomes: Student will be able to	
1	Understand various methods of improving creative skills.
2	Use different sources of inspiration to improve creative skills.

Units	**Contents**
Unit I	**Techniques for improving Creativity** - Brainstorming, Lateral Thinking, Random Combinations, Use of Manipulative Verbs, Tree of Possibilities, Abstraction, Transformation, Use of the Ridiculous, Matrix of Ideas, Role of Memory and Experience
Unit II	**Sources of inspiration for Creativity** - Material, Geometry, History, Nature & Climate, Mimesis, Multicultural, Association with other arts, Biographies, Fantasy.
Unit III	**Graphical Communication** - Introduction and application of computer software for graphical communication

Learning Resources	
Text Books:	
Reference Books:	1. Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and Sons 2. Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons 3. Yatin Pandya (2014) *Elements of Space Making*, Ahmedabad, Mapin Publishing 4. ShirishVasantBapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books 5. Barry A Berkus (2000) *Architecture, Art – Parallels and Connections*, Australia, Watson-Guptill Publications 6. Bacon E.N. (1974) *Design of Cities*, England, Penguin Books 7. Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press 8. Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing 9. Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami Book*, United Kingdom, Acropolis Books 10. Thompson I (1999) *Frank Lloyd Wright: A Visual Encyclopedia*, London, Grange Book Plc 11. Edward De Bono (1990) *Lateral Thinking*, London, Penguin Books
Websites:	www.artinarch.org www.edwdebono.com
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination-**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
	Drawing portfolio consisting of relevant exercises including –
1	Any two exercises to demonstrate Techniques for improving Creativity (2D and 3D)
2	Any two exercises to explore Sources of inspiration for Creativity (2D and 3D)
3	One exercise to demonstrate Graphical Communication
	(The nature of exercises will depend on the focus of the studio

Architectural Drawings and Graphics-III

Subject Code	**K8205**	**Semester -III**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To understand the relation between depth of building elements and shades and shadows.
2	To understand three - dimensional view of architectural projects

Learning Outcomes: student will be able to	
1	Represent Scio-graphy in Plan and Elevation of Architectural design project
2	Sketch perspective of Interior and Exterior.

Units	**Contents**
Unit I	**Sciography** - Sciography in buildings. - Projection of sciography in plan and elevation
Unit II	**Perspective** - Anatomy of perspective: Station point, Eye level, Cone of vision, Picture plane, Horizon line, Ground line, Vanishing points. - Types of perspectives: One point, Two point, Three point
Unit III	**Perspective** - Perspective drawing by, Measuring pt. method, directs projection method Grid method etc - Perspectives of simple and complex blocks - Perspectives of simple household furniture items. - Perspectives of interiors - Perspectives of Residences
Unit IV	**Sciography in perspective**

Learning Resources	
Text Books:	1. F. D K. Ching (2009) *Architectural Graphics*,New Jersey, John and Wiley and Sons. 2. Francis D K Ching (1989) Drawing a creative process, Van Nostrad Reinhold 3. Hugh C. Browing (1996) *ThePrinciples of Architectural Drafting,* New York, Watson-Guptill Publications. 4. Rangwala(1991)*Civil Engineering Drawing,* Gujarat, Charotor Publishing House.
Reference Books:	1. Gill R.W.(2011) *Rendering with Pen and Ink,* London, Thames &Hudson ltd. 2. Sleeper R. (2000)*Architectural Graphic Standards*, New York, John Wiely and Sons.
Websites:	http://www.assignmenthelp.net/sciography-of-geometrical
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	20

U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
I.A. Assignments	
1	Sem II AD Project to be presented with 2 point Perspective using any method.
2	Sciography of overhangs, stairs porticos pergolas to be enhanced on vertical, horizontal and curved surfaces.
U.E.Assignments	
3	Drawing portfolio - Adequate number of drawings covering all the units.

History of Architecture-II

Subject Code	**K8206**	**Semester -III**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand development of architecture as a process of contextual and cultural evolution rather than simply as a product.
2	To acknowledge and interpret from history, best design guidelines which respond aptly to the vernacular character of that place, the lifestyle of the users and building traditions of that time.
3	To gain knowledge of the development of architectural form with reference to technology, style and character

Learning Outcomes: Student will be able to	
1	Explore Geography, Politics, Economy, Social Systems, Religion, Paintings and Sculptures and its influence on Architecture at different periods of time.
2	Acquire knowledge of the development of architectural form with reference to technology, style and character in the Indian context through the evolution of the temples, mosques and tombs in the various phases of Hindu and Islamic rule in India.
3	Acquire knowledge of the development of architectural form with reference to technology, style and character in the Western World through the evolution of the church from early Christian phase up to the Renaissance period

Units	**Contents**
Unit I	**Architecture in Indian sub-continent-Hindu Temple Architecture** - Evolution of architectural style, major influences on development of form and other architectural elements. - Gupta and early Chalukyan style - Gupta temple, Tigawa, Dasavatara Temple, Deogarh, Ladkhan and Durga temples, AiholeVirupaksha temple, Pattadakkal, Papanath temple, Pattadakkal, Cave temple, Badami, Kailash Temple, Ellora **Dravidian style** - Pallava - Rathas, Mamallapuram, Shore temple, Mamallapuram - Chola - Brihadeswara temple, Thanjavur - Hoysala - Keshava temple, Somnathpur - Vijayanagara - Vitthalaswami temple, Hampi, column orders - Madura - Meenakshi temple, Madurai, Sriranganathaswami temple, Srirangam **Indo Aryan Style** - Orissa - Parasurameswara, Mukteswara, Lingaraja temples, Bhubaneswar, Sun temple, Konark - Khajuraho - KandariyaMahadeo temple, Khajuraho - Gujarat - Sun temple, Modhera **Jain School** - Vimal Shah at Mount Abu, Chaumukh at Ranakpur
Unit II	**Architecture in Indian sub-continent -Islamic Architecture in India** - A brief introduction to origin and characteristics of Islamic architecture: building types, elements, structural systems, construction techniques

	Imperial style of Delhi - Slave dynasty - Quwat-ul-Islam Mosque, QutbMinar, Khirki Masjid, Sultan Ghari, Tomb of Iltumish, Tomb of Balban - Khilji Dynasty - Alai Darwaza., JamatKhana masjid **Provincial styles: (any two provinces)** - Punjab,Sind,Bengal,Gujrat,Kashmir,Jaunpur,Malwa,Deccan - Mosque: Jami – Ahmedabad, Champaner and Gulbarga - Tomb: GolGumbaj, Ibrahim Rauza, Bijapur - Civic work: Dada Hari stepped well, Adalaj **The Mughal phase** - Evolution of Mughal style and the different eras of rule: - Mosque: Jami – FatehpurSikri , Delhi - Tomb: Humayun, Akbar, Itmadud-daulla, TajMahal - Fort: FatehpurSikri, Red Fort, Delhi, - Regal Buildings: Birbal's house, Jodhabai's palace at FatehpurSikri
Unit III	**Architecture in Europe** **Early Christian and Byzantine Architecture** - Evolution of Church form, technique adopted to construct domes, surface treatment and material of construction - Elements of Special Attributes: - Domes, timber trusses, clear storey, pendentives - Major typologies - St. Peters, Rome (earlier one) Hagia Sophia, Constantinople **Romanesque** - Design evolution, planning principles and structural details - Elements of Special Attribute: Wall passages, raking arcades, triforium gallery, vaulting systems - Major typologies - Churches – St. Michelle Pavia, Campus at Pisa
Unit IV	**Architecture in Europe** **Gothic Phase** - Elements of Special Attribute: Structural innovations with buttresses, pointed arches, vaulting systems, window traceries, flying buttresses etc. - Major typologies - Churches- Amines Cathedral, Notre dame cathedral, Salisbury cathedral, West Ministers Abbey, castles **Renaissance Phase** - Elements of Special Attribute: Revived column orders, rusticated masonry, grand cornices, public architecture – piazzas- St Mark, Del Signoria - Major typologies - Churches – St. Peters Rome, St Paul's, Palladian villas, buildings with respect to architects

Learning Resources	
Text Books:	
Reference Books:	1. Percy Brown, (1983) *Indian Architecture (Hindu And Buddhist)*. Bombay, Taraporevala and Sons.

	2. Henri Stierlin, (2002) *Hindu India*. ISBN 3-8228-1767-8. Taschen GmbH. 3. George Michell, (1995) *Architecture of the Islamic World.* London, Thames and Hudson Ltd. 4. Sandra Forty, (2004) *Architecture*.. Rochester, Grange books 5. Sir Banister Fletcher, (1996) *A History of Architecture*. Delhi, CBS Publishers. 6. Hiraskar, (2009) *The Great Ages of World Architecture*. New Delhi, 7. DhanpatRai Publications (P) Ltd, 16th Reprint.
Websites:	http://www.twcenter.net/forums/showthread http://www.mughalhistory.com/humayun.htm www.indhistory.com http://www.indianetzone.com
Journals:	JSAH-Society of Architectural Historians (www.sah.org/publications-and-research/jsah)ArchitecturalHeritage-EdinburghUniversity Press(www.euppublishing.com/journal/arch) Architectural History (journal.eahn.org/)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Building Services-I

Subject Code	**K8207**	**Semester -III**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To Study Water supply, treatments, distribution and plumbing system for various type of buildings.
2	To Study Waste water treatments, Sewer lines for various types of buildings
3	To Study Drainage system for a low and medium level building

Learning Outcomes : Students will be able to	
1	Understand how water supply and sanitation services are managed, in small and medium buildings.
2	Acquire knowledge about the principles of water supply and sanitation

Units	**Contents**
Unit I	**Water supply** - Sources of water supply. - Treatment plants and Pipe Appurtenances
Unit II	**Distribution Patterns** - Service Connection (Ferrule, water meter etc.) - Water storage tanks (Ground and overhead), their capacity and location. Calculation of water consumption. - Water Distribution pipes, their sizes, materials, jointing, fixing and laying
Unit III	**Sanitation** - Principles of sanitation. Introduction of various terminologies used in sanitation. Collection of waste matter in buildings. Various sanitary fittings and fixtures like washbasins, WC's, bathtubs, sink urinals, bidets, flushing cistern traps etc. Various traps and their functions. - Sewerage Systems: Dry conservancy method Water carriage systems. - Sewage collection and disposal system for individual house of urban areas. - Locations and use of appurtenances i.e. I.C, manholes, disconnecting chambers. - Various types of sanitary pipes, their joining, fixing and laying. Pipes and piping network. Anti- Siphonage Pipes.
Unit IV	**Testing of house drains.** - Sewage disposal system for individual house of rural areas or un-sewered localities (Septic tank, soak pit, cesspools, aqua privy, leeching pits. - Self-cleaning and non-scouring velocities for drain pipes. Invert levels and drains on sloping site

Learning Resources	
Text Books:	1. S.C.Rangwala,(1989)*Water supply and sanitary engineerin.*,Gujarat, Charotar publishing house.
Reference Books:	1. AFE Wise, JA Swaffied Water,(2002)*Sanitary & Waste Services in buildings*. V Edition, Los Angeles, Mitchell Publishing, Co. Ltd. **2.** C. shah,(1999) *Water supply and sanitary engineering*, Delhi,Galgotia publishers.

Websites:	http://www.slideshare.net/prrinskhaleel/sanitary-and-water-supply http://www.slideshare.net/Liguidliguid/presentation-plumbing
Journals:	Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.journals.elsevier.com/energy-and-buildings/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-**journals**/technical-**journals**-bsert-lr-t)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Elective-I

Subject Code	**K8208**	**Semester- III**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: student will be able to	
1	Engage in systematic self study of topic they feel interested in.

	Students can select one elective from the following list
1	**Traditional Building science**
	- Introduction, Meaning, Elements etc. - Vastusastra Principles - Climatological, sustainable aspects of VastuSastra. - Relevance of vastushastra in Todays Built Environment
2	**Vernacular architecture and settlements (Regionalism)**
	- Defining Vernacular - Culture ,Tradition, Society, Climate and Shelter - Vernacular architecture in India - Study of traditional Building materials and Techniques - Study of Vernacular Settlements pattern - Style of the Maratha region
3	**Environmental Studies**
	- Environmental Factors effecting human habit such asclimate,environmental pollution, environmental degradation, Green cover etc.at micro and macro scales. - Fundamentals of eco system - Environmental legislation
4	**Photography**
	- Introduction to Architectural Photography. - Techniques of Recording Building and surrounding on a film with respect to position of viewer and angle, light and shades, foreground and background, scale, colour, texture, mood, time etc. - Techniques of Photography for documentation - Photographs of drawings, models, feature of buildings and surroundings to be elaborated. - Close up Photographs - Photography practicals on: simple objects, still life composition with the play of light and shadow, Historical and modern Buildings with surroundings landscape ,Architectural details such as brackets, staircase etc.

Assessment		**Marks**
IA	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – IV

Architectural Design -IV

Subject Code	**K8209**	**Semester -IV**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To understand the contextual relationship of buildings with climate and landform
2	To document rural/traditional settlement to understand the context, people, function
3	To understand the process of complex multi-activity space design

Learning Outcomes: student will be able to	
1	understand relationship of building and site, climate and landform
2	document rural/traditional settlement
3	design multi-activity spaces responding to climate and landform

Units	**Contents**
Unit I	**Documentation and analysis of Settlement** - Document rural settlement in terms of settlement patterns, cluster configurations and building typology. - Document and analyze influence of climate and landform and all three levels - Document and analyze any traditional knowledge systems, structural system and architectural vocabulary of that place. - Documentation of social structure, religious and cultural practices that guide the built form
Unit II	**Application of Context** - Proposal of small design insert responding to existing context of the settlement based on the analysis
Unit III	**Design Demonstration** - Climate responsive design demonstrating passive design principles

Learning Resources	
Text Books:	
Reference Books:	1. Baruch G., (1976), *Man, Climate and Architecture*, 2nd Edition, U. K., Applied Science Publishers. 2. ChingF. D. K. (2007), *Architecture: form, space, and order*, New Jersey, Canada, John Wiley and sons. 3. Dengle N., (2013), *Zarokha*, Brain Tonic Publishing. 4. Dengle N., (1998), *The Introvert and Extrovert Aspects of the Marathi House'*, House and Home in Maharashtra, USA, Oxford University Press. 5. Editors of Phaidon Press (2004), *ThePhaidon Atlas of Contemporary World Architecture*, Phaidon Press; Comprehensive Edition. 6. Shankar P., (2014) *Himalayan Cities: Settlement Patterns, Public Places and Architecture*, New Delhi, India, USA, Canada, Niyogi Books. 7. Jain K. B. & Jain M., (2001), *Architecture of the Indian Desert* 8. Koenigsberger O.H.; Ingersoll, T.G.; Mayhew, Alan; Szokolay, S.V., (1980), *Manual of Tropical Housing and Building. Part one: Climatic design*, Longman Used.

	9. Steele J., Doshi B.V., (1998) *The complete architecture of BalkrishnaDoshi: rethinking modernism for the developing world*, India, Super Book House
Websites:	
Journals:	Ahmed Muhaisen, S. "Shading simulation of the courtyard form indifferent climatic regions", Building and Environment Vol. 41,pp. 1731-1741, 2005.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Rural/traditional settlement studio - Drawing portfolio, Models
2	Drawing portfolio or a detailed model for short design-insert related to settlement study shall be carried out as a time bound exercise
3	Drawing portfolio for design of a small campus involving complex issues of site, topography, integration, environment (primary school, sports club, small resort / institute, primary health care, nursing home, etc.)

Building Construction and Materials-IV

Subject Code	**K8210**	**Semester -IV**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To involve students in construction process of special construction of cavity walls and retaining walls.
2	To aware student for natural disasters and techniques of protection
3	To inform the students about materials like steel and aluminum its properties

Learning Outcomes: student will be able to	
1	Understand special construction of masonry walls.
2	Understand site development with retaining walls with respect to different materials.
3	Be aware about earthquake resisting structures and its protections.

Units	**Contents**
Unit I	**Retaining Wall** - Retaining walls and its terminology, mass retaining wall in bricks, Stones etc. and cantilever retaining wall in R.C.C.
Unit II	**Cavity Walls:** - Principles of Cavity wall construction & advantages of Cavity wall - Cavity wall in Brick, Stone and Concrete blocks - Precautions in Hollow Concrete wall construction - Reinforced and Decorative Brick masonry, Jali construction
Unit III	**Aluminum Doors &Windows** - Aluminum and P.V.C. Windows - Aluminum and P.V.C. Doors
Unit IV	**Earthquake Resistant Structures** - For engineered and non-engineered construction.
Unit V	**Study of Materials** - Steel and Aluminum. - Water concrete admixtures. - Paints and varnishes

Learning Resources	
Text Books:	1. Rangwala S. C.(2007)*Engineering Materials*. Gujarat,Charotar, Publishing House. 2. Duggal S.K.(2009)*Building materials.* New Delhi, New Age International.
Reference Books:	1. J. S. Foster, Roger Greeno (2007)*Mitchell's Structure & Fabric: Part 2*.New York,Taylor and Francis group
Websites:	www.slideshare.net/vikskyn/earthquake-resistant-structure
Journals:	Journal of construction engineering, technology stmjournals.com/index.php?journal=jocetm) Master builder -construction magazine, construction news(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**

	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different design in aluminum door and window for prescribed projects. (Under discretion of the subject faculty).

Theory of Structures-IV

Subject Code	**K8211**	**Semester -IV**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand basic structural concepts
2	To understand behavior of RCC as a material for framed structure
3	To understand fundamental beam column slab construction and loading

Learning Outcomes: student will be able to	
1	develop understanding of basic requirements of framed structure
2	develop understanding of strength of RCC structure
3	Understand different loads affecting strength and stability of structure.

Units	**Contents**
Unit I	**Design of RCC structures using limit state method (IS456)** - Different type of loads: dead load, live load, wind load, earthquake load. - Calculation of dead load (self weight) if dimensions of a beam, column, wall or slab and unit weight of material are given. - Principles and applications of live load and wind load in different types of structures such as residential, commercial, institutional etc. - Introduction to related IS specifications.
Unit II	- RCC framed structures flat roof i.e. beam slab column system - IS 456 provisions for removal of formwork, nominal cover. - Design of one way and two way slab, cantilever slab, load transfer from one way and two way slabs to beams and cantilever slab. - Beam design 1) simply supported 2) cantilever and 3) continuous. Continuous beam moments to be found using co-efficient. Explain similar details for continuous slab - Design of columns. Explain the structural actions on columns, explain slenderness ratio and its effect on load carrying capacity of columns, design of only short axially loaded columns. Explain uni-axial and biaxial bending cases. - Introduction to doubly reinforced beams and T or L beams. (no design problems)

Learning Resources	
Text Books:	1. Dr.Shah V.L. & Dr. Karve S.R.(2014)*RCC Theory andDesign.*Pune,Structures Publishers. 2. Shah H.J. (2013)*Design of Reinforced Concrete Structures.*Anand,Charotar Publishing house. 3. Sinha S.N. (2014) *Reinforced Concrete Design.*New Delhi,Tata McGraw-Hill Publishing Company limited.
Reference Books:	1. Dr.Shah V.L. & Dr. Karve S.R.2014) *Illustrated design of reinforced concrete buildings(design of G+3 storied office/residential building).*Pune, Structures Publishers. 2. Negi L.S.&Jangid R.S.(2000)*Structural analysis.* New Delhi,Tata McGraw-Hill Publishing company limited
Websites:	Bureau of Indian standards

Journals:	IS: 456 - 2000

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	calculation of dead load, live load, G+1 building slab design, one beam, one column design, make drawings and schedule for the same

Computer Aided Design and Drawings

Subject Code	**K8212**	**Semester -IV**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To develop computer aided drafting skill in 2D and 3D.
2	To familiarize with various software available for documentation, presentation and drawing purpose.
3	To understand the use of computer for graphical applications.
4	To introduce and use of various software's available for computer application in Architecture.

Learning Outcomes: Student will be able to	
1	Understand the use of computer as a tool for imagination and design.
2	Apply architectural presentation techniques using different software's.
3	Know how to use commands rather than what commands are.
4	Create 3D compositions and drafting plans.

Units	**Contents**
Unit I	**Computer Aided Drawing (2D Composition)** - Introduction of Auto CAD as drafting tool. - Basics of 2D drafting, Drawing simple objects, projections and plans etc. - Preparation of 2 dimensional drawing with dimensioning. - Creating layers, styles, Blocks, line types etc
Unit II	**Computer Aided Architectural Modeling** - Introduction to Auto cad 3D/Sketch up /3Dmax. - Drawing 3D standard solid models. - Drawing 3D planes and surfaces. - Complex 3D commands such as extrude/revolve, meshes and solids - Solid editing in 3D such as subtract - General introduction to rendering and light effects
Unit III	**Computer aided presentation skills** - Introduction of various software available for Architectural presentation. - Introduction to power point, Microsoft excel, Microsoft word
Unit IV	**Animation/Walkthroughs**

Learning Resources	
Text Books:	1. George Omura(1998).*Mastering Autocad,*Singapore,Tech publications. 2. Ted Boardman and Jercy Hubbell (1998).*Inside 3D studio Max2*, volume II,Modeling and Materials,New Delhi,G.C.Jain for techmedia. 3. Stephen Paul Jacobs(1991)*The CAD Design studio,3DModeling as a Fundamental Design Skill,*New York,McGraw-Hill,Inc. 4. Durvid Frey (1998)Autocad 14,New Delhi,BPB publications.
Reference Books	As required by subjects /topics in a particular semester.

Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Rendering drafting for Sem.III design .
2	Prepare digital drawings for Sem.III design portfolio.
3	Create 3D model.

History of Architecture-III

Subject Code	**K8213**	**Semester -IV**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To gain knowledge of the development of architectural form with reference to style and character in the Indian context through the evolution of colonial Architecture in the country
2	To understand the Industrial era as evolving within specific contexts including aspects of social and political factors.
3	To gain knowledge of the development of architectural form with reference to technology, style and character in the Western World through the Industrial revolution and in the phases covering the Art and Craft , Art Nouveau styles

Learning Outcomes: Students will be able to	
1	Explore spatial and stylistic qualities associated with Colonial architecture**.**
2	Explain architecture as an outcome of various social, political and economic upheavals
3	Comprehend the condition of Industrial Revolution and its impact on architecture
4	Understand Art and Craft, Art Nouveau styles with reference to Industrial Revolution.

Units	**Contents**
Unit I	**Colonial Architecture in India** - Colonial Architecture under British, Portuguese and French with reference to industrial revolution and emergence of new materials and construction techniques. - Indian Colonial architecture-British: The styles and trends of architecture brought by British to India and their evolution – The impact of Indo-Sarcenic style on the British Architecture in India – The characteristics of British Colonial Architecture with examples from work of Edwin Lutyens. - The Impact of Portuguese architecture in India – The characteristics of Portuguese Colonial Architecture with examples from Goa-Bom Jesus Cathedral Complex-Old Goa. - The Impact of French Architecture in India – The characteristics of French Colonial Architecture with examples from Puducherry, Maheetc - The Impact of French Architecture in India – The characteristics of French Colonial Architecture with examples from Puducherry, Maheetc
Unit II	**Baroque Art, Rococo Art** - Roman Baroque churches: The central plan modified – St. Peters, Rome; - French Baroque: Versailles - English baroque – Sir Christopher Wren; - St. Paul's London – Domestic Architecture in England. - Rococo Architecture – Interiors – hotels
Unit III	**Neo classical Art and Architecture** - Beginnings of modernity –Origin and development of Neo Classicism Structural Neo classicists: Laugier, Soufflot, Schinkel, Labrouste - Romantic Neo classicists: Ledoux, Boulle, Durand, Jefferson

Unit IV	**Industrial Revolution** - Causes, consequence and impact in Architecture – Urbanization in Europe and America- split of design education into architecture and engineering streams- Emergent new building / space types. Growing need for mass housing .Its influences in building, technology and modern building materials Steel, glass, RCC etc. Industrial exhibitions- Chicago School and skyscraper development. - Arts and Crafts in Europe and America : Morris, Webb - Art Nouveau: Opposition to industrial arts and production Horta, Van De Velde, Gaudi, Guimard, Mackintosh Hoffman, Olbrich- Wright's early works

Learning Resources	
Text Books:	1. Kenneth Frampton, (1994) *Modern Architecture: A Critical History*. London, Thames & Hudson. 2. James C. Harle, (1994) *The Art and Architecture of the Indian Subcontinent.* Second Edition. Yale,Yale University Press. 3. Banister Fletcher, (1996) *A History of Architecture*. New York, Architectural Press, 4. Raeburn Micheal, (1988) *Architecture of the Western World*. England, Popular Press.
Reference Books:	1. Hiraskar, (2009) *The Great Ages of World Architecture*. New Delhi, DhanpatRai Publications (P) Ltd, 16th Reprint. 2. Christian Norburg-Schulz,(1993) *Meaning in Western Architecture*. Rizzoli, Revised edition, 3. Ed.HenriStierlin,(2002) *Architecture of the world- Baroque.* ISBN 3-8228-9300-5.Germany, BenediktTaschenVerlagGmbtt
Websites:	www.culturalindia.net › Indian Architecture www.britannica.com/EBchecked/...architecture/.../Baroque-and-Rococo www.greatbuildings.com/types/styles/neo-classical.html https://thearchiblog.wordpress.com/.../impact-of-industrial-revolution http://www.quora.com/What-is-impact-of-the-Industrial-Revolution-on-nineteenth-century-architecture
Journals:	JSAH-Society of Architectural Historians (www.sah.org/publications-and-research/jsah) Architectural Heritage-Edinburgh University Press (www.euppublishing.com/journal/arch) Architectural History (journal.eahn.org/)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Assignments	
1	Study of Colonial Architecture in India with literature survey
2	Analysis of various Architecture and Art styles studied and their development
3	Report based on field study.

Surveying & Leveling

Subject Code	**K8214**	**Semester -IV**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To understand various land forms.
2	To introduce surveying as a method to explain land form and its utility in site planning.
3	To acquaint students with the physical surveying and levelling work in order to, Measure and document built and non-built spaces.
4	To prepare and interpret of Base Map for Architectural Design Projects.
5	To read and interpret various forms of cartographic presentation.

Learning Outcomes: Students will be able to	
1	Understand importance of land forms and topography and its significance in site planning /Design.
2	Calculate area of a site / plot.
3	Discuss slope of land for site planning.
4	Design services and buildings on sloping terrain

Units	**Contents**
Unit I	- Introduction to surveying and survey equipments, understanding land topography and its relevance in Architecture. - Methods of Surveying: Chain and Compass, Plane Table Survey, computation of areas
Unit II	- Methods of Levelling: Contour Survey, Use of Theodolite. - Use of electronic equipment like EDM, Total Station etc.
Unit III	- Introduction to remote sensing and aerial photographic surveying etc. - (Electronic Total Station) ETS Survey - Study and analysis of Topo-sheet

Learning Resources	
Text Books:	1. N.N. Basak ,*(2004) Surveying and Levelling* , *New* Delhi ,Tata Mcgraw Hill, 2. Kanetkar, T.P and Kulkarni, S.V *(2013) Surveying and Leveling*. Pune Vidyarthi Pune. **3.** R.Subramanian *(2012) Surveying and Leveling*Roorkee,Cyber TechPublication.
Reference Books:	1. David Clerk, Surveying Vol -I & II, 2. Dr. K.R. Arora, Surveying Vol -I & II, 3. S.K. Duggal, Fundamentals of Surveying Milton.O.Schimidit.
Websites:	www.aboutcivil.org, www.cambridge.org, www.civilprojectsonline.com
Journals:	International Organization of Scientific Research (IOSR) IOP Science (Institute of Physics), American Journal of Engineering Research (AJER)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	To measure plot by linear method and determine the area.
2	To measure the contour plot and work out the site sections to understand levels and slopes.
3	To prepare small report with presentation of various equipments used in surveying and leveling
4	Measurement of plot by using different methods. (Equipments, plot selection can be done by the student and approved by instructor
5	To measure the live plot by using chain &compass, plane table survey, and prepare drawing for the area calculation
6	Survey of a given area of city road to understand slope, road details by using chain &compass, plane table survey .submission will in the form of drawings and digital presentation
7	Report on topics related to remote sensing and aerial photographic survey.

Building Services-II

Subject Code	**K8215**	**Semester -IV**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To Study basics of electricity and wiring systems within domestic and commercial buildings.
2	To Study fundamentals of lighting and lighting design.
3	To familiarize the students with the fundamentals of acoustics and principles in designing various built environment

Learning Outcomes: Student will be able to	
1	Understand the basics of Electricity and wiring system
2	Understand various fundamentals of Lighting and Lighting design
3	Learn and evaluate fundamentals of acoustics and its applications in buildings.

Units	**Contents**
Unit I	**Electrical Services.** - Different wiring systems, fuses and MCBs, electrical fittings and appliances. Detailed layout of electrical services in residences
Unit II	**Daylighting** - Day lighting, sky condition, daylight availability graph, sky condition square. - Luminance levels for various sky conditions as a function of solar altitude, daylight factor, daylight factor standards, components of daylight factor, functional objectives of daylight, - Site criteria, building configuration, building orientation. - Day light apertures, glare control, shading devices- external and internal, measurement of day lighting
Unit III	**Illumination (Artificial lighting)** - Light radiation, its unit, laws of illumination, types of illumination schemes –direct, semi direct, diffused lighting and their design consideration - Light sources, various types of lamps and their characteristics - Types of luminaries for interior and exterior - Exterior lighting for monuments, gardens, fountains, sculptures etc
Unit IV	**Acoustics** - Frequency range of Audible sound. - Propagation of sound, sound reflection, diffusion, diffraction, sounds insulation. - Echo, Reverberation and Doppler effect. - Sound absorption, absorbing materials, their classification and application. Sound Reflection and reflecting materials, their classification and application. - Space layout consideration and Buffer zones - Noise and Noise control Noise criteria curves,noise from ventilation and AC systems. - Floor and ceiling construction for noise insulation. - Floating floors, outdoor barriers for noise Control. - At least one live case study in detail of acoustical treatment of

	- Auditorium, Lecture halls/Conference hall (any performing space) - Acoustical defects and remedies.

Learning Resources	
Text Books:	
Reference Books:	1. E.P. Ambrose,(1968) *Electric Heating*. New York, John Wiley & Sons Inc. 2. Philips,(1964)*Lighting in Architectural Design.* New York, McGraw Hill. 3. R. G. Hopkenson& J. D. Kay, (1969)*The lighting of Buildings*, London, Faber& Faber. 4. National Building Code of India, 2005 (NBC 2005)
Websites:	www.slideshare.net/haroldtaylor1113/9-acoustics-sound-and-noise-control https://www.scribd.com/doc/59706240
Journals:	Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.journals.elsevier.com/energy-and-buildings/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-journals/technical-journals-bsert-lr-t)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Assignments(Any 2)	
1	Design electrical layout for a low or medium size building.(an individual /independent unit)
2	Layout of acoustical space with reverberation time calculations
3	Daylight Calculation in medium sized space.

Elective - II

Subject Code	**K8216**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: student will be able to	
1	Engage in systematic self study of topic they feel interested in.

	Students can select one elective from the following list
1	**Passive Design Principles (SBDP)** - Meaning ,Need of Passive Cooling - Principles of Passive Cooling - Passive Cooling in Different Climatic zones - Case studies
2	**Seminar –I (Design Philosophies of Master Architects)** - Independent study and documentation of architectural and allied subjects by individual student alongwith oral and visual presentation. - The seminar shall be a research paper on a topic related to Architecture.
3	**Human settlements** - Origin and growth of human settlement. - Role of River Banks in growth of human settlement. - Study of ancient Indian settlements like Mohenjodaro, Taxila, Nalanda. - Study of ancient Indian cave settlements of Ajanta, Ellora, Elephanta. - Ancient texts and treatises on settlement and area planning in India. - Historical survey of the city as an expression of the vitality of a civilization. - Human settlements during ancient medieval and modern periods in and India, and other parts of the world. - Characteristics of human settlements built by Hindu and Islamic Rulers in India
4	**Communication skill/public speaking** - Basic principles and Benefits of Better Communication, Communication Theory, Organizing Thoughts, Valuing People, Choosing Appropriate Words, Using Non Verbal Behaviors (Body Language, Voice Inflection) - Conducting Meetings, Giving Presentations, Writing for Business, Writing Letters, Memos and minutes, Writing Reports and reviews, Using Visuals, Interviewing and facing interviews. - English usage, grammar and composition, learning to listen and speak correctly (One to one communication, on the telephone, Group discussions) - Basic knowledge of effective use of ms word and excel and power point. - Business Etiquettes: Professional Image, Introductions and Greetings, Networking Manners, General, Workplace Manners, Life on the Cube Farm, Interacting With Superiors, Manager's Manners, Business Meetings,

	Business Gifts, Business Cards, Telephone Manners, Cell Phone Etiquette, E-Mail Etiquette, Gender-Free Etiquette, Business Dining, Avoiding Social Blunders When Abroad, Dealing with Angry Customers

Assessment		**Marks**
IA	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – V

Architectural Design -V

Subject Code	**K8301**	**Semester -V**
Credits	**8**	**Subject type-Core**

Learning Objectives	
1	To understand and reflect 'culture as maker of space'

Learning Outcomes: Students will be able to	
1	Develop analytical skill set for spatial design of built spaces
2	Synthesize and translate analytical understanding into Architectural Design

Units	**Contents**
Unit I	Research and analysis of community living with examples.
Unit II	Study of theories on neighborhood planning concepts, community living, campus planning principles etc.
Unit III	It can be a small eskii project like a club house, small community hall, badminton court.

Learning Resources	
Text Books:	
Reference Books:	1. Bhatt V. &Seniver P., (1990), *Contemporary Indian Architecture: After The Masters,* Ahmedabad, USA, Mapin Publishing Pvt. LTD. 2. Kanvinde A. P. & Miller J. H., (1969), *Campus Design in India: Experience of a Developing Nation*, Jostens/American Yearbook Company 3. Mehta J., (2011) *Rethinking Modernity*, New Delhi, India, Niyogi Books 4. Pressman A., *Design Architecture the elements of Process*, USA, Routledge 5. Pandya Y., (2005) *Concepts of Space in Traditional Indian Architecture*, India, New Jersey, Mapin Publishing. 6. Salvadori M., & Robert H., (1975),*Structure in architecture: the building of buildings*,Cornell University,Prentice-Hall 7. Steele J., Doshi B.V., (1998) *The complete architecture of BalkrishnaDoshi: rethinking modernism for the developing world*, India, Super Book House 8. Unwin S. (4th Ed), *Analysing Architecture*, Canada, Routledge
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Design Project demonstrating principles of community living, neighborhood planning etc. on any one of the following - Group Housing, High-end residential building, housing for economically weaker sections, Community Housing etc. –

	Drawing portfolio and model.
2	Design Project on any one of the following – Club House, Community Hall, Sports Club etc. which can be an extension of the projects mentioned above - Drawing portfolio and model.

Building Construction and Materials-V

Subject Code	**K8302**	**Semester-V**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To introduce construction of building components in Reinforced Cement Concrete.
2	To introduce water proofing, insulation & protection systems and their methods of construction
3	To explain the concept of curtain wall and its architectural relevance.

Learning outcomes: Student will be able to	
1	Understand different foundation systems with respect to site and building character
2	Explore special construction techniques of curtain wall and design integration.
3	Become knowledgeable of alternative building materials used in construction

Units	**Contents**
Unit I	**Foundation** : - Concept of bulb of pressure and its significance for site investigation. - Introduction to relevance of soil mechanics in foundation design - Soil types & its behavior under different loading conditions
Unit II	**Types Of Foundation** - Mass concrete strip foundation. - Foundation for brick piers, entrance steps, compound walls etc. - Foundation on sloping site. - Foundation for point load. - Isolated R.C.C. footing for columns - Combined R.C.C. footing - Cantilever R.C.C .footing & eccentric footing - Foundation on weak strata. - Raft Foundation. - Pile Foundation
Unit III	**Foundation and D.P.C.** - Damp proof course treatment using rigid & flexible treatment - Brick on edge - Rough Shahabad stone - Bitumen sheets
Unit IV	**Misc. Constructions** : - Construction Details of Curtain Walls and Structural Glazing Including External Fixing andCladding Details. **Special Construction**: - Basement Construction, Water Proofing details, etc. (Sketches, notes etc.) - Shoring and Underpinning - Flying, raking & dead shoring - Wall, Jack and mega pile, needle &pile, column underpinning

Unit V	**Study of Materials** - R.C.C. end connection details.(beam and column. Slab and beam etc.) - Reinforcement. - Fly ash brick, Stabilized earth block, Rammed earth block, Ferrocrete, Concrete debri block. - Timbering & shuttering for French excavation - Glass

Learning Resources	
Text Books:	1. M.S.Shetty(1986)*Concrete Technology* New Delhi, S.Chand&Co.ltd.
Reference Books:	1. J. S. Foster, Roger Greeno(2007). *Mitchell's Structure & Fabric: Part 2*.New York,Taylor and Francis group. 2. Mörsch, Emil (1909). *Concrete-steel Construction(Der Eisenbetonbau)*.New York, The Engineering News Publishing Company.
Websites:	www.slideshare.net/mvm2594/concrete-technology-12587295
Journals:	Journal of construction engineering, technology stmjournals.com/index.php?journal=jocetm) Master builder -construction magazine, construction news(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different design in aluminum door and window for prescribed projects. (Under discretion of the subject faculty).

Theory of Structure -V

Subject Code	**K8303**	**Semester-V**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	Tounderstand basic structural concepts in steel design.
2	To understand behavior of steel as a structural materials.
3	To understand fundamentals of steel structure.

Learning Outcomes: Student will be able to	
1	Developunderstanding of basic requirements of steel structure
2	Developunderstanding of behavior of use of steel structures
3	Explain importance of types of steel connections and jointing

Units	**Contents**
	Steel design (working stress and limit state both are acceptable – IS: 800)
Unit I	**Sloping roof system** - truss, loads acting on truss, design of purlin (working stress or limit state both shall be acceptable), analysis of truss using method of joints, identifying ties and struts, design of tension and compression members.
Unit II	**Connections** - Riveted, welded bolted connections, their strength. Explain single and double shear (no calculations, no zigzag riveting). Finding length of weld and arranging it along member edges
Unit III	**Design of steel beams**
Unit IV	**Design of steel columns** - (Compression members) single and built in (Introducing lacing and battening. No calculations for lacing and battening design) - Introduction to masonry structures and timber structural members. (no numericals)

Learning Resources	
Text Books:	1. Negi L.S (2008)*Design of Steel Structures.*New Delhi,Tata McGraw-Hill Publishing company limited. 2. Bhavikatti S.S.(2009)*Design of Steel Structures.*I.K. International publishing house. 3. Vazirani V. N. &Ratwani M. M. &Mehra H.(2012)*Analysis and Design of Steel Structures.*New Delhi,Khanna Publishers.
Reference Books:	1. Mckay J.K.*The construction of buildings, vol- IV, 4th ed. (metric), preparations steel RCC fire protection.* 2. Ed Ownens, G.W. Knowles,P.R. Dowling. *Steel designers manual Vththe steel construction institute.* 3. Iyengar K.T.S.&Viswanathan C.S.(2003)*Torsteel design handbook for reinforced concrete members with limit state design.*New Delhi,Tata McGraw-Hill Publishing company limited. 4. Negi L.S.(2002)*Design of steel structures 2nd ed.*NewDelhi,Tata McGraw-Hill Publishing company limited. 5. Karve S.R. & Shah V. L.(2014)*Structural designdatabook steel structures according to I S 800-1984.*Pune,Structures Publication.

	6. Vazirani V. N. &Ratwani M. M. &Mehra H. (2012)*Steel structure design and analysis.*New Delhi,Khanna Publishers. 7. Habermann S.S.*Steel construction manual.*InternationalCertification. 8. AISC*Seismic provisions for structural steel buildings april 15th 1997.*American society of plant physiologists. 9. RamamruthamS.&Narayanan R.(1997)*Design of steel structure.*New Delhi,DhanpatRai Publishing.
Websites:	www.bis.org.in
Journals:	IS 800-2007

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Design of an industrial building, show column locations for given plan area, determine type of truss, design of purlin, purlin-truss connection detail, analysis of any three joints of truss, design of tension member with rivet/weld/bolt, design of compression member, design of columns (built in) supporting the trusses. Drawings and schedule

Working Drawing-I

Subject Code	**K8304**	**Semester -V**
Credits	**5**	**Subject type-Core**

Learning Objectives	
1	To understand and prepare working drawings necessary for construction/execution of buildings on site.
2	To make student understand how to read "Working drawings" on site

Learning Outcomes: Students will be able to	
1	Prepare working drawings for load bearing structure.
2	Prepare Detailed drawings such as doors, windows, toilets, kitchen, flooring etc.
3	Prepare drawing which are readable for all agencies which are involved in execution of the project.

Units	**Contents**
Unit I	Introduction to WD, their significance, study of Example of Working Drawings, site visit
Unit II	Translating design into working drawing of entire project.
Unit III	Drawing showing construction details**.**
Unit IV	Details of toilets, doors, windows etc

Learning Resources	
Text Books:	
Reference Books:	**1.** Wakita, Osamu A., Richard M. Linde, and Nagy R. Bakhoum (2011). "The Professional Practice Of Architectural Working Drawings" **2.** Drawings from ISO certified architect office
Websites:	
Journals:	Gawne, Eleanor. "Cataloguing architectural drawings." Journal of the Society of Archivists 24.2 (2003): 175-187

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Site visit report, Common project assignment.
2	Assignment of Time bound working studio assignment.
3	A portfolio of working drawings where student selects their own design.

History of Architecture-IV

Subject Code	**K8305**	**Semester -V**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To introduce the idea of modernity and demonstrate its impact in the realm of Architecture.
2	To study modern architecture as evolving from specific aspects of modernity industrialization, urbanization, material development, modern art.
3	To study in detail different post modern and contemporary directions in World Architecture
4	To study quest for Indianness in architecture of India from the end of colonial rule to contemporary period

Learning Outcomes: student will be able to	
1	Acquire knowledge of the development of architectural form with reference to technology, materials, style and character of the decades of modernism, post modernism and contemporary architecture and architects.
2	Obtain an overall understanding of the architectural developments of Architecture of post-colonial India

Units	**Contents**
Unit I	**Modernism** - Introduction to Modern Architecture. **Isms in Art and Architecture** - Adolf Loos and critique of ornamentation- Raumplan: Peter Behrens- Werkbund. Expressionism: Mendelsohn, Taut, Polzeig- Futurism- Constructivism, Cubism-Suprematism- De–Stijl. Bauhaus- Gropius, Meyer and Mies. Bauhaus School, Chicago School of Architecture and Taliesin School of Architecture – Great masters like Louis Sullivan, Frank Lloyd Wright **International Style** - Post WW II developments and spread of international style –works of Corbusier:- Brasilia, Unite - Works of later modernists: Louis Kahn, Paul Rudolph, Eero Saarinen, Philip Johnson
Unit II	**Post Modernism** - Critiquing Modernism - Brutalism- projects of Smithsons and Aldo Van Eyck – writingof Jane Jacobs, Robert Venturi, Aldo Rossi and Christopher Alexander - Deconstructivism –Critical regionalism - Innovation and ideas of Archigram – post modern architects like Peter Cook, Paolo Soleri, Robert Venturi - Contemporary architects: Norman Foster, Richard Rogers, James Sterling, Peter Eisenman, Renzo Piano, Daniel leibskind, Zahahadid, Frank O Gehry, Santiago Calatrava, , Rem koolhaas
Unit III	**Post Colonial Architecture in India and any two examples across the globe** - Architectural debates associated with nation formation– early modernist architecture-

	- Post-independence city planning: Chandigarh and Bhuvaneswar- influences on post-independence architects- Architecture of Kanvinde, Raje, Doshi, Correa, Nari Gandhi, RajRewal.
Unit IV	Master Architects influenced by Vernacular/Regional Architecture of India

Learning Resources	
Text Books:	
Reference Books:	1. Kenneth Frampton, (1994) *Modern Architecture: A Critical History*. London, Thames & Hudson. 2. Kenneth Frampton, Richard Ingersoll, (2000) *World Architecture-A Critical Mosaic 19002000 Vol 1*. New York , China Architecture and Building Press. **3.** ManfredoTafuri, (1980) *Modern Architecture.* New York, Harry N. Abrams Inc. 4. William Jr. Curtis,(1988) Balkrishna Doshi, An Architecture for *India* .New York, Rizzoli Publication. James Steele,(1985) *Hassan Fathy*. London, Academy Editions. 5. Sandra Forty, (2004) *Architecture*. Rochester, Grange books 6. Andeas C. Papadakis (1991) A spirit in Architecture, London
Websites:	www.historiasztuki.com.pl/ARCHWSP-POSTMODERNIZ www.modern-architect.com http://www.quora.com/What-are-the-main-differences-of-modern-and-post-modern- architecture http://www.arthistoryarchive.com/arthistory/architecture/Architecture-UrbanCactus.html
Journals:	JSAH-Society of Architectural Historians (www.sah.org/publications-and-research/jsah) Architectural Heritage-Edinburgh University Press(www.euppublishing.com/journal/arch)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
Note	Based on the Assignments listed below with continuous assessment and attendance scrutiny. The final presentation in standard specified Portfolio with all written reports and graphical representations (sketches, pictures)
1	Analytical study of Post-Colonial Architecture in India with literature survey
2	Power point Presentation and discussion of Modern, Post modern, Contemporary World Architects with references to their styles ,designs, technologies, materials and directions
3	Critical Analysis through book /literature survey of various architects and their buildings with relevance to vernacular architecture of India
4	Report based on field study.
5	Model making.

Specification Writing

Subject Code	**K8306**	**Semester -V**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To develop skill of writing specifications for materials and works.

Learning Outcomes: students will be able to	
1	Write specifications with reference to building trades, materials, workmanship and performance of different items of work
2	Discuss specifications as integral part of contract document for building projects

Units	**Contents**
Unit I	- Specifications as part of contract document, definition, need and importance, its relationship with working drawings, bill of quantities and Schedule of rates. - Types of specifications, open, closed, restricted, prescriptive, performance based, or combination of above types. Use of manufacturers guide etc. - Specification writing method to include master list, sectional formats, page formats, general material items, tests, performance, mode of measurements etc
Unit II	- Methodology of writing detailed specifications including methods and forms of writing descriptive notes on materials and workmanship based on working drawings. - Collection of catalogues and technical information on various materials, products and specialized items. - Preparation of checklist for writing detailed specifications
Unit III	- Study of different building trades, their scope and contents. - Introduction to writing specifications for building services and checklist for services such as Water Supply, Drainage, Electrical and HVAC installations. - Writing specifications of a previous design project in full or part as final assignment

Learning Resources	
Text Books:	1. S. Patil (2013) *Civil Engineering Contracts and Estimate.* Anand. Orient Blackswan,Bangalore 2. B.N.Datta (2011) *Estimation and Quantity Surveying*, UBS Publishers & Distributors Ltd.Mumbai.
Reference Books:	1. SP 27 (1987) *Handbook of Method of Measurement of Buildings Works,Bureau of Indian Standards (BIS)* 2. *[CED 44: Methods of Measurement of Works of Civil Engineering] (first revision-2003) Bureau of India Standards*. 3. Willis, C. & A. Willis (1997) *Specification writing for architects and surveyors*, Blackwell Science, United Kingdom
Websites:	www.trainning@theNBS.com(National Building Specifications) www.ncarb.org
Journals:	National Council of Architectural Registration Boards(N.C.A.R.B) - See more at: http://www.ncarb.org/en/About-NCARB.aspx#sthash.bpyDoY2q.dpuf International Cost Estimating and Analysis Association (ICEAA)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper.	

Building Services-III

Subject Code	**K8307**	**Semester -V**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To expose students to the science behind HVAC system.
2	To familiarize students with the various air- conditioning systems and their applications
3	To study various aspects of Natural Ventilation

Learning Outcomes: student will be able to	
1	Acquire knowledge of various air conditioning systems and their applications.
2	Address various issues in design of HVAC system
3	Understand various issues in natural ventilation systems in buildings

Units	**Contents**
Unit I	**HVAC** - Air distribution systems, ducts and ducting layout. - Costing data and space requirements. Integration of AC systems in Design. - Principles of Psychometrics and heat transfer
Unit II	**Components of HVAC** - Unit AC's, Central AC's split AC's. - Components of AC system such as chilling plant, cooling towers, air handling units, calculation of AC load. - Water consumption for AC
Unit III	**Ventilation of buildings** - Natural ventilation (passive.) - Ventilation functions and requirements. - Physical mechanism of ventilation. - Design factors affecting ventilation
Unit IV	**Mechanical ventilation (active)** - Need of mechanical ventilation a) Forced ventilation – Exhaust fans, Axial flow fans, Blowers for industrial ventilation. b) Introduction to Air conditioning, heating and cooling

Learning Resources	
Text Books:	1. Benjamin Stein and John Renolds.(2006)*Mechanical and Electrical Equipment for Building*, New York, John Wiley and Sons.
Reference Books:	1. Vasisth K.(2011)*Waste management* New Delhi, Essential books. **2.** National Building Code of India, 2005 (NBC 2005)
Websites:	**http://bst1.cityu.edu.hk/e-learning/**
Journals:	Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.journals.elsevier.com/energy-and-buildings/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-journals/technical-journals-bsert-lr-t)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Elective- III

Subject Code	**K8308**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: Student will be able to	
1	Engage in systematic self study of topic they feel interested in.

	Studentscan select one elective from the following list
1	**Barrier Free Architecture** - Types of disabilities and its implications in Architecture, barrier free environment, access- provisions to facilities and amenities. - Typical barrier problems of the physically challenged people-parking, approaches to buildings travel within buildings etc. - Special design considerations in residential buildings, congregational buildings like auditoriums, theatres, studios, transport terminals etc, Institutional buildings, outdoor appurtenances, garden – parks etc. - Study of norms set by Central Government
2	**Appropriate technology** - Introduction to the concept of Appropriate technology and services suitable in Indian context for both rural and urban application - Study of theoretical and practical aspects of innovative /alternative materials and construction techniques developed in recent past. - Mud wall, suitability of soil for mud walls - Waffle and daub walls, Rammed earth walls, adobe walls - Walls, vaults using soil cement, compressed mud blocks, Nubian arch roof - Use of Bamboo as material its properties ,available in country - Burnt clay tile roofing, ferro cement roofing units, doubly curved tile roofing
3	**Contemporary Design Theory(History and Design)** - Detail study and analysis of styles of contemporary Indian and foreign Architects - Study of spatial order, structural, constructional and material order, manner of articulation, symbols, and meanings as these evolved in time and space. - Comparative study of building typologies in vernacular and architecture in modern period
4	**Seminar II** - Independent study and documentation of architectural and allied subjects by individual student alongwith oral and visual presentation. - The seminar shall be a research paper on a topic related to Architecture

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – VI

Architectural Design -VI

Subject Code	**K8309**	**Semester -VI**
Credits	**8**	**Subject type-Core**

Learning Objectives	
1	To explore and demonstrate 'technology and services as major determinants of Architectural form' and understand co-relation between function, structure, services and form.

Learning Outcomes: Student will be able to	
1	Develop analytical skill set for understanding built and non-built spaces
2	Synthesize and translate the analytical understanding into Architectural Design

Units	**Contents**
Unit I	Research and Analysis of innovative technologies and materials prevailing in market, state of the art services and systems.
Unit II	Multi-functional public buildings like IT Complex, Hospitals, Commercial Centers, High Rise Structures
Unit III	Extension of the large project mentioned above e.g. Design of gymnasium, bank, departmental store, operation theatre, auditorium, etc.

Learning Resources	
Text Books:	
Reference Books:	1. Bhatt V. &Seniver P., (1990), *Contemporary Indian Architecture: After The Masters,* Ahmedabad, USA, Mapin Publishing Pvt. LTD. 2. Kanvinde A. P. & Miller J. H., (1969), *Campus Design in India: Experience of a Developing Nation*, Jostens/American Yearbook Company 3. Mehta J., (2011) *Rethinking Modernity*, New Delhi, India, Niyogi Books 4. Pressman A., *Design Architecture the elements of Process*, USA, Routledge 5. Pandya Y., (2005) *Concepts of Space in Traditional Indian Architecture*, India, New Jersey, Mapin Publishing. 6. Salvadori M., & Robert H., (1975),*Structure in architecture: the building of buildings*,Cornell University,Prentice-Hall 7. Steele J., Doshi B.V., (1998) *The complete architecture of BalkrishnaDoshi: rethinking modernism for the developing world*, India, Super Book House **8.** Unwin S. (4th Ed), *Analysing Architecture*, Canada, Routledge
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Design project demonstrating integration of the building components and

	technology, services, vertical circulation, byelaws etc. on any one of the following – 3-star hotel, commercial complex, hospital, civic center, convention centre etc – Drawing portfolio and models
2	Design Project on any one of the following – gymnasium, bank, departmental store, operation theatre, auditorium, etc. - Drawing portfolio and models

Building Construction and Materials-VI

Subject Code	**K8310**	**Semester -VI**
Credits	**6**	**Subject type-Core**

Learning Objectives	
1	To introduce construction of building components in Reinforced Cement Concrete.
2	To introduce construction of building components in steel and its use in industrial construction
3	To introduce methods of the pre-engineered structures

Learning Outcomes: student will be able to	
1	Explore different R.C.C components of framed construction as well as special component construction.
2	Discuss different steel components and its construction
3	Understand concept of pre-engineered construction with respect to industrial construction

Units	**Contents**
Unit I	**R.C.C. Framed ConstructionElement study** - Principles and practices of R. C. Framed construction and its components - R. C. C. Footing for column, Isolated footing - R. C. C. Plinth beams and Plinth formation - R. C. C. Lintels and Chajja projections - R. C. C. Slab – one way, two way, single span and continuous spans - R. C. C. Beams – singly and doubly reinforced, single and continuous spans, cantilever beams - R. C. C. Columns
Unit II	**R.C.C. Framed Construction Special Component study** - R.C.C., Balconies, Canopies, fins, parapets - R.C.C. its potential and application - Details of junctions of slab and beam, slab-beam- column, primary, secondary beams - Study of form work construction - R.C.C. Staircase
Unit III	**Steel Structures** - Study of portal frames, its various types & connection details. - Study of Castellated Beam, Veradale girder, Portal Frames & Lattice Construction with - Connection details. - Medium span Roof Trusses with Sheet Cladding details & Rain Water Disposal details. - Introduction to framed steel structures using steel sections & steel decking
Unit IV	**Industrial Building**: - Study of constructional details for industrial buildings. - Details for lighting, Ventilation & Rain water disposal for industrial buildings. - Study of Machine foundation, gantry & high Strength flooring etc
Unit V	**Study of Materials**

	- Different cladding materials with fixing details. - Pre engineered structures. - Pre-stressed and post-tensioning methods pros and cons.

Learning Resources	
Text Books:	1. M.S.Shetty(1986)*Concrete Technology* New Delhi, S.Chand&Co.ltd. **2.** J. S. Foster, Roger Greeno(2007)*Mitchell's Structure & Fabric: Part 2*.New York,Taylor and Francis group.
Reference Books:	1. Gorenc, Tinyou, Syam(2005)*SteelDesinger's Handbook.* New Delhi,CBS Publishers and Distributors. 2. Ralph Monletta(1989)*Plastics in Architecture" – A guide to acrylic and Polycarbonate.N*ew York, Marcel Dekker Inc. **3.** Jack M Landers(1983)*Construction Materials, Methods, Careers* USA,Good Heart - WilCox Company,Inc Publishers, Homewood, IL.
Websites:	www.slideshare.net/mvm2594/concrete-technology-12587295
Journals:	Journal of Construction Engineering, Technology stmjournals.com/index.php?journal=jocetm) Master Builder -Construction Magazine, construction News(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building technology topics.
3	Proposals of different design in industrial building for prescribed projects. (Under discretion of the subject faculty).

Theory of Structures-VI

Subject Code	**K8311**	**Semester -IV**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand basic concepts for RCC foundations
2	To understand behavior of different soils and foundation choice
3	To understand different types of RCC footings

Learning Outcomes: student will be able to	
1	develop understanding of basic staircase design.
2	develop understanding of behaviour of footings
3	understand importance of prestressing structural elements

Units	**Contents**
Unit I	**Staircases** - Types based on supports, loads, design of simply supported doglegged staircase
Unit II	**Soil types and foundations** - Soil types and determining suitable foundation (only theory) : safe bearing capacity, shear failure, excessive settlement, differential settlement, trial pits, need of pile foundation, need of raft foundation. - Design of rcc isolated pad footing. Explain (not design)rcc details of isolated circular and sloped footing, eccentric footing. - Necessity of combined footing, behaviour of combined footing, rcc details. (no design problem)
Unit III	**Foundation for steel columns** - Theory.(no numerical)
Unit IV	**Prestressing** - Introduction to prestressed structural elements, procedures, advantages, disadvantages, simple numerical beam problem to explain the concept of prestressing

Learning Resources	
Text Books:	1. Shah H.J. (2014) *Design of RCC structures part II.* Anand, Charotar publishing house.
Reference Books:	1. Dr.Shah V.L.& Dr. Karve S.R.(2014)*RCC Theory and Design.*Pune,Structures Publishers. 2. Shah H.J.(2013)*Design of Reinforced Concrete Structures.*Anand,Charotar Publishing house. **3.** Sinha S.N.(2014)*Reinforced Concrete Design.*New Delhi,Tata McGraw-Hill Publishing company limited.
Websites:	www.bis.org.in www.nptel.ac.in
Journals:	IS: 456-2000 code of practice for plain and reinforced concrete SP:16-Design aids for reinforced concrete

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**

	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Design of simply supported doglegged stair case, drawing and schedule
2	Design of isolated pad footing, drawing and schedule
3	Making a typical RCC structural drawing with column location, numbering, beams (identifying beams to be designed as simple/cantilever/continuous…slabs to be identified as one way/two way/cantilever/continuous…typical detail of each element and schedule – no design)
4	Photo documentation of various foundation problems and their solutions

Working Drawings -II

Subject Code	**K8312**	**Semester -VI**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To understand and prepare advanced drawings necessary for construction/ execution of the buildings on site

Learning Outcomes: Student will be able to	
1	Prepare working drawings for RCC Framed structure
2	Prepare Detailed drawings such as OHWT, staircase, electrical layout, toilet details
3	Ability to coordinate with other consulting agencies involved in the project.

Units	**Contents**
Unit I	Preparation of working drawing for RCC structure
Unit II	Details
Unit III	Fieldwork: Setting of structure on Site

Learning Resources	
Text Books:	
Reference Books:	1.Wakita, Osamu A., Richard M. Linde, and Nagy R. Bakhoum (2011). "The Professional Practice Of Architectural Working Drawings
Websites:	
Journals:	Gawne, Eleanor. "Cataloguing architectural drawings." Journal of the Society of Archivists 24.2 (2003): 175-187

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To ‘Rule number 6, sub point 6.2.2.’	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Common project
2	Field assignments
3	Individual design translated to working drawing portfolio with all details necessary for construction.

Landscape Architecture

Subject Code	**K8313**	**Semester -VI**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To emphasis learning of architecture beyond building, in the outdoor environment and spaces
2	To introduce the role and importance of landscaping and site planning in enhancing and improving the quality of building environs, functionally and aesthetically.
3	To explain site and its context while designing of buildings
4	To use landscape elements to create and enhance exterior spaces and to achieve climatic control at the buildings and site level.

Learning Outcomes: Students will be able to	
1	Explore various aspects of site planning and relationship between built and openspaces
2	Understand role of landscape in architecture.
3	Design small scale landscape project using landscape elements.

Units	
Unit I	**Introduction to landscape architecture – Importance, need and scope** **Landscape Elements** - Plant element: Different aspects of - trees, shrubs, lawns, climbers, hedges, Indoor plants as elements. Basic idea about plants, plant selection, planting design and care of plants. Importance and use of NATIVE vegetation - Land element: Different aspects –soils, topography, levels, grading, earth forms, and foundations. - Water elements: Fountains, waterfalls, pools, cascades, channels, irrigation etc. - Architectural elements: sculptures, curbs, walls, steps, fence, etc
Unit II	**Historical and contemporary landscape practices and case studies** **Integration of indoor and outdoor spaces**
Unit III	**Climate** - Macro and microclimatic consideration in landscaping; effect on landscape and microclimate **Site analysis and planning** - Methodology and process of site study. Landform analysis, site analysis techniques. Importance of site planning for landscape design and architecture. **Principles of landscape design** - Aesthetical consideration
Unit IV	**Relation between built and open spaces** Pedestrian and vehicular circulation Landscape construction details Services related to landscape - Plumbing, water supply, electrical, sewage management

Learning Resources	
Text Books:	
Reference Books:	1. Jellicoe, G. A., & Jellicoe, S. (1982). *The Landscape of Man: Shaping the Environment from Prehistory to the Present Day*: Van Nostrand Reinhold. 2. Simonds, J. O. (1998). *Landscape Architecture: A Manual of Site Planning and Design*: McGraw-Hill. 3. Booth, N. K., & Hiss, J. E. (2012). *Residential Landscape Architecture: Design Process for the Private Residence*: Prentice Hall. 4. Reid, G. W. (2007). *From Concept to Form in Landscape Design*: Wiley. 5. Robinette, G. O. (Ed.). (1983). *Landscape Planning for Energy Conservation*. NewYork: Van Nostrand Reinhold Company. 6. White, S., & Stein, J. A. (1993). *Building in the garden: the architecture of Joseph Allen Stein in India and California*: Oxford University Press. 7. Kanvinde, A., & Miller, H. J. (1969). *Campus Design in India: Experience of a Developing Nation*: Jostens/American Yearbook Company. 8. Lynch, K. (1984). *Site Planning* (Third ed.): M.I.T. Press
Websites:	
Journals:	Journal of landscape Architecture (LA)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Comprehensive landscape proposal(Drawing portfolio) **a)** One project for Functional and Aesthetic considerations, at residence level. (Especially landscape places like interiors, courtyards, terrace gardens, window landscaping etc.) **b)** One project for campus planning including vegetation, parking, road sections, footpaths, lighting etc.
2	Case studies of landscape project under consideration in the form of report

Estimation and Costing

Subject Code	**K8314**	**Semester -VI**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To equip students with necessary technical knowledge for calculating estimates and detailed costing for small to medium projects with developing the skill of writing specifications for materials and item works.

Learning Outcomes: Students will be able to	
1	Computequantities of various building items for simple load bearing structures and be acquainted with various types of Estimates including mode of measurements as adopted by I.S.1200.
2	Compute quantities and rate analysis of various building items of R.C.C. framed structure along with building services such as water supply, sanitation and drainage, electrical installations etc

Units	**Contents**
Unit I	Introduction, purpose of "Quantity Computation" i.e. estimating, types of estimates (preliminary, Detailed) - Study of I.S.-1200. - A small project in load bearing and R.C.C. frame construction or their part to work out quantities and to understand market rate of materials and labours.
Unit II	- Bill of quantities for single story structures - Load bearing construction system. - R.C.C. Frame construction system.
Unit III	- Methods of calculating quantities for building works - Preparation of Bill of Quantities (B.O.Q.) Mode of measurements of quantities. Market rates of labour and building materials. Labour requirement and norms for consumption of basic materials. - Schedule of rates
Unit IV	- Study of different agencies involved in construction e.g. CPWD, PWD, etc. - Rate analysis and cost index. - Study of rate of innovative building materials in the market. - General factors affecting the rate of an item .rate analysis for different components of construction. - Software for calculation of quantities of various building items

Learning Resources	
Text Books:	1. B. S. Patil(2006). Civil Engineering Contracts and Estimates (Third Edition), Orient Blackswan. 2. B.N.Datta, (2011) Estimation and quantity surveying
Reference Books:	1. *SP 27 (1987): Handbook of Method of Measurement of* 2. *Buildings Works [CED 44: Methods of Measurement of Works of* 3. *Civil Engineering] (first revision-2003) Bureau of India Standards* 4. Arthur J.Willls (1979). Specification writings for Architects and surveyor by. Published by Crosby Lockwood 5. National Building Code(N.B.C.)2005,*Bureau of India Standards*
Websites:	www.bdg.org. WDBG- National Institute of Sciences.(Cost Estimating)

	www.cost -estimating.com
Journals:	Specifications Consultants in Independent Practice (SCIP) International Cost Estimating and Analysis Association (ICEAA)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Assignments	
	Exercises for IA
1	To work out the quantities of a small load bearing structure having area not more than 40 sqm.
2	To work out the quantities of items of construction work of load bearing and R.C.C. framed structure along with presentation
3	To prepare the list of items in construction and work out the quantities of items as directed by instructor

Building Services-IV

Subject Code	**K8315**	**Semester -VI**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To study different high rise systems with respect to service core designs and building automation systems.
2	To familiarize the students with firefighting equipment and their installation
3	To familiarize students with water supply and sanitation systems in high rise
4	To study various aspects of vertical communication systems.

Learning Outcomes: Student will be able to	
1	Explore various services including core and building automation systems.
2	Understand fire safety, fire fighting, fire prevention and installations in buildings including codal requirements
3	Address various design issues of water supply and sanitation systems in high rise buildings.
4	Understand various systems of vertical communication

Units	**Contents**
Unit I	**Advanced Building Services** - Types of High Rise Buildings - Building Core Arrangements
Unit II	- Water distribution systems in High rise buildings- downfeed water distribution, pumped upfeed distribution, constant pressure upfeed, gravity downfeed system - Sanitation systems in High rise buildings- two pipe system, solvent system.
Unit III	- Vertical communication systems for high rise buildings-Types of Elevators, Sky lobby Elevator system, double- deck elevator system, Hydraulic Elevators
Unit IV	- Fire fighting in high rise buildings- Water fire suppression systems and other fire suppression systems, Fire detection systems - Codal provision and standards for Fire fighting
Unit V	- Building automation system

Learning Resources	
Text Books:	1. Benjamin Stein and John Renolds.(2006)*Mechanical and Electrical Equipment for Building*, New York, John Wiley and Sons.
Reference Books:	1. "Fire Safety: National Building Code of India 1983" published by Bureau of Indian Standards. 2. Andrew H Buchanan, (2001) *Design for fire safety*.New York,John Wiley & Sons Ltd 3. Yeang K.(2002) *Service cores details in building*. New York, John Wiley and sons. 4. National Building Code of India, 2005 (NBC 2005)
Websites:	http://www.slideshare.net/rdpatil65/fire-fighting-presentation http://www.powershow.com

Journals:	Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.**journals**.elsevier.com/energy-and-**buildings**/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-**journals**/technical-**journals**-bsert-lr-t)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Elective-IV

Subject Code	**K8316**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes; student will be able to	
1	Engage in systematic self study of topics they feel interested in.

	Studentscan select one elective from the following list
1	**Architectural Journalism** - Structure of architecture Journals - Writing Descriptive and analytical reports - Editing write ups,Photo Journalism. - Book reviews - Page compositions - The public process - Electronic media
2	**Theatre /Film set Design** - History of set and backdrop design for performance - Theme based design strategies - Period and modern sets,Technology applications
3	**Green material/advanced material** - Green material Selection, factors in selection, Resources to assist in determining materials appropriateness. - Material consideration when using the LEED rating program - Finishing materials for interior and exterior - Insulating materials :organic binders and bitumen and tar based materials like Bitumen, tar, emulsions, mastics, waterproofing items - Folymer sand polymer –based materials and components, polymer based building material for walls, pipes, sanitary-ware, glues and mastics - Metals in advanced building systems, steel cables, structural glazing and curtain walling - Light weight roofing materials :asbestos, galvanized iron, acrylic, polycarbonate
4	**Visual Communication** - Visual communication in architecture - Non verbal communication –signs, symbols, metaphor. - General concepts of image and schema - Concept sketches, bubble Diagrams, Area Diagram - Exploring methods of presentation for design through photographs, ppt, sketching, rendering etc. - Built forms and environment, Way finding in architecture and space between environment

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – VII

Architectural Design -VII

Subject Code	**K8401**	**Semester -VII**
Credits	**10**	**Subject type-Core**

Learning Objectives	
1	To learn different visual mapping methods in architecture
2	To understand and analyze the urban context and respond through design of a public space /public building

Learning Outcomes: Student will be able to	
1	Learn methods of mapping data
2	Develop analytical skills responsive to the broader socio-economic & physical context of the study area
3	Synthesize and translate analytical understanding into Architectural Design

Units	**Contents**
Unit I	**Data Collection, Representation** - Learning different methods of data collection, documentation and representation through mapping - Documenting the socio-economic & physical context of the study area, understanding character and distinctive features of the same. - Understanding of the legislative provisions including land-use, zoning, DCR& relevant acts as applicable to the study area.
Unit II	**Data Analysis** - Analyzing the available data to arrive at issues, concerns and design decisions based on methods like SWOT analysis. - Arriving at a design proposal and developing design brief based on the analysis
Unit III	**Design Proposal** - Design of a public space/building responsive to the context - site and people

Learning Resources	
Text Books:	
Reference Books:	1. Alexander C., Ishikaw S., Silverstein M. & Jacobson, *A Pattern Language, Town, Buildings, Construction*, Oxford University Press 2. Alexander C., Ishikaw S., Silverstein M. & Jacobson, *A Timeless way of Buildings*, Oxford University Press 3. Bacon E. N., (1976), *Design of Cities* Revised Edition, USA, Penguin Books 4. Jain K. B., (2011), *Architecture Conceptual to the Manifest* 5. Lang J., (1994) *Urban Design: The American experience*, John Wiley & Sons, 6. Cullen G., (1971), *The Concise Townscape*, New York, USA, Architectural Press, Routledge. 7. Lang J. T. , Desai M. & Desai Madhavi, (1997) *Architecture and independence: the search for identity--India 1880 to 1980*, USA, Oxford University Press 8. Lynch K., (1960, 1990), *The Image of the City*,Massachusetts Institute of Technology Cambridge, Massachusetts, and London, England, The M.I.T. Press (20th Printime)

Websites:	Atre S., *Comprehensive Architecture + Urban Design Studio, Architecture And Context* California Polytechnic State University, San Luis Obispo College of Architecture & Environmental Design, From http://www.calpoly.edu/~arch/program/fifthyr/atre.pdf
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Data collection and analysis of urban fabric of selected site
2	Site responsive design demonstration of the following building typologies may be encouraged — residential, industrial, museums, libraries, transportation, institutional, hospitality buildings, recreational, any public activity spaces, etc. - Drawing portfolio and 3 - d model

Building Construction and Materials-VII

Subject Code	**K8402**	**Semester-VII**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To introduce students to the advanced construction systems.
2	To introduce large scale roof constructions like stadiums, industrial buildings etc, and related materials.
3	To introduce types of swimming pool design and construction.
4	To introduce student to concepts of modular design and construction.

Learning outcomes: Student will be able to	
1	Understand various typologies and technologies of long span structures.
2	Understand various design and construction parameters of swimming pools.
3	Analyze modular concept of design and construction in large scale projects.
4	Explore sport stadiums, their field area and support space as well as building envelopes.

Units	**Contents**
Unit I	**Long Span Structures** • Shell structure like single curvature and double curvature etc. • Folded slab structure • Tension Structures like membrane, cable net and air supported etc. • Grid structure and skeletal like Space frames etc.
Unit II	**Multi-basement** - Soil bearing capacity and excavation techniques for basement. - Different uses of basement, it's planning criteria, Techniques of construction techniques like retaining wall, diaphragm wall, caissons, cofferdam etc. - Various services related to Basement like waterproofing, drainage, Ventilation, Ramps, elevators etc.
Unit III	**Auditorium** - Auditorium shape and size, seating arrangements. - Cone of vision, sightlines, stage and back stage design. - Acoustical design consideration, Noise and its criteria, sound defects etc. - Ancillary spaces like projection room, balcony, green rooms, orchestra pit etc. required for Auditorium. - Services related to Auditorium like fire protection and ventilation etc.
Unit IV	**Modular coordination.** • Precast and prefabricated building components used for roof, wall, interior and floor construction etc.
Unit V	**Study of Materials** - Study of modern building materials with respect to long span roof, modular system ,Acoustics ,basement etc.

Learning Resources	
Text Books:	1. T.D Ahuja and G.S. Birdie (1996)*Fundamentals of Building Construction* New Delhi, Dhanpat Rai Publishing Company Pvt. Ltd
Reference Books:	2. J. S. Foster, Roger Greeno(2007)*Mitchell's Structure & Fabric: Part **2***.New York,Taylor and Francis group. 3. Gorenc, Tinyou, Syam(2005)*Steel Designer's Handbook* New Delhi,CBS

	Publishers and Distributor. 4. Ralph Monletta (1989)*Plastics in Architecture" – A guide to acrylic and Polycarbonate*.New York, Marcel Dekker Inc.
Websites:	http://roofhugger.com/ConstructionDetails.htm?utm_source=Come+See+Us+in+New+Orleans&utm_campaign=Hugger+News-January+2018&utm_medium=email`
Journals:	Journal of Construction Engineering, Technology stmjournals.com/index.php?journal=jocetm) Master Builder -Construction Magazine, Construction News(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2'	
U.E.	**University Examination**	**60**
	Theory paper	

Theory of Structures -VII

Subject Code	**K8403**	**Semester-VII**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To understand trends and challenges in contemporary building structural systems.
2	To understand complex building structures and large spans
3	To understand importance and need for structural modeling

Learning Outcomes :Student will be able to	
1	Develop connections between Design, Construction and Material.
2	Design Ground and First floor structures with R.C.C. and steel building with simple configuration
3	Apply software as tool for modeling structures

Units	**Contents**
Unit I	- Earthquake zoning, base shear, lateral forces. Introduction to IS: 1893 - Introduction to shear wall, structural behaviour, typical details. - Ductile detailing: introduction to IS: 13920, typical details of beams, columns, junctions
Unit II	- Introduction to flat slab (beamless). Major structural actions, behaviour and RCC details. - Introduction to plate girders, gantry girders, castellated girders. - Introduction to flitched beams.
Unit III	- Introduction to shell roofs. Behaviour, structural actions and rcc details of spherical dome. - Understanding space frame and space truss (3D elements, equilibrium conditions and concepts only) - Introduction to long span structures: arches, open web sections, bow string girders, typical details. - Modelling and analysis of structure on STAAD-Pro software.

Learning Resources	
Text Books:	1. Sarma T.S. (2014) *STAAD Pro V8i for Beginners with Indian Examples.*Chennai, Notion Press. 2. Shah H.J.(2014)*Design of RCC Structures part II.*Anand,Charotar Publishing house.
Reference Books:	1. Dr.Shah V.L.& Dr. Karve S.R.(2014)*Illustrated design of reinforced concrete buildings(design of G+3 storeyed office/residential building).*Pune,Structures Publishers. 2. Negi L.S.&Jangid R.S.(2000)*Structural analysis.*New Delhi,Tata McGraw-Hill Publishing company limited.
Websites:	www.nicee.org www.bis.org www.nptel.ac.in INSDAG website
Journals:	IS :1893 and IS: 13920

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Sketching and explaining structural behaviour of above topics.
2	Case study of structural systems implemented by imminent architects in their projects
3	Modelling and analysis of simple structure on STAAD-Pro

Interior Design I

Subject Code	**K8404**	**Semester -VII**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To make students understand various aspects of interior spaces
2	To make students understand qualities of interior spaces to develop skills in designing for functional and aesthetical meaningful interior spaces.

Learning Outcomes: Student will be able to	
1	Design interior spaces of buildings.
2	Design furniture with all necessary details.
3	Develop competence for working with various materials & construction techniques used in interior design

Units	**Contents**
Unit I	- Introduction to the field of interior design and various parameters. market survey of various interior materials
Unit II	- Market survey of various interior materials.
Unit III	- Case study of a small interior project. (100sq.m to 150 sq,m) Carpet area.
Unit IV	- A detailed design of the interior projects. (50sq.m to 100 sq,m) Carpet area.

Learning Resources	
Text Books:	1. John Coles & Naomi, (2007) The fundamentals of interior architecture/AVA Publishing SA.
Reference Books:	1. Mitcheil Beazley (2004), The new colour book/octopus publishing group ltd. 2. Julie Savill (2001), Good homes magazine(101 colour schemes that really works)/BBC World wide. 3. Elizabeth wilhide. (2007), Surface & Finish(Directory of materials for interiors) /Quadrille publishing Ltd. UK
Websites:	www.quadrille.co.in. www.theaid.in.
Journals:	Magazine published by IIID "Insite" International journal of interior architecture & spatial design.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Study Example report with drawings & Studio based time bound Interior design project.
2	Report on survey of materials in market (This will be referred for UE examination)
3	Drawing portfolio comprising of Individual interior design layout, elevations,

	sections and views
4	Constructional drawing of various interior components and specification of the above interior finalized project.

Advance Landscape Architecture

Subject Code	**K8405**	**Semester -VII**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To understand the complex issues related to landscape architecture and respond comprehending natural, man-made and social environment.
2	To understand various factors affecting landscape design at urban scale

Learning Outcomes: student will be able to	
1	Respond to complex issues related to landscape architecture at macro level
2	Understand influences of various factors on design of landscape at urban scale

Units	**Contents**
Unit I	**Understanding advancements in Landscape Architecture** -Terrace Gardens, Roof Gardens, Vertical Landscapes, etc. -Landscape for atriums -Innovative Landscape construction techniques.
Unit II	**Understanding the process of site analysis and planning at macro level (involving complex issues such as physical, functional, environmental and socio-cultural)** - Physical factors such as topography, geology, site features, hydrology, surrounding land-use, buildings and soil conditions - Environmental factors such as climate, existing flora and fauna - Socio-cultural such as existing use, structures of historic or religious importance if any , - Aesthetics such as views from and within site - Strom water management
Unit III	**Understanding role of landscape for energy conservation** -Role of vegetation -Role of water bodies -Role of land form -Effect on temperature, air movement, noise and pollution
Unit IV	**Understanding the various factors affecting design and planning of urban open spaces and provide landscape solution for the same.** - Physical Factor - Social Factors - Environmental Factors - Functional Aspects

Learning Resources	
Text Books:	-----
Reference Books:	1. 1.Jellicoe .G and Jellicoe. S (1987).The Landscape of Man, Thames and Hudson, London 2. Simonds. J. O. (1961). Landscape Architecture, The Shaping of Man's Natural Environment. F.W. Dodge Cooperation, London 3. Harris.C.W and Dine.N.T ; Time Saver Standards For Landscape Architecture, McGraw – Hill International Edition, Arch. Series

	4. Starke .B and Simonds. J. O. (2013) Landscape Architecture: A Manual of Site Planning and Design. McGraw-Hill Professional 5. Reid G. W: (1987) Landscape Graphics. 6. Reid G. W: (1993) From Concept to Form: In Landscape Design. John Wiley & Sons . 7. 7.Robinette, G.O (1977) Landscape planning for energy conservation. Environmental Design Press,Reston, VA
Websites:	-----
Journals:	Journal of Landscape Architecture

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Case studies based on unit I
2	Assignment based on unit III
3	Case studies or readings based on unit IV
4	One large scale studio project based on unit II or IV

Urban Planning I

Subject Code	**K8406**	**Semester -VII**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To introduce students to the basic concepts of Town and Urban Planning.
2	To understand the hierarchy of planning.
3	To understand the importance of Town Planning with respect to legislative guidelines, through Acts and Byelaws
4	To introduce the subject of Urban Design in order to enable students to establish a larger context for Architectural Design

Learning Outcomes: Student will be able to	
1	Understand the basic concepts of Town and Urban Planning
2	Legislation and rules of Town Planning
3	Do the Subdivision of Layout, and Municipal Drawings.
4	Understand the evolution of urban form of cities

Units	**Contents**
Unit I	**Introduction to the subject of Urban Planning**. Introduction to the Basic concepts in planning like landuse, zoning, byelaws etc Need and importance of study of Rural/ Town /Urban Planning for an architect.
Unit II	**Evolution of planning in settlements from ancient to contemporary times.** Principles, influences on Indus cities, Egyptian cities, Greek cities, Roman cities, Industrial cities etc.
Unit III	**Planning Theories By** Patrick Geddes; Kevin Lynch; Clarence Perry; Frank Lloyd Wright; Ebenezer Howard; Le Corbusier, C.A. Doxiadis, Lewis Mumford. **Conceptual study** of Garden city, Satellite towns, Industrial Towns, New Towns, Planned Cities, Twin Cities, Neighbourhood Etc. **City plan patterns**-Linear, Radial, Grid Iron layout and Ribbon development
Unit IV	**Introduction to Housing and Housing Typologies** Characteristics of Urban housing. Study of Housing typologies based on Topographical and Social, Economics aspects. Housing scenario and its impact. Study of Housing Neighbourhoods with reference to planning concepts and principles by planners.
Unit V	**Introduction to Planning Legislation** Introduction to various planning related laws, their contents and provisions, viz: M.R.T.P. Act of 1966, Land Acquisition Act of 1894, Maharashtra Slum Redevelopment Act, Urban Arts Commission Act, Municipal Act etc
Unit VI	**Introduction to urban form and space** Urban Form and space in historical and theoretical terms.

Learning Resources	
Text Books:	1. Kevin Lynch (1960)*The Image of the City* USA, MIT press. 2. Lewis Mumford (1972)*The City in History: Its Origins, Its Transformations, and Its Prospects*.USA, Harcourt, Inc.

	3. Peter Geoffrey Hall (1996 Updated Edition) *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century* USA, Blackwell publishing. 4. Anthony J. Catanese, James C. Snyder (2014) *Urban Planning.* New Delhi, McGrawHill Education Private Limited. 5. AbirBandyopadhyay, (2010) *Town Planning*, Kolkata, ArunabhaSen
Reference Books:	1. Browm A.J.(1969) *Introduction to town and country planning* Australia, Angus and Robertson publisher. 2. P.Healey,(1981) *Planning Theory*.UK, Pergamon Press 3. Arthur Gallion(1993)*The Urban Pattern*. New York, John Wiley and Sons
Websites:	**www.planetizen.com/websites/2014** http://www.unhabitat.org / @UNHABITAT http://sustainablecitiescollective.com / @sustaincities
Journals:	Cities: The International Journal of Urban Policy and Planning Urban Policy and Research Urban Studies

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Building Services-V

Subject Code	**K8407**	**Semester -VII**
Credits	**2**	**Subject type-Core**

Learning Objectives	
1	To expose students to the various integrated services of water supply And drainage at campus level.
2	To familiarize students with solid waste management.
3	To study various Building Management Systems.

Learning Outcomes: student will be able to	
1	Acquire knowledge of various integrated building services.
2	Address various issues of solid waste management.
3	Understand various Building management systems

Units	**Contents**
Unit I	**Water Distribution systems** - For housing schemes and high rise buildings. Schematic water distribution from treatment plant to town, group housing etc. - Hot water supply in high rise buildings. - Water heaters, boilers - Solar water heating
Unit II	**Sewage collection and disposal** - For large campuses, complexes, High rise Buildings etc. Mechanical methods of removal of sewage from basements (Shone's ejector). - Sewage treatment, Waste water conservation, recycling, biogas etc
Unit III	**Urban Drainage Systems** - For private and public places. - Drainage ,sub drains, culverts, ditches, gutters, drop inlets and catch basins - Rain water Harvesting.
Unit IV	**Solid waste or refuse Disposal** - Refuse chutes. - Waste /kitchen - waste Managements
Unit V	**Integration of Services** - ETP, STP and other building management services like CCTV, PG & UPS

Learning Resources	
Text Books:	1. Benjamin Stein and John Renolds.(2006)*Mechanical and Electrical Equipment for Building*, New York, John Wiley and Sons.
Reference Books:	1. Vasisth K.(2011)*Waste management* New Delhi, Essential books. 2. National Building Code of India, 2005 (NBC 2005)
Websites:	**http://bst1.cityu.edu.hk/e-learning**
Journals:	CIBSE journal http://www.cibsejournal.com/ Building Services Engineering Research and Technology (bse.sagepub.com) Energy and buildings-Journal-Elsevier (www.**journals**.elsevier.com/energy-and-**buildings**/) Technical journals- CIBSE-(www.cibse.org/knowledge/technical-**journals**/technical-**journals**-bsert-lr-t)
Assessment	**Marks**

I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Detail services layout which includes water supply and sanitation requirements for a campus project. (Project is preferably the architectural design project which the students have already worked on)

Elective- V

Subject Code	**K8408**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: Student will be able to	
1	Engage in systematic self study of topics they feel interested in.

	Students can select one elective from the following list
1	**Housing** - Housing survey and methodologies - Factors effecting housings - Housing demand, slums, Typologies, finance, etc. - Comparative study of various housing policies and programmes. - Housing case studies - Post Occupancy evaluation. - Importance of housing in urban and regional development - Structural concepts, use of traditional and new building materials ,self help and low cost housing - Role of co-operative and public and private agencies
2	**Disaster Management** - Study of building designs to resist following types of disasters: Earthquake; Fire; Flood; Cyclone; Tsunami; Other natural disasters - Post-disaster problems - Study of geological structure and its deformation - Study of behaviour of the structure in such disasters - design aspects and considerations for various types of buildings especially the residential, congregational and institutional buildings
3	**Sustainable architecture** - Study of effects of Luminous Environment on comfort condition in built space, including Analysis Techniques, Design Strategies and Evaluation Procedures - Introduction and Analysis of the Precedent - Analysis of the site and climate - Analysis of the building programme and use. - Schematic design. - Design development. - System integration - Various rating systems like LEED, GRIHA.
4	**Industrial Architecture** - Location and planning aspects of Industrial areas - Indoor and Outdoor working environment in Industries - Services essential for Industries, considerations f industrial safety (Fire) - Various acts applicable to construction of industries such as Factory act,

	Pollution control Act etc. - Review of structural systems used for Industries with materials. - Environmental pollution as resultant of industrial activity.

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – VIII

Architectural Design VIII

Subject Code	**K8409**	**Semester -VIII**
Credits	**10**	**Subject type-Core**

Learning Objectives	
1	To develop understanding of present day urban/socio-economic/technological/infrastructural issues and identify redevelopment triggers.
2	To evaluate performance of a built space with respect to present day urban parameters.
3	To develop skill of feasibility analysis and design capacity in given urban context.

Learning Outcomes: Student will be able to	
1	Learn building Design issues such as parking, additional FSI with design and work out feasibility due to change in life style.
2	Redevelop a precinct to meet the present day needs like innovative technology
3	Study of relevant bylaws applicable for the above mentioned project.

Units	**Contents**
Unit I	Identify, Research and analyze urban issues such as parking/changed life style/ changed urban fabric/infrastructure of a given plot of land and feasibility study.
Unit II	Case study of redevelopment projects
Unit III	Design of given plot (Redevelopment)

Learning Resources	
Text Books:	
Reference Books:	1. Shah Jagan, 2008, Contemporary Indian Architecture, Lustre Press 2008 8 ISBN 174364463, 9788174364463 2. National Building Code of India, 2016
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Collecting data about a project/site to be developed.
2	Feasibility study and formulation of design brief
3	Design: The project that can be taken up can be redevelopment of a plot/, addition and alterations to existing structures/change of use.

Building Construction and Material VIII

Subject Code	**K8410**	**Semester -VIII**
Credits	**04**	**Subject type-Core**

Learning Objectives	
1	To introduce the concept of multi-basement and its construction systems.
2	To introduce the Acoustical design considerations for Auditorium and its construction systems.
3	To introduce various considerations in Design and Construction of high rise structures.

Learning Outcomes: Student will be able to	
1	Understand different systems of basement constructions and its services.
2	Understand different systems of Semi- permanent structures and its installation techniques.
3	Understand different design consideration for Auditorium and its systems of construction.

Units	**Contents**
Unit I	**Swimming Pool** • Components of Swimming pool like basin, drain, filter, deck, ladder, diving board, lane and lane marking etc. • Types like private, public, recreational, theme based, sports etc. • Materials used for swimming pool like brick, concrete, fiber reinforced etc. • Techniques used for constructions of swimming pool like underground, above ground, elevated etc. - Services related to swimming pool like filtration, electrical, drainage , maintenance etc.
Unit II	**Stadium**: • Introduction to Components of Stadiums like stadium field area, Seating area, envelope and roof. • Field area and their shapes, orientation, field drainage, field protection etc. • Stadium Bowl design parameters like viewing distances and sightlines, gangways, vomitories, media boxes, VIP areas, player areas, facility areas like food and services. • Building Envelope and roof materials and their technologies. • Roof design considerations like wind and sun. • Services related to Stadium like lighting, access control, signage, toilet, maintenance etc. -
Unit III	**Semi-permanent Structures** - Need, Planning and Layout, Installation techniques used worldwide. - Various Semi-permanent Structural systems for floor, wall, roof etc. - Services related to water and sanitation layout, natural and mechanical ventilation, lighting, insulation etc.
Unit IV	**High Rise Structures** - Design consideration like wind and seismic, foundation, form work systems,

	Construction Techniques and Building Envelope, mechanical floors. - Systems in steel and Concrete. - Structural glazing, elevators,
Unit V	**Study of Materials** - Study of different modern building materials with respect to Swimming Pool, Stadium, installable structures and high rise.

Learning Resources	
Text Books:	1. T.D Ahuja and G.S. Birdie (1996)*Fundamentals of Building Construction* New Delhi, Dhanpat Rai Publishing Company Pvt. Ltd
Reference Books:	2. J. S. Foster, Roger Greeno(2007)*Mitchell's Structure & Fabric: Part **2***.New York,Taylor and Francis group. 3. Gorenc, Tinyou, Syam(2005)*Steel Designer's Handbook* New Delhi,CBS Publishers and Distributor. 4. Ralph Monletta (1989)*Plastics in Architecture" – A guide to acrylic and Polycarbonate*.New York, Marcel Dekker Inc.
Websites:	https://www.som.com/ideas/research/design_of_high-rise_buildings www.losberger.com/us/en_us/applications/semi-permanent-structu... www.theatresolutions.net › Layouts & Design
Journals:	Journal of Construction Engineering, Technology stmjournals.com/index.php?journal=jocetm) Master Builder -Construction Magazine, Construction News(www.masterbuilder.co.in)

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Assignments	
1	Portfolio of technical drawings of above mentioned topic with supporting documents of sketched booklet and pictographic presentation. (min.4drgs.)
2	Field reports and Market survey of building Material topics.
3	Proposals of different designs of swimming pool and sitting area for small scale stadia. (as per discretion of the subject faculty)

Vocabulary and Repertoire

Subject Code	**K8411**	**Semester -VII**
Credits	**3**	**Subject type-Core**

Learning Objectives	
1	To express understanding of architecture writings.
2	To learn vocabulary to be used for analyzing Architecture.

Learning Outcomes: student will be able to	
1	Acquire effective verbal communication in architecture
2	Write essays, research papers, book reviews etc.

Units	**Contents**
Unit I	**Architectural expression** - Form and expression - structural expression - society - culture and expression - spatial expression **Vocabulary and grammar of form** **Glossary of technical words**
Unit II	**Architectural Journalism** - Writing Descriptive and analytical reports - Book reviews - Page compositions
Unit III	**Elements of Architecture** - Basic elements of architecture - Modifying elements of architecture
Unit IV	**Seminar on Architects Biography and** **Concepts in contemporary architecture**

Learning Resources	
Text Books:	Simon Unwin (2009**).** *Analysing Architecturethird edition***,** *revised and enlarged.* USA and Canada by Routledge.
Reference Books:	John Ruskin (1989).*The seven lamps of Architecture*.London,Dover Publications NeelkanthChhaya(2014).*Harnessing the intangible,collected essays on the work of BalkrishnaDoshi,*New Delhi,NIASA Council of Architecture.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Writing Journals on Theory of design
2	Any one Book review and Any one Architects Biography

Interior Design II

Subject Code	**K8412**	**Semester -VIII**
Credits	**04**	**Subject type-Core**

Learning Objectives	
1	In this subject students will apply their skills, knowledge gained in the previous interior design studio for more complex interior design projects with all details of services.
2	The students will also understand the complex interior designing process , specification, various detailing and tentative estimate of to fulfill the needs of client.

Learning Outcomes: Student will be able to	
1	Acquire knowledge of various high end interior building materials their specification its cost and its application in interior design project.
2	Design complex Interior spaces with services, construction details with cost consideration to suit its function and aesthetics in a Systematic cad presentation with all detail drawings.

Units	**Contents**
Unit I	Introduction to the field of interior design with respect to services.
Unit II	Market survey of application of various finishing interior materials and techniques.
Unit III	Detailed Case study of a medium scale interior project. (150 sq.m to 250 sq.m.)
Unit IV	A detailed design of the medium scale interior projects showing all necessary services, specifications and costing. Carpet Area (150 sq.m to 250 sq.m.)

Learning Resources	
Text Books:	Office Spaces – Crane Dixon, Architectural Data Sheeets
Reference Books:	Corporate Interiors – Kogek Yee, Office Interiors – Alan Phillips
Websites:	www.quadrille.co.in. www.theaid.in.
Journals:	Architectural Digest, Elle Décor, Home and Design, Interior Design etc.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignment	
1	Report based on Market survey of interior Materials
2	Live Case Study of a completed Interior Project
3	Detailed drawings of the Interior Design project of the following – residential , public , commercial etc with thrust on services , specification and tentative

	estimate etc.
4	Design of the decorative ceiling, paneling, lightings, floor details, toilet details etc for the above projects.
5	Detailed design of two furniture units with specification and construction/ joinery details.

Urban Planning II

Subject Code	**K8413**	**Semester -VIII**
Credits	**03**	**Subject type-Core**

Learning Objectives	
1	To introduce students to the advanced concepts of Town and Urban Planning.
2	To understand the planning procedures at various levels of planning.
3	To understand the holistic relationship of planning with various other aspects of physical developments.
4	To develop an urban vocabulary required to understand urban form and public spaces

Learning Outcomes: Student will be able to	
1	Understand the interrelated concepts of Town and Urban Planning
2	Exposure to the various laws and rules for planning and balanced development.
3	Understand the effects of various policies on physical development.
4	Understand urban form and space

Units	**Contents**
Unit I	**Introduction to the process of formulation and implementation of** : Regional Plan, Development Plan and Town Planning Schemes. Study of various Planning agencies and their role in planning like HUDCO, CIDCO, HDFC, MHADA etc.
Unit II	Role and relevance of Transport Planning, Landscape and Environmental issues, Heritage etc in Urban Planning.
Unit III	**Introduction to various planning tools.** Methodology of conducting town planning surveys, types of surveys (physical, social, and economical, Aesthetic Surveys etc) and analysis of data collected.
Unit IV	**Urbanization and Its Impacts.** Introduction to Study of Contemporary Issues of Urban Development and concerns in the City.
Unit V	**Policies and legal framework for contemporary planning development**: National Missions, Schemes for funding various planning activities, infrastructure development schemes like JNNURM, HRIDAY, SMART CITY etc.
Unit VI	**Introduction to urban design terminologies and definitions** To understand the urban form derived from theories as well as empirical evidence.

Learning Resources	
Text Books:	6. Kevin Lynch (1960)*The Image of the City* USA, MIT press. 7. Lewis Mumford (1972)*The City in History: Its Origins, Its Transformations, and Its Prospects*.USA, Harcourt, Inc. 8. Peter Geoffrey Hall (1996 Updated Edition) *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century* USA, Blackwell publishing. 9. Anthony J. Catanese, James C. Snyder (2014) *Urban Planning.* New Delhi, McGrawHill Education Private Limited.

	10. AbirBandyopadhyay, (2010) *Town Planning*, Kolkata, ArunabhaSen
Reference Books:	4. Browm A.J.(1969) *Introduction to town and country planning* Australia, Angus and Robertson publisher. 5. P.Healey,(1981) *Planning Theory*.UK, Pergamon Press 6. Arthur Gallion(1993)*The Urban Pattern*. New York, John Wiley and Sons
Websites:	**www.planetizen.com/websites/2014** http://www.unhabitat.org / @UNHABITAT http://sustainablecitiescollective.com / @sustaincities
Journals:	Cities: The International Journal of Urban Policy and Planning Urban Policy and Research Urban Studies

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	

Research Skills

Subject Code	**K8414**	**Semester -VIII**
Credits	**04**	**Subject type-Core**

Learning Objectives	
1	To inculcate in students methodical process to approach an architectural design project holistically.
2	To develop research skills necessary to provide approach and directions in design of architectural project.
3	To develop a systematic approach of research for application in Architectural Design Project.
4	To develop skill sets of writing research paper

Learning Outcomes: student will be able to	
1	Develop primary skills to conduct research in Architecture
2	Demonstrate Visual Research Methods.
3	Demonstrate acquired research skills through the topic selected for Architectural Design Project.

Units	**Contents**
Unit I	Introduction to Research Skills , Types of research , Methods of data collection , Ethics ,and Referencing
Unit II	Visual Research Methods in Design Imageability Environmental mapping – Direct observation and direct communication Visual representation Environmental behaviour
Unit III	Selection of topic for Architectural Design project giving overview of introduction, background, context, relevance, scope and limitation, methodology and identification of case studies.
Unit IV	Demonstration of Case study and its analysis (Minimum two Book /live case studies) to understand the Project. Literature review minimum three research papers relevant to the research project
Unit V	Research Paper Writing

Learning Resources	
Text Books:	
Reference Books:	1. Robert Bechtel et al (eds). Methods in Environmental and Behavioral Research, NY:VanNostrand Reinhold, 1987. 2. Gary T Moore et al. Environmental Design Research Directions: Process and Prospect. New York: Preager Publishers, 1985. 3. Henry Sanoff. Visual Research Methods in Design. New York: Van Nostrand Reinhold, 1991
Websites:	
Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Synopsis of Architectural design project.
2	Literature review.
3	Case studies and its analysis (minimum two).
4	Research Paper Writing.
5	Seminar presentation of components level research areas based on selected Architectural Design Project .

Elective- VI

Subject Code	**K8415**	**Semester IV**
Credits	**2**	**Subject type-Elective**

Learning Objectives	
1	To give students an opportunity to develop their skills in a subject they may opt for further studio.
2	To study the selected topic in depth of a particular subject that student is interested.
3	To prepare a technical base for students through in depth study.

Learning Outcomes: Student will be able to	
1	Engage in systematic self study of topics they feel interested in.

	Students can select one elective from the following list
1	**Real Estate Management** - Real estate development: Fundamental concepts and techniques, -recognizing institutional and entrepreneurial elements, issues encountered in various phases of development like site evaluation and land procurement, development team assembly, -market study and development scheme, construction & project management, project marketing and hand-over of completed projects. -Development & project financing**:** Project Feasibility, Development Financing, Asset Disposal and Redevelopment Options, -Analyses of Development Sites and Case Studies, integrated case study on a specific development project, which requires reviewing, analyzing and resolving the problems or strategic issues. - Urban policy & real estate markets **:** Impact of Government Regulations and Public Policies on Real Estate Markets, include urban land rent and location theories, land use structures, community and neighbourhood dynamics, degeneration and renewal in urban dynamics, private-public participation, government policies on 95 public and private housing, and urban fiscal policy including property taxation, local government finance. - Corporate real estate asset management: Strategic plans to align real estate needs with corporate business plans; -Performance measurement techniques to identify asset acquisition or disposal; methods for enhancing value through alternative uses, efficient space utilization or improving user satisfaction. - Commercial real estate appraisals: Determination of the capitalization rates across different types of properties;-Appraisal of freehold and leasehold interests; -Critical analysis of the valuation approaches adopted for securitized real estate; Asset pricing models; investment flexibility and future redevelopment opportunities.
2	**Architectural Conservation** - History and theory of conservation - Philosophy of conservation

	- Pioneers of conservation - Definition of conservation, preservation, restoration, reconstruction ,Adoption - Broad concepts of terms such as Reuse, Rehabilitation, Revitalization, Regeneration, Up gradation etc. - Value and ethics - Traditional building materials and their decaying characteristics. Environmental influences: thermal effect, corrosion and oxidation. - Preparation of Inspection reports. - Cultural Heritage - Conservation methods - Classifications - Management of historic sites - Studies of various charters. Role of INTACH,UNESCO, ECOMOS and other organizations
3	**Digital architecture** (can be a combination of seminar and workshop - project and practice based course) -Compare approaches of design processes - conventional process focused on architects' style and contemporary process influences by digital tools -Introduce the new tools of design, production and fabrication in architecture that affect various stages of architectural production, from conception and visualization to development and manufacturing -Provide opportunities to integrate the use of the computer for design, production, and presentation with the help of individual projects -Provide understanding of software packages, and modeling techniques
4	**Architectural Software** -Provide hands-on exposure to various software packages to work on design, modelling, and simulations used in architectural design -Use of various (relevant at the time) 2D drafting and 3D modeling tools for rendering and architectural presentation -Use of various software packages for analysing building systems and services performance (this can be for passive and/or active measures relevant to the semester focus) -Options Advanced AutoCAD Advanced SketchUp with various plugins Revit

Assessment		**Marks**
I.A.	**Internal Assessment**	**100**
	Refer To 'Rule number 6, sub point 6.2.2.'	
Note	**There is no 'University Examination' for this subjects**	

Semester – IX

Practical Training

Subject Code	**K8501**	**Semester -IX**
Credits	**30**	**Subject type-Core**

Learning Objectives	
1	To acquaint students with prevalent purview and procedure of architectural and allied practice
2	To invite practitioners participation in the education of the 'would-be entrants' to the profession for up datedness of information and orientation
3	To boost the dialogue between 'practice' and 'academics' of architecture for progressive learning of a student

Learning Outcomes: student will be able to	
1	Develop skills in professional behavior
2	Explore different facets of office management including preparation of working drawings, detailed drawings, perspectives, study of filing systems of documentation, preparation of tender documents etc.
3	Gain site experience in respect of supervision of construction activity, observation, layout on site, taking the measurements and recordings.

Units	**Contents**
Unit I	**Indoor activities, office administration** - Routine correspondence with client's local authorities, contractors and other agencies dealing in building industries - Systematic filing and registering office correspondence for easy re-reference. - Regular maintenance of work-diaries with notes on principal's instructions, interviews with various agencies, indoor and/or outdoor work and time-spent - Systematic filing and indexing of technical catalogues and price lists for handy reference. - Systematic ordering and use of office library
UnitII	**Indoor activities, drawing and designing** - Making of preliminary designs and drawings accountably by requisite prior study, research, and case studies. - Preparing 'Presentation' 'statutory ', working' and 'detailed' drawings of customary contents and format by understanding their propriety and logic - Reading and making use of 'Contour Plans' while at VI & VII above - Dependably efficient handling of auxiliary routine operations like taking off and codified rendering of prints and electronic and/or computerized communication, drafting, copying etc - Briefing with various technical consultants and co-coordinating their drawings. - Preparation of 'study' and 'Presentation' models of buildings and/or development lay-outs in different levels and chromatic material-textures
Unit III	**Outdoor activities:** - Attending routine meetings with clients, local authorities, contractors and other trade representatives - Checking of lining-out of buildings on site - Systematic surveying of sites and/or existing buildings of moderate size and complexity in conventionally comprehensive format - Architecturally monitoring the work-progress on site/s through periodic

	supervisions, instructions and reports thereon

Learning Resources	
Reference	**Architects Drawings**

Assessment		**Marks**
I.A.	**Internal Assessment-** Refer To 'Rule number 6, sub point 6.2.2.'	**40**
1	**The Log-Book** duly filled in and authenticated by the said responsible registered architect- member of the employer-organization. (one member-signatory throughout Log-Book)	**15**
	Diary-The day to day hand-written preformed Work-Diary maintained by the student during the period of 'training' (as stipulated hereinabove) and certified by the said responsible registered architect-member of the employer-organization- one and the same members signatory who authenticates the Log-Book. (preferably initialed per day)	15
	Work report-The manually laboured 'Work-Report' structured as herein after prescribed under 'Term work' and authenticated too only by the said responsible registered architect-member of the employer organization. (One member-signatory who certifies Log-Book and Work-Diary).	10
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments
Portfolios consisting of drawings prepared by the student as intern in the office

Details of training	-The practical training of minimum duration of 15 to 18 working weeks (90 work days) shall be carried out in the office of an architect or an organization Operating in an allied field of practice or research, duly approved by the institution, under mentorship of an architect having experience of at least 5 years. -Training in Foreign Country shall be done under the Registered Architect of that Country and to be approved and monitored by the Head of the Institution.

Semester – X

Architectural Design Project

Subject Code	**K8502**	**Semester-X**
Credits	**16**	**Subject type-Core**

Learning Objectives	
1	To inculcate in the students methodological process to approach an architectural project holistically.
2	To prepare students to handle large scale complex architectural projects individually.

Learning Outcomes: student will be able to	
1	Include intensive study of relevant literature, case studies, climatology and analysis of problems concerned with development of functional organisation of space form and structure.
2	Study based on correlation and interpretation of the social, economic and physical data.

Units	**Contents**
Unit I	The architectural project should consist of 2 parts: A. Technical Report: well documented report consisting of hypothesis formulation, data acquisition, verification, and analysis by following qualitative and quantitative research methods. B. Design Solution: Self explanatory drawings, covering various aspects of construction, function, technology, services, and site planning etc. few suggested buildings types are institutional projects, civic amenities, commercial, industrial, sports and recreation, administrative, transportation facilities, housing, specialized building, etc.
Unit II	**Technical report:** - A hard bound copy of original report shall be submitted, which will be certified and signed by the college authorities as authentication of the work and by the guide who has guided the work - Size: Project Report size A4 Sized '120 Mm x 297 mm portrait with embossed title necessarily on the spine and front page. - Total Pages: There Shall Be Maximum 50 Pages with double side printing excluding drawings. - Printing: Font type like Arial/ Times New Roman With 12-point size shall be used for regular typing with 15- point size shall be used for captions. The typing shall be done with 1.5 lines spacing throughout. - The presentation copy shall be necessarily a hard bound copy. Number of copies shall be as prescribed by the college. (1 copy for the student, 1 original copy for the college library and 1 soft copy on a CD.)
Unit III	**Design solution:** Graphically presented design solution with minimum 5000 Sq.M Built up area shall be in form of a drawing portfolio. It shall consist sufficient number of architectural drawings (manually drawn / computerized) with models, etc. Since the architectural project is the culmination of five years of learning in various aspects of architecture, it is expected that student demonstrates an ability of holistic and comprehensive thinking in the areas of, - Site Planning - Structural considerations

	- Space Designing - Landscape Design - Building Services - Climate Responsive, Energy Efficient and Exhibiting Qualities of sustainable architecture. - Architectural Detailing. The portfolio will consist of drawings (minimum of 10 and maximum of 15) sufficiently in detail to demonstrate consideration given to above mentioned attributes. The emphasis shall be given to prepare self-explanatory drawings.

Learning Resources: As required by individual project.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	The Internal Assessment of "Architectural Project shall be carried out stage wise as decided by the subject Coordinator for the year which shall be announced to the students at the beginning of the semester.	
U.E.	**University Examination**	**60**
	The final assessment in the examination shall be done by both internal and external examiners in which the student will display his/her work and answer all the queries raised by the examiner.	

Capstone Project

Subject Code	**K8503**	**Semester -X**
Credits	**06**	**Subject type-Core**

Learning Objectives	
1	To study interrelationship of all subjects that a student has learned in the curriculum of architectural studies.
2	To understand the architecture as a "craft".

Learning Outcomes; Student will be able to	
1	Develop competence in transforming architectural drawing to professional working document
2	Prepare documents of building design project minimum 500 Sq.M. such as Presentation drawings, Working drawings, Specifications, Quantities, Estimates, and Tender document.

Units	**Contents**
Unit I	Preparation of working drawing, municipal drawing of the above
Unit II	Preparation of Specifications and Bill of Quantities (BOQ)
Unit III	Preparation of Contract Document

Learning Resources	
Text Books:	
Reference Books:	1. Wakita, Osamu A., Richard M. Linde, and Nagy R. Bakhoum (2011) "The Professional Practice of Architectural Working Drawings. 2. Reference drawings from an ISO certified architect's office 3. Handbook of Professional Documents: 2011, Council of Architecture, New Delhi, India 4. Indian Institute of Architects, Handbook
Websites:	
Journals:	Gawne, Eleanor. "Cataloguing Architectural Drawings." Journal of the Society of Archivists 24.2 (2003): 175-187.

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Assignments or portfolios based on entire syllabus as mentioned below.	

Assignments	
1	Assignment I: Preparation of Presentation Drawings with rough estimates
2	Assignment II: Preparation of Set of Working Drawings, Specifications, BOQ, and Contract Document

Professional Practice

Subject Code	**K8504**	**Semester -X**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To introduce aspects of professional conduct, duties and responsibilities, legal rights and procedures of architectural profession.
2	To enable student to acquaint with various responsibilities of professional architect.
3	To acquaint students with documentation and procedures for execution of building work/projects as well as with management aspects

Learning Outcomes	
1	Visualise various working situations that may arise in practice as an architect
2	Manage his/her professional environment towards fair practice
3	Understand ethics of architectural profession
4	Learn to work with various agencies in practice

Units	**Contents**
Unit I	**Laws, Rules and Guidelines related to Architectural Practice** - Architects Act 1972 - brief overview, introduction to nature, scope and functions of Council of Architecture - Detailed study of professional conduct regulation - Comprehensive architectural services, scale of professional fees as framed by Council of Architecture - Architectural competitions guidelines by Council of Architecture - Architects Liability
Unit II	**Setting up architectural practice as profession, tax liabilities** - Nature of profession, difference between trade, business and profession - Emerging Role of architectural profession - Accounting and taxation - Organization of architects office and different models of business
Unit III	**Land tenures and contracts** - Introduction to valuation, land tenures and easements and dilapidations - Architects role in construction contracts

Learning Resources	
Text Books:	RoshanNamavati (1968). Professional Practice: Estimating and Valuation, , Universal Book Corporation
Reference Books:	MadhavDeobhakta, MeeraDeobhakta (2007) Architectural Practice in India, , Council of Architecture, New Delhi Handbook of Professional Documents: 2011, Council of Architecture, New Delhi, India Indian Institute of Architects, Handbook Standard Contracts, International Federation of Consulting Engineers (FIDIC) The Architect's Handbook of Professional Practice- 2013, American Institute of Architects, John Wiley & Sons.
Websites:	

Journals:	

Assessment		**Marks**
I.A.	**Internal Assessment**	**40**
	Refer To 'Rule number 6, sub point 6.2.2.'	
U.E.	**University Examination**	**60**
	Theory paper	60

Self Study

Subject Code	**K8505**	**Semester -X**
Credits	**4**	**Subject type-Core**

Learning Objectives	
1	To facilitate the students to learn out of a pool of specialized subjects, which provides extended scope or which enables exposure to cross-disciplinary subjects
2	To facilitate the students to learn cross-disciplinary subjects.

Learning Outcomes	
1	Engage in systematic self study.

Units	**Contents**
	Under this, the student can select any one subject related the parent course or other than the parent course. The choice of the subject is not restricted. If a student is interested in a subject of a particular discipline he/she has to inform accordingly to the Principal and academic Co-ordinator of that department.

Learning Resources: As required by subject.

Assessment		**Marks**
U.E.	**University Examination**	**100**
	Based on Reports and evidences of the course	

Bharati Vidyapeeth Deemed to be University's College of Architecture,Pune-43

Internal Communication Sheet

Minutes of meeting of Board of Studies in Architecture held on 2nd September 2020

The meeting of Board of Studies in Architecture was held on 2nd September 2020 on Google Meet. The meeting convened at 11:30 a.m. and ended at 12.30 p.m.

AGENDA of the meeting was as follows:

1. Confirmation of minutes of the previous meeting
2. Approval of syllabus for **B.Arch CBCS 2020** as per CoA notification dated 11th August 2020
3. Any other item with permission of the chair.

In attendance:

1) Prof. Archana Gaikwad
2) Prof. Mukta Latkar
3) Assoc. Prof Priya Bangale
4) Assoc. Prof Aditi Lanke
5) Asst. Prof. Meghana Malve

Special Invitee

6) Assoc. Prof. Sushama Dhepe

Apologies for absence

1. Prof. Dr. B.H.Sutar
2. Prof. Dr. Vasudha Gokhale

The meeting started with the welcome address by the chairperson Prof. Archana Gaikwad. Chairperson read out the agenda for meeting and opened it for discussion. Each item was discussed in detail. Resolution for the same is given below:

1. Confirmation of minutes of the previous meeting

The Chairperson put forth the action taken report of the previous minutes of meeting held on 5th May 2020.

Resolution: The minutes of the previous meeting were confirmed by the BOS and it was decided to incorporate changes as per CoA notification dated 11th August 2020 in the proposed
B.Arch 2020 syllabus as they are minor changes.

2. Approval of syllabus for B.Arch CBCS 2020

The BoS discussed the changes required to be incorporated in the B.Arch 2020 course as per CoA notification dated 11th August 2020. The changes were incorporated in the syllabus and the syllabus was approved unanimously.

Resolution: The B.Arch CBCS 2020 course syllabus (Rules, structure for 5 years and first year contents) is approved by BoS.

3. Any other item with permission of the chair.

No other item was discussed.

Prof. Archana Gaikwad
Chairperson (BoS in Architecture)
08th September 2020

Proposed Draft Structure for CBCS-2020
For
Bachelor of Architecture (B. Arch) Programme

(Structure Semester I &X and Contents Semester I &II)

To be implemented from Academic Year2020-21

Bharati Vidyapeeth (Deemed to be University)
College of Architecture, Pune

TABLE OF CONTENTS

VISION OF BV (DU) UNIVERSITY

"To be a world class University for Social Transformation through Dynamic Education**"**

MISSION OF BV (DU) UNIVERSITY

- To provide quality technical education with advanced equipment, qualified faculty members, infrastructure to meet needs of profession and society.
- To provide an environment conductive to innovation, research and entrepreneurial leadership.
- To practice and promote professional ethics, transparency, and accountability for social community, economic and environmental conditions.

VISION OF BV (DU) COLLEGE OF ARCHITECTURE PUNE

"Inculcate Sensitivity towards Sustainable Built Environment through Architectural Education"

MISSION OF BV (DU) COLLEGE OF ARCHITECTURE PUNE

The institution shall strive

- To inculcate knowledge, skills, values and ethics to create '**socially responsible'**, '**environmentally sensitive'**, '**economically conscious'**, architectural professionals.
- To promote innovations and research for sustainable built environment.

PROGRAMME: BACHELOR OF ARCHITECTURE (B.ARCH)

Programme Objectives:

- To develop creative, capable, future ready architectural professionals.
- To create responsible and dedicated individuals who are intellectually mature, emotionally sensitive and self-motivated towards sustainable built environment.
- To orient courses and course content in order to develop holistic learners, for taking up challenging responsibilities in the respective field.
- To offer courses which help the graduates to emerge as competent professionals fully aware of their commitment to the society and nation.

Programme Outcomes:

The graduates will be able to**:**

- Imbibe the fundamental knowledge of built environment**.**
- Identify and analyze current architectural issues**.**
- Create and envision built environment responding to physical, social, cultural, economical and environmental context.
- Communicate effectively in verbal, written and graphical form.
- Use modern architectural tools, technology and software for analysis, design and construction.
- Imbibe ethics and values as learners and professionals.
- Develop research ability and promote experiential learning.
- Function effectively as individual; work cooperatively and responsibly as team.
- Encourage interdisciplinary learning.
- Prepare for professional, societal and environmental challenges.
- Promote managerial, entrepreneur and leadership qualities in profession.

SALIENT FEATURES OF SYLLABUS

- Imparting **'Outcome Based Education'**.
- Included programme outcome, programme specific outcome, course outcome and intended learning outcome**.**
- Categorisation of courses focusing on development of 'Cognitive', 'Affective' and 'Psychomotor' domains of learning and learners.

- Offered wide range of electives in every semester, which facilities choice to learners in selecting courses of their own interests. Introduced open electives at First year B.Arch

- Skill enhancement facilitated through professional skill courses as well as open electives.

- Practical training incorporated in VIII semester which helps for students in achieving research ability by providing consecutive courses such as Research projects and Architectural design Project in IX and X semesters respectively.

- Social and environmental awareness through 'Audit Courses'.

- Vertical progression and horizontal integration of courses considering the stage of development of learning.

RULES FOR FIRST TO FIFTH YEAR B. ARCH

❖ Rule No.1: Eligibility for Admission

***Eligibility Criteria*:** Students seeking admission to First year of Bachelors Degree Course in Architecture must fulfil the eligibility criteria laid down by Council of Architecture, New Delhi, India and the University as applicable from time to time.

❖ Rule No.2: Duration of the course (as per Council of Architecture)

The Architecture course shall be of minimum duration of 5 academic years/ 10 semesters of approximately 15 to 18 working weeks (90 work days)each, inclusive of one semester of approximately 16 working weeks of Practical Training during Semester-VIII in a Professional's office.

❖ Rule No.3: Scheme of Assessment

A candidate to be eligible for the degree of Bachelor of Architecture will be required to appear for and pass all examinations as under:

- Semester I Examination in Architecture (First Year Semester-I)
- Semester II Examination in Architecture (First Year Semester-II)
- Semester III Examination in Architecture (Second Year Semester-III)
- Semester IV Examination in Architecture (Second Year Semester-IV)
- Semester V Examination in Architecture (Third Year Semester-V)
- Semester VI Examination in Architecture (Third Year Semester-VI)
- Semester VII Examination in Architecture (Fourth Year Semester-VII)
- Semester VIII Examination in Architecture (Fourth Year Semester-VIII)
- Semester IX Examination in Architecture (Final Year Semester-IX)
- Semester X Examination in Architecture (Final Year Semester-X)

❖ Rule No. 4: Granting of Academic Term

Each semester shall comprise of Eighteen weeks (Minimum 90 working days).
The candidate will be permitted to appear for semester examination only if he/she has,

-75 % attendance in each course that constitute a head of passing as prescribed by the university.

- **Satisfactory completion of the sessional work as prescribed in the syllabus.**
-
- **Good conduct:** The Principal/ Director of the institution shall have the right to withhold the student from appearing for examination of a specific course if the above requirements are not fulfilled.

❖ Rule No. 5: Progression Requisite

As general rule, a student shall be allowed to keep the next year of study of the course, if he/she has a backlog of not more than "**Six heads of passing**" in the preceding year.

Furthermore,

- A student shall be allowed to get admitted to Second Year B. Arch. course, if he/she has a backlog of not more than "**Six heads of passing**" at First year B. Arch (semester I and II considered together).
- A student shall be allowed to get admitted to Third Year B. Arch course, if he/she has cleared all the heads of passing at First year B.Arch and if he/she has a backlog of not more than "**Six heads of passing**" at Second Year B.Arch (semester III and IV considered together).
- A student shall be allowed to get admitted to Fourth Year B.Arch course, if he/she has cleared all the heads of passing at Second Year B.Arch (Semester III and IV considered together) and if he/she has a backlog of not more than "**Six heads of passing**" at Third Year B.Arch (semester V and VI considered together).
- A student shall be allowed to get admitted to Final Year B.Arch course, if he/she has cleared all the heads of passing at Third Year B. Arch (Semester V and VI considered together), and if he/she has a backlog of not more than "**Six heads of passing**" at fourth Year B.Arch (semester VII and VIII considered together).

❖ Rule No 6: Examinations

6.1. Conduct of Examinations

The university examinations for all the 10 semesters shall be conducted at the end of each semester by the University.

***6.2. Pattern of Examination*:** The evaluation scheme for B.Arch comprises of --

University Examination (UE) -60 marks (for courses having IA and UE both)

Internal Assessment (IA)- 40 marks (for courses having IA and UE both)

Internal Assessment (IA) - 100 marks (for courses having only IA)

UE and IA will constitute two separate heads of passing.

*6.2.1 University Examination (***UE)**

- UE will be conducted by the University and will be based on the entire syllabus.
- UE shall be assessed jointly by the internal and external examiners from amongst the panel approved by the University in equal weight-age. An examiner for any of the courses of examinations shall have a minimum of 5 years teaching or 5 years of professional experience in his/her field of study. However, an external examiner for Semester-X Architectural Design Project shall have minimum of 10 years teaching/ professional experience after Council of Architecture registration.

- The nature of assessment will vary depending upon the course and its delivery and whether it is studio-based or theory based. **Refer to detailed syllabus for individual courses.**
- Work done by the student which is assessed for UE i.e Sessional (SS) or Sessional + Oral (SO) will be based on entire syllabus.
- Number of assignments for UE will be minimum **three** and a maximum **five .**
- UE may be undertaken through following suggestive form of assignments(but not restricted to):

-Portfolio
-Models
-Reports

University Examination (UE) head will constitute ANY ONE of the following:

a. ***Sessional(SS) :*** Assessment by internal & external examiner in equal weight-age of the sessional , that is ,work done by the student during the semester and certified by the course teacher.

b. ***Sessional + Oral(SO):*** Assessment by internal & external examiner in equal weight-ageof the sessional ,that is, work done by the student during the semester and certified by the course teacher along with oral of the student is to be conducted (i.e provided that the student appears for UE).

c. ***Terminal paper(TP)***: Assessment by internal & external examiner in equal weight-age of total maximum marks.(Duration of paper: 2-1/2 hrs for theory paper & 3 hrs. for drawing paper.)

6.2.2:Internal Assessment (IA)

IA will be conducted by the Institution imparting B.Arch course. IA will be done by the teacher teaching the course through a continuous assessment system that is spread through the duration of course and weight-age will be for the sessional , that is, work done by the student during the semester & assessed by the course teacher covering the entire syllabus. The marks assigned for attendance in IA weight-age will be 5(five) only. Number of assignments for IA will be minimum **three** and a maximum **five .**

There will be 15(fifteen) teaching and 3(three) assessment weeks in a semester.

Individual faculty member shall have the flexibility to design the continuous assessment assignments in a manner so as to evaluate student's capabilities across knowledge, skills and attitudes. IA may be undertaken through any or combination of the methods stated below:

The following components can be used-

- Seminar presentation
- Written Test /Open Book
- Reviews
- Essays

- Short answer questions
- Study of best practices /precedent study/field study
- Multiple choice questions/Quiz
- Projects/group projects/Dissertation
- Reflective Practical assignments
- Drawing Portfolios
- Report writings
- Learning logs/diaries
- Hands on workshops and participation

For IA, in case of courses having Terminal paper (TP), it is mandatory to conduct minimum one class- test as a form of assignment.

The faculty shall announce in advance the units based on which continuous assessment shall be conducted. Detailed records of continuous assessment shall be maintained by the teaching faculty and these will be submitted to the institute at the end of the semester.

❖ Rule No. 7: Credits

The total credits for B.Arch degree programme are 296 credits.

Semester-wise distribution of credits is as follows:

Semester	I	II	III	IV	V	VI	VII	VIII	IX	X
Credits	30	30	30	30	30	30	30	30	28	28

7.1. Evaluation criteria for additional credits:

Credit may also be given for participation in extra-curricular/co-curricular activities. There will be maximum of **10 credits at UG level. 25-30 hours** of extra-curricular/ co-curricular work may be considered as one credit.

Participation in these activities at national/ international/state level can be claimed to earn maximum 10 extra credits which are over and above the minimum number of credits the student has to complete for award of the degree. These credits would be awarded for type of activity undertaken from the joining of course till end of course. Students have to submit the necessary documents at the end of Semester-X.

7.2. Award of extra credits per participation

Sr.No	**Type of Activity**	**Credits Awarded**
1	Publication in International/ National Journal(for 1st or 2nd author only)	01
	Publication in Scopus/ Referred Journal	02
2	Participation with presentation in seminar, workshop, conference, etc (national/ international/state/	01

3	Participation in seminar, workshop, conference, etc (national/ international /state/ local)	0.5
4	Sending entry to design competition held at state / national / international level	01
5	Winning award at the contest mentioned above	02
6	Publication of Final year Architectural Design Project in International/ National Journal under guidance & co-	1
7	MOOC Courses with certificate: 1. 4 hr/week course 2. 12 hr/week course	 1 3

The student has to accumulate and submit the respective documents to the Principal, to become eligible for getting the credits as mentioned above.

7.3. Non-credit courses -Audit Courses:

Audit Courses will be conducted in Semester-IV and Semester-VI as per the syllabus. University will conduct examination and it is mandatory for students to pass in these courses. Passing in these courses is by clearance. **Audit courses are Non-credit courses**

7.4. Credit Transfer:

Credit transfer option may be made available to students on exchange with other universities under MoUs if any after verifying the equivalency for particular courses on case to case basis.

❖ Rule No.8: Criteria for Passing

To pass in every semester examination and earn minimum grade point , a candidate must obtain minimum 50% marks in each head of passing and 50% marks in aggregate.

8.1.For all courses, both UE and IA constitute separate heads of passing.

- In order to pass in such courses and earn minimum grade point.
- The student must obtain minimum grade point of 6.0(50% marks) at UE and also minimum grade point of 6.0 (50%) marks at IA.
- A student who fails at UE in a course has to reappear only at UE as a backlog candidate and clear the head of passing. Similarly, a student who fails in a course at IA has to reappear only at IA as a backlog candidate and clear the head of passing.

8.2. Students with backlog in IA will have to present themselves and their work for continuous assessment throughout the semester for which they intend to appear.

8.3. In case of backlog courses, a student can work on same topic of assignment for two more chances. Even after two chances in case he/she fails, the course teacher may change or modify the topic of assignment.

❖ Rule No.9: Grading system

The grading system will be 10-point absolute grading system.

9.1 Award of Grades (Ten point Grading systems):

The assignment of score obtained by the candidate (out of maximum 100) to a grade may be done as follows:

Range of % of marks	Grade Point	Grade Letter
80<= Marks <100	10	O
70<= Marks <80	9	A+
60<= Marks <70	8	A
55<= Marks <60	7	B+
50<= Marks <55	6	B
Marks <50	0	D

9.2 Performance

The performance of a student will be evaluated in terms of two indices, viz

a) Semester Grade Point average (SGPA) is calculated separately after every end-semester examination.
b) Cumulative Grade point average (CGPA) is calculated across all the semesters at the end of the programme.

9.3 Semester Grade point average (SGPA)

SGPA measures the cumulative performance of a learner in all courses in a particular semester. SGPA is calculated by the formula

$$SGPA = \frac{\sum C_k \times GP_K}{\sum C_k}$$

Where C_k the credit-value is assigned to a course and GP_K is a GPA obtained by the learner in the course.

The SGPA shall be calculated up to two decimal place accuracy.

9.4 Cumulative Grade point average (CGPA)

CGPA measures the cumulative performance of a learner in all courses since his/her enrolment. CGPA is calculated by the formula

$$CGPA = \frac{\sum C_k \times GP_K}{\sum C_k}$$

Where C_k is the credit-value assigned to a course and GP_K is a GPA obtained by the learner in the course.

The CGPA shall be calculated up to two decimal place accuracy.

❖ Rule No.10: Award of Degree (B.Arch)

A student who has completed the minimum grade point specified for the programme and obtains required CGPA as prescribed (in the table below) shall be declared to have passed in the programme. The final result will be in terms of letter grade only and is based on the CGPA of all courses studied and passed within the time permissible by the University & as per COA Rules prescribed.

The criteria for the award of **Degree (B.Arch)** are as given in table below:

Range of CGPA	**Final Grade**	**Letter Grade**
9.50≤CGPA ≤10.00	O	Outstanding
9.00≤CGPA ≤9.49	A+	Excellent
8.00≤CGPA ≤8.99	A	Very Good
7.00≤CGPA ≤7.99	B+	Good
6.00≤CGPA ≤6.99	B	Satisfactory
CGPA Below 6.00	F	Fail

Degree Requirements:
A candidate who has successfully completed all the Core and Elective courses and obtains required CGPA as prescribed (in the table above), shall be eligible to receive the Degree.
Registration (as an Architect) will only be given by Council of Architecture, New Delhi, India as per the prevailing rules .

University & Council of Architecture, New Delhi may frame additional rules and regulations or modify these rules if needed and once approved they would be binding on the students.

❖ Rule No.11: Introduction of this Curriculum

The new curriculum for the degree course in architecture B.Arch will be introduced from Academic Session 2020 -2021

- First year B.Arch Course from June 2020

Final Draft B.Arch CBCS 2020 Course

- Second year B.Arch Course from June 2021
- Third year B.Arch Course from June 2022
- Fourth year B.Arch Course from June 2023
- Final year B.Arch Course From June 2024

❖ Rule No.12: Course Code

Code used for serial numbers of the courses in the structure for B.Arch course shall be as follows :

12.1. **First Character:** will be Faculty and for Engineering Faculty BVDU has assigned K character.

12.2. **Second Character:** will be for BoS to which that course belongs (H for Architecture)

12.3. **Third character**: relates to Department for which course is to be conducted (M for Architecture)

12.4. **Fourth character: will** be for UG or PG course (U for UG in Architecture)

12.5. **Fifth Character**: will stand for Semester No.

Semester Code :

1. First Semester
2. Second Semester
3. Third Semester
4. Fourth Semester
5. Fifth Semester
6. Sixth Semester
7. Seventh Semester
8. Eighth Semester
9. Ninth Semester
10. Tenth semester

12.6. **Sixth character:** will be serial no. of course in that semester structure from 1 to 9.

❖ Rule No.13: Maximum period for duration of course

Students have to qualify for a degree within the period prescribed by the University Grants Commission. If the student could not, he/she will be allowed two more years beyond prescribed period. In exceptional cases, further extension of one more year, may be considered by the University. University & Council of Architecture, New Delhi may frame additional rules and regulations or modify these rules if needed and once approved they would be binding on the students.

In case a candidate is not able to complete the course in the prescribed duration, the university or institution may provide an exit option for the candidate if has completed and earned all credits for the first three years of study.

STRUCTURE OF B.ARCH DEGREE PROGRAMME

Structure of B.Arch degree programme is proposed to be implemented from academic year 2020-21, to provide students centric educational philosophy.

A. Course Categories:

Under CBCS, the degree programme will consist of the following categories of courses, in the framework of council of Architecture:

1. Professional Core Courses (PC)
2. Building Science and Applied Engineering (BS& AE)
3. Enhancement Course
4. Skill Enhancement Courses (SEC)
5. Professional Ability Enhancement Courses (PAEC)
6. Elective Courses
   a. Open Electives (OE)
   b. Professional elective (PE)

In addition, a student should satisfactorily complete Audit courses (AC) minimum 2 Nos prescribed in the curriculum. Audit courses are non credit courses.

A.1. Compulsory courses consisting of

a. **Professional Core (PC))** courses introducing the students the foundation of architectural topics
b. **Building Science and Applied Engineering (BS& AE)** courses informs the Professional Core courses
c. **Skill Enhancement (SEC)**Courses nurtures skill of the
d. **Professional Ability Enhancement (PAEC**) Courses

A.2. Elective Course enables students to take up a course of their own interest and facilitates students a freedom in selecting courses.

a. **Open Elective** Courses enables an exposure to some other discipline
b. **Professional Elective** Courses supportive to the core discipline of the study or provides an extended scope; may be very specific; specialized; advanced.

A.3. Audit Course courses consisting of

a. Disaster Management
b. Environmental Studies

B. Credits:

Credits are the weightages are assigned to the courses based on the following general pattern:

1. lecture period 1 credit
2. Periods Lab/Workshop/ Tutorial 1 credit
3. Period of Design/ Construction/ Practical Training/ Thesis 1 credit

B.1. The curriculum for B. Arch. Programme is designed to have a minimum of 296 credits + 2Non CGPA credits distributed across ten semesters of study for the award of degree.

B.2.A student must earn a minimum number of credits under each category as shown in Table 1 and also a minimum total of credits (296 credits + 2 Non CGPA courses) for the award of B. Arch degree.

Table1: Distribution of credits

No.	**Category**	**Code**	**Credits**	**Percentage**
1	Professional Core	PC	149	50.34%
2	Building Science and Applied Engineering	BSAE	60	20.27%
3	Skill Enhancement Course	SEC	17	05.74%
4	Professional Ability Enhancement Courses	PAEC	34	11.49%
5	Open Elective	OE	10	03.38%
6	Professional Electives	PE	26	8.78%
	Total Credits		296	100.00%
		NON CGPA		
	Audit courses		----	---

Structure & Examination Pattern of First Year B.Arch

Semester I							**Total Duration-30 hrs/Week**					
							Total Credits -30					
Course Code	Course Category	Course	Teaching Scheme (in hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	Total
								TP	SO	SS		
KHMU11	PC	Architectural Design-I	2	2	2	6	40	-	60	-	100	6
KHMU12	BSAE	Building Construction and Material-I	2	-	4	6	40	-	60	-	100	6
KHMU13	BSAE	Theory of Structures-I	1	-	1	2	40	-		60	100	2
KHMU14	PC	History of Architecture –I	2	-	1	3	40	60	-	-	100	3
KHMU15	PC	Architecture Drawings and Graphics-I	1	-	4	5	40	60	-	-	100	5
KHMU16	PC	Workshop	1	-	2	3	40	-	-	60	100	3
KHMU17	PC	Basic Design-I	1	-	2	3	40	-	60	-	100	3
KHMU18	OE	Elective I	1	-	1	2	100	-	-	-	100	2
		Total				**30**	**380**	**120**	**180**	**120**	**800**	**30**
Notations: L-Lectures, SP-Studio project, W-Workshop/Studio Exercises												
IA: Internal Assessment; UE: University Examination TP- Terminal Paper ,SS-Sessional ,SO -Sessional Oral												
PC: Professional Core Course; BSAE: Building Science and Applied Engineering Course ,OE: Open Elective												

Structure & Examination Pattern of First Year B. Arch

Semester-II							**Total Duration-30 hrs/Week**					
							Total Credits -30					
Course Code	Course Category	Courses	Teaching Scheme (in hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	Total
								TP	SO	SS		
KHMU21	PC	Architectural Design-II	2	2	2	6	40	-	60	-	100	6
KHMU22	BSAE	Building Construction and Material-II	2	-	4	6	40	-	60	-	100	6
KHMU23	BSAE	Theory of Structures-II	1	-	1	2	40	-	-	60	100	2
KHMU24	PC	History of Architecture –II	2	-	1	3	40	60	-	-	100	3
KHMU25	PC	Architecture Drawings and Graphics-II	1	-	4	5	40	60	-	-	100	5
KHMU26	PC	Climatology	2	-	1	3	40	-	-	60	100	3
KHMU27	PC	Basic Design -II	1	-	2	3	40	-	60	-	100	3
KHMU28	OE	Elective II	1	-	1	2	100	-	-	-	100	2
		Total				**30**	**380**	**120**	**180**	**120**	**800**	**30**
Notations: L-Lectures, SP-Studio project, W-Workshop/Studio Exercises												
IA: Internal Assessment, UE: University Examination, TP- Terminal Paper, SS-Sessional, SO -Sessional Oral												
PC: Professional Core Course, BSAE: Building Science and Applied Engineering Course, OE: Open Elective												

Structure& Examination Pattern of Second Year B.Arch

Semester-III							**Total Duration-30 hrs/Week**					
							Total Credits -30					
Course Code	Course Category	Courses	Teaching Scheme (hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	Total
								TP	SO	SS		
KHMU31	PC	Architectural Design -III	1	4	1	6	40	-	60	-	100	6
KHMU32	BSAE	Building Construction and Material-III	2	-	4	6	40	-	60	-	100	6
KHMU33	BSAE	Theory of structures-III	2	-	-	2	40	60	-	-	100	2
KHMU34	PC	History of Architecture-III	2	-	1	3	40	-	60	-	100	3
KHMU35	PC	Architecture Drawings and Graphics-III	1	-	4	5	40	-	-	60	100	5
KHMU36	PC	Building services-I	2	-	1	3	40	60	-	-	100	3
KHMU37	SEC	Computer Applications in Architecture-I	1	-	2	3	100	-	-	-	100	3
KHMU38	PE	Elective-III	1	-	1	2	100	-	-	-	100	2
		Total				**30**	**440**	**120**	**180**	**60**	**800**	**30**
Notations: L-Lectures, SP-Studio Project, W-Workshop/Studio Exercises												
IA: Internal Assessment, UE: University Examination, TP- Terminal Paper, SS-Sessional, SO -Sessional Oral												
PC: Professional Core Course, BSAE: Building Science and Applied Engineering Course, SEC: Skill Enhancement Course, PE: Professional elective												

Structure & Examination Pattern of Second Year B.Arch

Semester-IV							**Total Duration-30 hrs/Week**					
							Total Credits -30					
Course Code	Course Category	Courses	Teaching Scheme (in hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	Total
								TP	SO	SS		
KHMU41	PC	Architectural Design-IV	1	4	1	6	40	-	60	-	100	6
KHMU42	BSAE	Building Construction and Material-IV	2	-	4	6	40	-	60	-	100	6
KHMU43	BSAE	Theory of Structures-IV	2	-	-	2	40	60	-	-	100	2
KHMU44	PC	History of Architecture-IV	2	-	1	3	40	-	60		100	3
KHMU45	BSAE	Surveying and Levelling	1	-	4	5	40	-	-	60	100	5
KHMU46	BSAE	Building Services-II	2	-	1	3	40	60	-	-	100	3
KHMU47	SEC	Computer Applications in Architecture-II	1	-	2	3	100	-	-	-	100	3
KHMU48	PE	Elective-IV	1	-	1	2	100	-	-	-	100	2
	AC	Environmental Studies	-	-	-	-	-	-	-	-	-	-
		Total				**30**	**440**	**120**	**180**	**60**	**800**	**30**
Notations: L-Lectures, SP-Studio Project, W-Workshop/Studio Exercises												
IA: Internal Assessment, UE: University Examination, TP- Terminal Paper, SS-Sessional, SO -Sessional Oral PC: Professional Core Course, BSAE: Building Science and Applied Engineering Course, SEC: Skill Enhancement Course, PE: Professional Elective, AC: Audit Course												

Structure & Examination Pattern of Third Year B. Arch

Semester-V							**Total Duration-30 hrs/Week**					
							Total Credits -30					
Course Code	Course Category	Courses	Teaching Scheme (in hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	
								TP	SO	SS		
KHMU51	PC	Architectural Design-V	1	6	1	8	40	-	60	-	100	8
KHMU5	BSAE	Building Construction and Material-V	2	-	3	5	40	60	-	-	100	5
KHMU53	BSAE	Theory of Structures-V	1	-	1	2	40	-	-	60	100	2
KHMU54	PC	Specification Writing	2	-	1	3	40	60	-	-	100	3
KHMU55	PC	Landscape Architecture -I	1	1	1	3	40	-	60	-	100	3
KHMU56	BSAE	Building Services-III	2	-	1	3	40	-		60	100	3
KHMU57	SEC	Working Drawing -I	1	-	3	4	40	-	60	-	100	4
KHMU58	PE	Elective-V	1	-	1	2	100	-	-	-	100	2
		Total				**30**	**380**	**120**	**180**	**120**	**800**	**30**
Notations: L-Lectures, SP-Studio project, W-Workshop/Studio Exercises												
IA: Internal Assessment; UE: University Examination, SS-Sessional, SO -Sessional Oral												
PC: Professional Core Course; BSAE: Building Science and Applied Engineering Course, SEC: Skill Enhancement Course, PE: Professional Elective												

Structure & Examination Pattern of Third Year B. Arch

Semester-VI							**Total Duration-30 hrs/Week**					
							Total Credits -30					
Course Code	Course Category	Courses	Teaching Scheme (in hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	Total
								TP	SO	SS		
KHMU61	PC	Architectural Design-VI	1	6	1	8	40	-	60	-	100	8
KHMU62	BSAE	Building Construction and Material-VI	2	-	3	5	40	60	-	-	100	5
KHMU63	BSAE	Theory of Structures-VI	1	-	1	2	40	-	-	60	100	2
KHMU64	PC	Estimation and Costing	2	-	1	3	40	60	-	-	100	3
KHMU65	PC	Landscape Architecture -II	1	1	1	3	40	-	60	-	100	3
KHMU66	BSAE	Building Services-IV	2	-	1	3	40	-	-	60	100	3
KHMU67	SEC	Working Drawing- II	1	2	1	4	40	-	60	-	100	4
KHMU68	PE	Elective-VI	1	-	1	2	100	-	-	-	100	2
	AC	Disaster Management	-	-	-	-	-	-	-	-	-	-
		Total				**30**	**380**	**120**	**180**	**120**	**800**	**30**
Notations: L-Lectures, SP-Studio Project, W-Workshop/Studio Exercises												
IA: Internal Assessment; UE: University Examination, SS-Sessional, SO -Sessional Oral												
PC: Professional Core Course, BSAE: Building Science and Applied Engineering Course, SEC: Skill Enhancement Course, PE: Professional Elective, AC: Audit Course												

Structure & Examination Pattern of Fourth Year B. Arch

Semester-VII							**Total Duration-30 hrs/Week**					
							Total Credits -30					
Course Code	Course Category	Courses	Teaching Scheme (in hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	Total
								TP	SO	SS		
KHMU71	PC	Architectural Design-VII	1	8	1	10	40	-	60	-	100	10
KHMU72	PC	Interior Design	1	2	1	4	40	-	60	-	100	4
KHMU73	PC	Urban Planning	1	-	2	3	40	-	60	-	100	3
KHMU74	PAEC	Research in Architecture	2	-	2	4	40	-	-	60	100	4
KHMU75	SEC	Advance Computer Applications in Architecture	1	-	2	3	40	-	60	-	100	3
KHMU76	PE	Elective-VII	1	-	2	3	40	-	-	60	100	3
KHMU77	PE	Elective-VIII	1	-	2	3	40	-	-	60	100	3
		Total				**30**	**280**	**Nil**	**240**	**180**	**700**	**30**
Notations: L-Lectures, SP-Studio Project, W-Workshop/Studio Exercises												
IA: Internal Assessment; UE: University Examination, TP: Terminal Paper, SS-Sessional, SO -Sessional Oral												
PC: Professional Core Course; PAEC: Professional Ability Enhancement Course, SEC: Skill Enhancement Course, PE: Professional Elective												

Structure & Examination Pattern of Fourth Year B. Arch

Semester-VIII							**Total Credits -30**					
Course Code	Course Category	Courses	Teaching Scheme (in hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	Total
								TP	SO	SS		
KHMU81	PAEC	Practical Training	-	-	-	-	-	-	100		100	24
KHMU82	OE	Self-Study	-	-	-	-	-	-		100	100	6
							Nil	**Nil**	**100**	**100**	**200**	**30**
Notations: L-Lectures, SP-Studio Project, W-Workshop/Studio Exercises												
IA: Internal Assessment; UE: University Examination, TP: Terminal Paper, SS-Sessional, SO -Sessional Oral												
PAEC: Professional Ability Enhancement Course, OE: Open Elective												
Note 1: For practical training, a student has to undergo 16 weeks of training per semester.												
Note 2: The work from practical training will be assessed after the student completes the internship in this semester.												
Note 3: Validity of training shall be only for a year after completion of training.												

Structure & Examination Pattern of Fifth Year B. Arch

Semester-IX							**Total Duration-28 hrs/Week**					
							Total Credits -28					
Course Code	Course Category	Courses	Teaching Scheme (in hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	
								TP	SO	SS		
KHMU91	PC	Advanced Architectural Design	2	6	4	12	40	-	60	-	100	12
KHMU92	PC	Capstone Project	1	2	1	4	40	-	60	-	100	4
KHMU93	PAEC	Research Project	1	-	3	4	40	-	-	60	100	4
KHMU94	PAEC	Professional Practice	1	-	1	2	40	-		60	100	2
KHMU95	PE	Elective-IX	1	-	2	3	40	-	60	-	100	3
KHMU96	PE	Elective-X	1	-	2	3	40	-	60	-	100	3
		Total				**28**	**240**	**Nil**	**240**	**120**	**600**	**28**
Notations: L-Lectures, SP-Studio Project, W-Workshop/Studio Exercises												
IA: Internal Assessment; UE: University Examination, TP: Terminal Paper, SS-Sessional, SO -Sessional Oral												
PC: Professional Core Course, PAEC: Professional Ability Enhancement Course, PE: Professional Elective												

Structure & Examination Pattern of Fifth Year B. Arch

Semester-X							**Total Duration-28 hrs/Week**					
							Total Credits -28					
Course Code	Course Category	Courses	Teaching Scheme (in hours/week)				Examination Scheme (Marks)					Credits
			L	SP	W	Total	IA	UE			Total	
								TP	SO	SS		
KHMU101	PC	Architectural Design Project	1	12	5	18	40		60		100	18
KHMU102	PC	Seminar in Architecture	1	-	3	4	100				100	4
KHMU103	PE	Elective-XI	1	-	2	3	40		60		100	3
KHMU104	PE	Elective-XII	1	-	2	3	40		60		100	3
		Total				**28**	**220**	**Nil**	**180**	**Nil**	**400**	**28**
Notations: L-Lectures, SP-Studio Project, W-Workshop/Studio Exercises												
IA: Internal Assessment; UE: University Examination, TP: Terminal Paper, SS-Sessional, SO -Sessional Oral												
PC: Professional Core Course, PE: Professional Elective												

LIST OF ELECTIVES

Following is the list of electives under various streams for each semester to facilitate choice to learners in selecting courses of their own interest. However, the list given is only suggestive and can expand or modify it for enrichment of the course. The college will offer electives based upon the availability of resources in the college, provided minimum 20 students choose the particular elective. However colleges have to ensure that the student does not repeat a particular elective. Wide range of 'Open Electives are offered for Sem I , II & VIII as below. Students have to choose any one from the list.

Semesters	**Open Electives**
Sem-I	Physical Education and Yoga
	Performing Arts
	Culinary Art
	Stress Management
	Community Engagement
	Pottery
Sem-II	Architectural Photography
	Personality development and Communication Skills
	Foreign Languages
	Calligraphy Techniques
	Ayurveda as a lifestyle
	Cyber Security
Sem.VIII	Certificate Course
	Study in their interest area

For Sem. VIII students can take up certificate course such as MOOC, SWAYAM etc. It could be online course, or conduct study in their interest area.

From Sem-III to Sem X, students can choose electives as per structure of the syllabus from any of the three streams (Professional Electives) mentioned in the table below. A student may adhere to a particular stream of elective of his/her choice and nurture his/her area of interest and develop his/her expertise across semesters. In the semesters where two electives are offered per semester, students have to choose them from two different streams.

Semesters	**Design**	**Technology and Management**	**Allied (Art, legalities, culture, environment, etc)**
Sem-III	Vernacular Architecture	Alternative Building Materials and	Sketching
	Theory of Design	Presentation Techniques in Architecture	Horticulture
Sem-IV	Climate Responsive Building Design	Modular Co-ordination	Visual Communication
	Vastu Shastra	Glass in Architecture	Study of Iconography in Temples
	Graphic Design	Sustainable Water Management	Introduction to Indology
Sem-V	Universal Design	Building Automation	Rural development
	Light in Architecture	Sustainable Waste Management	Architectural Journalism
	Water in Architecture	Cost Effective Construction	Ekistics
Sem-VI	Furniture Design	Auditorium Acoustics and Services	Affordable Housing
	Gendered Spaces	Fenestrations in Buildings	Building Economics
	Architects and Their Philosophies	Facility Management	Introduction to Archaeology
Sem-VII	Product Design	Long Span Structures	Gender in Architecture
	Architectural Conservation	Disaster Resistance Structures	Behaviour Psychology
	Healthcare Design	Pre-Fabricated and Pre-Stressed Structures	Ergonomics
	Critical Thinking of Modern Architecture	Steel Structures	Housing Laws and Policies
Sem-IX	Set Design	Office Management	Study of Cities
	Hospitality Design	Real Estate Management	Intellectual Property Rights
	Urban Design	Fire Fighting Systems in Buildings	Art in Architecture
	Landscape Urbanism	Pneumatic Structures	Urban Infrastructure Planning
Sem-X	Digital Architecture	Construction Management	Cultural Landscapes
	Industrial Design	Intelligent Building Systems	Geographic Information System
	Modular Furniture Design	Valuation	Legalities in Architectural Profession
	Specialized Architecture(Defence/	Specialized Services in Buildings	Green Building Rating Systems

GUIDELINES FOR PAPER-SETTING SYLLABUS CBCS-2020

1. Question paper to cover questions from entire syllabus.
2. All UE theory papers are for maximum 60 marks.
3. Duration:
   a. 2&1/2 hrs. for writing papers
   b. 3hrs. for drawing papers.
4. There will be Two sections of max. marks 30 each.
   a. Section-I from Units-I,II& III of syllabus
   b. Section-II from Units-IV,V& VI of syllabus
5. There will be Four questions in each section of 10 marks each.
6. Maximum marks for each question will be in whole numbers & not in fractions.
7. In each Section following pattern will be followed:
   Section –I
   a. Question no. 1 is compulsory
   b. Attempt any Two questions out of Question no. 2,3,4.
   Section –II
   a. Question no. 5 is compulsory
   b. Attempt any Two questions out of Question no. 6,7,8.
8. In each section 20% marks will be assigned for Analytical questions i.e in each section out of 30 marks 6 marks are assigned for Analytical component. This component will be in compulsory question i.e Question no.1 and Question no.5.

SEMESTER I

First Year B Arch. Architectural Design-I

Course Code:KHMU11	Course Category: Professional Core		Semester: I
Credits :	6	Internal Assessment	40 Marks
Lectures per week	2	Terminal Paper	-
Studio Projects per week	2	Sessional Oral (SO	60marks
Workshops or studio exercises / week	2	Sessionals (SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	108Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	90 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	18 Hours

Course Objectives:

1. To apply knowledge gained in other subjects and present them in graphic form using manual medium.
2. To imbibe the importance of pre-study in design process
3. To provide knowledge and understanding of design with special attention to design fundamentals and orientation

Course Outcomes:

CO No.	**Cognitive levels**	**On successful completion of course the learner will be able to:**
1.	Remembering	**Define** anthropometry and **recognize** the importance of cardinal directions in design.
2.	Understanding	**Comprehend** design fundamentals in relation to space design.
3.	Applying	**Develop** visualization of liveable spaces by understanding relationship between the activities and spaces through case studies and site visits.
4.	Analyzing	**Analyze** the aspects related to function, space, structure, and aesthetics
5.	Evaluating	**Relate** knowledge in the domain of fundamentals of design
6.	Creating	**Design** a single activity space and **create** final project and model

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Study of Design Fundamentals** - Study of anthropometry, (study of basic human activities in Indian and Global context) - Study of function and circulation (Relationship between function and space)	12
Unit -II	**Study of orientation of buildings** - Study of cardinal and ordinal directions - Study of building orientation with respect to basics of sun and wind - Understanding the preferred/ non preferred, favorable/ non favorable orientation with respect to cardinal directions and climate	12
Unit -III	**Pre-study: Learning from primary and secondary resources** - Case-studies and site visits - Books, reports, articles - Films and documentaries	24
Unit-IV	**Architectural Design** - Single activity architectural design project (approximately 50 sqm.), with application of the learning's from study of design fundamentals, study of cardinal directions, climate, and the pre-study.	30
Unit-V	**3-D models** - Study models - Physical model of the final design proposal with site development	12
Total Contact Hours		**90**

Learning Resources:

1.	Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press
2.	Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons
3.	Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and
4.	Krishnan Arvind (2017), *Climate Responsive Architecture: A Design Handbook for Energy Efficient Buildings*, McGraw Hill Education

5.	Neufert Ernst (1970) *Neufert Architects data*, Bauwelt-Verlag (German 1st Ed.), Lockwood (English 1st Ed.)
6.	Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing
7.	Pandya Yatin (2014) *Elements of Space Making*, Ahmedabad, Mapin Publishing
8.	Pramar V. S. (1973) *Design Fundamentals in Architecture*, Somaiya Publication
9.	Rapoport Amos (1969), *House, form and culture*, Pearson
10.	Thakkar Jay, Morrison Skye, (2008) *Matra:Ways of Measuring Vernacular Built Forms of Himachal Pradesh*, SID research Cell, CEPT University

First Year B Arch. Building Construction and Material-I

CourseCode:KHMU13	Course Category: BSAE		Semester: I
Credits :	6	Internal Assessment	40 Marks
Lectures per week	2	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO	60marks
Workshops or studio exercises / week	4	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	108Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	90 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	18 Hours

Course Objectives:

1. To enable students to understand materials, principles and methods of construction
2. To cover the breadth of students including components and systems of buildings

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Define** various components of building and **know** technical terms, different materials available for masonry work
2.	Understanding	**Understand** the concept of load transmission and **distinguish** load bearing and framed structure
3.	Understanding	**Describe** purpose ,methods and types of finishes
4.	Applying	**Apply** knowledge gained in Theory of Structure and **develop** understanding about basic principles of construction method
5.	Analyzing	**Analyze** different materials in terms of properties, types, application in design ,market forms available ,advantages and disadvantages etc
6.	Evaluating	**Compare** different types of materials in masonry work
7.	Creating	**Design** masonry element and entrance gate applying alternative materials and methods of construction
8.	Creating	**Create** drawings, models and **relate** structural behaviourism and construction techniques

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Introduction** Introduction to building construction as course and its relevance to Architectural design. - Introduction to various components of building from foundation to roof. - Structural elements of load bearing and framed structure and its differences	7
Unit -II	**Materials** - Properties, sustainability aspects, various types, cost, application in buildings, defects and strengths, market survey of bricks , stones ,cement, sand, aggregates, mortar and lime.	7
Unit -III	**Finishes** - Pointing: Purpose and types - Plastering: Method and types i.e. neeru faced, sand faced, rough cast, pebble finish and all proprietary types. Innovative materials used for pointing and plastering	7
Unit-IV	**Foundation** - Excavation: purpose and types, plinth formation - Introduction to shallow foundation - Strip foundation for a load bearing structure in stone and brick upto plinth level including plinth formation - Foundation for brick piers, entrance steps, compound walls.	21
Unit-V	**Masonry** - Fundamentals, principles of load bearing construction for medium rise structures using brick, stone, concrete blocks, solid blocks, hollow blocks, cavity blocks etc. - Introduction to various types of brick masonry. - Bonds: English, Flemish, header, stretcher, garden wall, rat trap and other types. - Junctions: Tee, crossed and right angled - Introduction to stone masonry and its types : dry rubble, uncoursed rubble, random rubble, squared, polygonal, etc. - Composite masonry	31
Unit-VI	**Entrance gate and Fencing** - Entrance gate - Constructional details of entrance gate in a compound wall of following types: Sliding Gate with floor channel, Sidehung , side hung with wicket gate. - Fencing - Construction in different materials like Barbed wire, Chain link, Wire mesh, R.C.C. Grills, M.S. Grills etc.	17
Total Contact Hours		90

Learning Resources:

1.	RangwalaS.C.(2007) Engineering Materials, Gujarat, Charator Publication House
2.	Duggal S.K.(2009) Building materials, New Delhi, New Age International
3.	Varghese P.C. (2005) Building Materials, New Delhi, Prentice Hall of India Pvt. Ltd.
4.	Duggal S.K. (1997) Building Materials, New Delhi, Oxford and IBH publishing Co.Pvt. Ltd.
5.	Spencke R.F. and Cook D.J.(1983) Building Materials in Developing Countries, New York, John Wiley and Sons.
6.	W.B. Mckay(1981)Building construction Vol. II, UK,Longmans Green and Co.
7.	Barry(1958)The construction of buildings, Vol.I , Blackwell science
8.	Roy Chudley, GogerGreeno (1988), Buildings Construction handbook, Routledge

First Year B Arch — Theory of Structures-I

CourseCode:KHMU13	Course Category: BSAE		Semester: I
Credits :	2	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO	-
Workshops or studio exercises/ week	1	Sessionals(SS)	60marks
No.s of Weeks in Semester	18	No.s of hours in Semester	36 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	30 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	6 Hours

Course Objectives:

1. To understand the structural concepts and behaviour of structural element

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Recognize** the significance of the main structural elements in structural analysis
2.	Understanding	**Explain** structural concepts, fundamentals of structure and **describe** of the various loading conditions acting on the structure
3.	Understanding	**Illustrate** the concept of free body diagram of structures and structural elements
4.	Applying	**Calculate** self weight, resolution of forces, centre of gravity, moment of inertia, material constants for all types of structures, and stress calculations of structural members having different material properties
5.	Applying	**Develop** an ability to analyse internal response of structure
6.	Analyzing	**Compare** response of structural system for various materials
7.	Evaluating	**Evaluate** the behaviour of structural elements of ancient and modern structures
8.	Creating	**Design** stepped foundation, wall of uniform thickness and variable thickness and **relate** principals of this subject to the other subjects such as Building Construction, Architectural design, Architectural drawing and graphics, History of Architecture

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Introduction to fundamental concepts of structure:-** Introduction to fundamental concepts of Applied Mechanics relevant to structures and characteristics of material like unit weight, elasticity, plasticity, ductility, hardness. Understanding of rigid body, deformable body, force systems, characteristics of forces, transmissibility, types of structures. Concept of tension, compression in structures	04
Unit -II	**Resolution of forces :-** Types of loads and moment a) calculation of self weight based on density for load bearing elements. b) Resultant of concurrent force system with simple practical examples. c) Concept of moment and resultant of non concurrent force system with simple practical examples	06
Unit -III	**Equilibrium of forces acting on beam:-** Introduction to i) Equilibrium conditions of force systems. ii) Types of loads - point loads, uniformly distributed load(udl), uniformly varying load(uvl), types of supports (hinge, simple, roller, fixed) , types of beams (simply supported, cantilever, overhanging, fixed, continuous) iii) Support reactions in beams.	06
Unit-IV	**Centroid & Centre of Gravity:** Importance and application of centroid and centre of gravity for plane sections like Rectangle, circle, semicircle, triangle.iii) Calculation of centroid for shapes-- C,T,L,I	04
Unit-V	**Moment of Inertia:** Moment of Inertia For standard sections, Parallel axis theorem, Perpendicular axis theorem, Radius of gyration. Moment of Inertia of sections considered for canter of gravity (Unit IV).Importance and Application	04
Unit-VI	**Simple stress &Strain:-** Concept of Simple stress and strain. Calculation of self weight for load bearing elements and downward soil pressure due to the same. Simple numerical based composite (modular ratio) and compound elements. Behaviour of ductile and brittle material in terms of stress and strain curve. Introduction to elastic constants and its significance. Definition of fatigue, creep. Introduction to flinched beams	06
Total Contact Hours		30

Learning Resources:

1.	Beer and Johnston,(2008).Mechanics of Materials.NewDelhi,Tata McGraw-Hill
2.	Mario Salvadori.(1980).Why buildings stand up:The strength of architecture. McGraw-Hill
3.	S.B.Junnarkar&Dr.HJ Shah,(2012).Mechanics of Structures Vol. I &II.Anand,CharotarPublishing
4.	KhurmiR.S.(2014).Strength of Materials.NewDelhi,S.Chand& Company Ltd
5.	DongreA.P.(2011).Strength of Materials.Pune/Hyderabad,Scitech Publications

First Year B Arch. History of Architecture-I

CourseCode:KHMU14	Course Category: Professional Core		Semester: I
Credits :	3	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	60marks
Studio Projects per week	-	Sessional Oral (SO	-
Workshops or studio exercises / week	2	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	54 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	45 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	9 Hours

Course Objectives:

1. To learn from the wisdom of traditional knowledge systems.
2. To imbibe the fundamental knowledge of the built environment
3. To study history of architecture as a response to climate, culture and socio political conditions.

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Identify** issues with reference to cultures, civilizations and settlements across the world at different periods of time
2.	Remembering	**Know** technology and its impact on built environment and building for
3.	Understanding	**Understand** the development of architecture as a process through a holistic approach of contextual and cultural evolution
4.	Understanding	**Differentiate** between various styles and elements of development and **describe** prominent historic buildings
5.	Applying and Analyzing	**Develop** ability to **analyze** the evolutionary aspects of stage of progress
6.	Evaluating	**Compare** architectural style across culture of that time with reference to location -geography , Social Systems, Religion ,climate, art etc.
7.	Creating	**Derive** materials ,construction techniques in design from historic civilization

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Prehistoric** Housing forms in the initial phase: Cave shelters- (suggestive examples at Lascaux, Terra Amataetc) Community structures: (suggestive examplesMenhir , dolmen, gallery and passage graves, Stonehenge, Ggantija Malta etc)	6
Unit -II	**River Valley Civilizations –Asia** Introduction to development of the settlements - location, social and cultural aspects, climate, construction techniques, building materials, building typologies and architectural characteristics, settlement principles etc - Yellow River, Indus River	9
Unit-III	**Vedic Architecture** Vedic culture and settlement planning layouts, City Planning in later Vedic period and Buildings and construction techniques. **Buddhist Architecture** Introduction to the Evolution and development of Major typologies like Stambha, Chaitya, Vihara ,Stupa. Development of Chaitya arch(suggestive examples Ashokan Stambhas, Lomas Rishi Cave,The Great Stupa at Sanchi, Chaitya Hall at Karli, Chaitya and Viharas at Verul and Ajanta etc)	7
Unit-IV	**River Valley Civilizations -Western** Introduction to development of the settlements - location, social and cultural aspects, climate, construction techniques, building materials, building typologies and architectural characteristics, settlement principles etc - Nile River ,Tigris River	7
Unit-V	**Greek Civilization** Introduction to the, Social and cultural Systems, political scenario, History and evolution of Architectural typologies, Characteristics of Buildings, construction technology and elements evolved like Classical Orders, Optical corrections etc. (suggestive examples Acropolis, City of Athens Temples, Theatres, Agora, Stoa, Council Halls etc)	8
Unit-VI	**Roman Civilization** Introduction of the History, evolution and characteristics Elements of special attributes. Introduction to the, Social and cultural Systems, political scenario, History and evolution of Architectural typologies, Characteristics of Buildings, construction technology and elements evolved like Arches, arcuated construction, bridges, aqueducts, etc(suggestive examples	8

	City of Rome ,Temples- Pantheon, Basillica at Trajan, Amphitheatre, Hippodrome, Circus, Palaces-hydrian's villa , Thermae at Carcalla etc	
Total Contact Hours		45

Learning Resources:

1.	Sir Banister Fletcher, (1999) A History of Architecture, Indian Edition. Delhi, CBS Publications.
2.	Percy Brown,(1983) Indian Architecture (Hindu And Buddhist). Bombay, Taraporevala and Sons
3.	Denis Montagnon, (2001) Rome . ISBN 3-8228-5870-6. Germany, TashchenGmnH Satish Grover, (2003) The Architecture of India (Buddhist and Hindu Period). New Delhi, Vikas Publishing Housing Pvt. Ltd.
4.	Leland M Roth ,(1994) Understanding Architecture: Its Elements, History and Meaning. Craftsman House;
5.	Pier Luigi Nervi, General Editor, (1972) History of World Architecture – Series. New York, Harry N. Abrams Inc. Pub
6.	Burns, Ralph, Lerner, Meacham, (1991) World Civilizations. First Indian Edition, Delhi, Goyl Saab Publishers and Distributors.
7.	Roger Smith, (1987) An Illustrated history of Architectural Styles. Omega Books Ltd. Sebastiano Serlio,(1982) The five books on architecture. New York, Dover Publication Inc.
8	Sebastiano Serlio,(1982) The five books on architecture. New York, Dover Publication Inc
9	Satish Grover, (2003) The Architecture of India (Buddhist and Hindu Period). New Delhi, Vikas Publishing Housing Pvt. Ltd.

First Year B Arch. Architectural Drawing and Graphics-I

CourseCode:KHMU15	Course Category: Professional Core		Semester: I
Credits :	5	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	60marks
Studio Projects per week	-	Sessional Oral (SO	-
Workshops or studio exercises / week	4	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	90 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	75Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	15 Hours

Course Objectives:

1. To develop visualization and presentation skills as tools for creative thinking and representation of ideas and concepts
2. To acquire effective communication in graphical form in Architecture
3. To impart basic knowledge and skill to draft a drawing manually.

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Know** architectural drawing techniques using drafting tools.
2.	Remembering	**Acquire** vocabulary and grammar such as scale, annotations, labelling ,dimensioning etc.
3.	Understanding	**Understand** the concept of orthographic projection, surface development.
4.	Applying	**Use** freehand techniques for preparing drawings and **develop** perception and presentation of different forms
5.	Analyzing and Evaluating	**Analyze and relate** Architectural Drawing Graphics with Architectural Design, Building Construction, Working Drawing etc
6.	Creating	**Create** conceptual and presentation drawings for various purposes

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Introduction to graphic language and its components** - Introduction to instruments - Line types: meaning and application - Architectural lettering and dimensioning techniques and their role and application in composition of drawings with various examples - Architectural annotations and conventions	12
Unit -II	**Orthographic Projections** - Geometrical construction, planar geometry - Method of Orthographic projections - Drawing 2-dimensional drawings from 3-dimensional objects	18
Unit -III	**Surface Development** - Surface Development of various three-dimensional objects	13
Unit-IV	**Study of Graphical Scales** - Introduction to graphic scale and their applications - Scaled enlargement and reduction of simple objects and site plans of complex shapes - Scaled drawings (plan/s section/s and elevation/s) of complex objects/ simple building of sufficient size to demonstrate use of various scales, conventions and standard annotations	9
Unit-V	**Sketching** - Introduction to architectural sketching and principles of free hand sketching such as proportions, light and shade: with primary thrust on sketching of building elements and built/un-built environment.	8
Unit-VI	**Sections: from simple geometrical elements to complex architectural elements** - Graphical and visual communication through sections of geometrical forms along with the understanding of the line weights, material indications, etc. - Graphical and visual communication through sections of architectural elements / building along with the understanding of the line weights, material, indications, etc	15
Total Contact Hours		**75**

Learning Resources:

1.	F. D K. Ching (2009) Architectural Graphics, New Jersey, John and Wiley and Sons.
2.	Manual of Section, David J. Lewis, Marc Tsurumaki, and Paul Lewis.
3.	Architectural Drawing Course: Tools and Techniques for 2D and 3D Representation, by *Mo*
4.	N.D.Bhatt (2012) Engineering Drawing, Gujrat, Charotar Publishing House.
5.	Hugh C. Browning (1996) The Principles of Architectural Drafting, New York, Watson-
6.	Calvin F. Schmid, Stanton E. Schmid, (1954) Handbook on Graphic Presentation, New York,
7.	David Littlefield (2012) Matric Handbook, London and New York, Routledge Taylor and
8.	Sleeper R.(2000)Architectural Graphic Standards, New York, John Wiely and Sons.

First Year B Arch. Workshop

CourseCode:KHMU16	Course Category: Professional Core		Semester: I
Credits :	3	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO	-
Workshops or studio exercises / week	2	Sessionals(SS)	60
No.s of Weeks in Semester	18	No.s of hours in Semester	54 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	45 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	09 Hours

Course Objectives:

1. To introduce various types of models at appropriate scales such as site model, study model, block model, finished presentation models
2. To introduce students to various materials, tools and techniques used in making architectural models.
3. To introduce students to various skills such as joinery, cutting, finishing in carpentry, smithy.

Course Outcomes:

CO No.	Psychomotor levels	On successful completion of course the learner will be able to:
1.	Imitation	**Observe** the nature and texture of different materials
2.	Manipulation	**Replicate** forms in drawing by making models
3.	Precision	**Choose** tools and joinery techniques required for model making
4.	Precision	**Integrate** two dimensional drawing and three dimensional form
5.	Articulation	**Construct** or Compose three dimensional forms using different model making materials and equipment in different scale
6.	Naturalisation	**Make** everyday objects, some building elements ,building forms with a wide variety of available materials and **handle** simple tools in carpentry

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Materials for model making:** Introduction to various materials like various types of papers, mount boards, softwood (balsa), cork, clay etc for architectural model making.	6
Unit -II	**Tools and techniques in model making** Introduction to various tools and techniques cutting, scoring, folding and gluing techniques, using templates, measuring aids, to build surfaces and simple/ solids such as cubes, prism, cylinders, pyramids, cones, spheres etc or interpenetrated forms.	9
Unit-III	**Adv. Materials, methods and tools:** Using materials such as plastics, films, plaster of paris, clay, acrylic, wax, metals, glass, fabric etc and their moulding, scooping, cutting, joining methods etc	6
Unit -IV	**Wood and metal work:** Exercises in cutting and joinery with planers, saw, lathe, and jigs; Joinery details in wood, metal, blocks, pipes, plates, etc, composition of basic and complex geometrical forms.	9
Unit-V	**Finishing:** Exercises in finishing with planers, sander; Finishing surfaces with various protective coats, paints, varnishes, oils etc	9
Unit-VI	**Prototyping and advanced modelling:** Introduction to model making using machines - explore laser cutting, acid etching, stereo lithography, 3D printing, etc. Introduction to various types of model making for Architectural studies like block model, working models, contour models, site models ,openable models, service models etc.	6
Total Contact Hours		**45**

Learning Resources:

1.	Engel, P. (1989). Folding the Universe: Origami from Angelfish to Zen. Vintage.
2.	Janke, R. (1978). Architectural models/Architekture modelle (No. 72.027). Academy Editions,.
3.	Mills, C. B. (2011). Designing with models: a studio guide to architectural process models. John Wiley & Sons.
4.	Taylor, J. R., & Taylor, J. R. (1971). Model building for architects and engineers. McGraw-Hill Companies.

First Year B Arch. Basic Design -I

CourseCode:KHMU17	Course Category: Professional Core		Semester: I
Credits :	3	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO	60marks
Workshops or studio exercises / week	2	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	54 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	45 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	09 Hours

Course Objectives:

1. To develop the basic understanding of the fundamentals of design
2. To provide knowledge and understanding of elements and principals of design; its importance

Course Outcomes:

CO No.	**Cognitive levels**	**On successful completion of course the learner will be able to:**
1.	Remembering	**Know** elements of Design
2.	Understanding	**Understand** effects of scale, the concept of form, space and structure through creative thinking
3.	Applying	**Develop** lateral thinking **and apply** the principles of design
4.	Analyzing	**Analyse** aspects of form, space and aesthetics
5.	Evaluating	A**ppraise** design forms in terms of visual character and **critique** basic design composition
6.	Creating	**Create** two dimensional and three dimensional composition with various media

Course Contents:

Units	**Contents of The Course**	**Hours**
Unit -I	**Elements of Design:** Introduction to: - Different Elements of design - Fundamentals of Design	08

Unit -II	**Scale, Proportion:** - Proportion &scale: Material proportions, structural proportions - Golden Section - Anthropometry Visual Scale and Human Scale	08
Unit -III	**Principles of Design** - Introduction to Principles of Design - Theory on Lateral Thinking and exercise on generation of alternatives - Explorations of Principles of Design through 2D and 3D compositions	09
Unit-IV	**Volume , Form & Space** - Properties of Form - Subtractive & additive forms - Degree of enclosure – Planes - Volumetric Study of Spaces – positive and negative spaces	08
Unit-V	**Organization:** - Organization of Form & Space - Spatial Relationships - Spatial Organizations - Explorations of Organization through 3D compositions	08
Unit-VI	**Indian Aesthetics**: Introduction to all art forms including architecture as a holistic sacred domain with reference from Vishudharmottar purana. ·Introduction to Art in India as a way of life, as a ritual, as a socio-cultural expression, and more, e.g. Rangoli, Mehendi, Serving of food, ornamentation, arrangement of puja, and so on.	04
Total Contact Hours		45

Learning Resources:

1.	Akiko Busch (1991) The Art of Architectural Models, Hong Kong, Design Press
2.	Bacon E.N. (1974) *Design of Cities*, England, Penguin Books
3.	Barry A Berkus (2000) *Architecture, Art – Parallels and Connections*, Australia, Watson-Guptill
4.	Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and
5.	Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons
6.	Edward De Bono (1990) *Lateral Thinking*, London, Penguin Books

7.	Gupta Neerja (2017), *A Student's Handbook of Indian Aesthetics,* Cambridge Scholars
8.	Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing
9.	Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami Book*,
10	ShirishVasantBapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books
11	Thompson I (1999) *Frank Lloyd Wright: A Visual Encyclopedia*, London, Grange Book Plc
12	Yatin Pandya (2014) *Elements of Space Making*, Ahmedabad, Mapin Publishing

First Year B Arch. Elective -I

CourseCode:KHMU18	Course Category: Open elective		Semester: I
Credits :	2	Internal Assessment	100 Marks
Lectures per week	1	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO	-
Workshops or studio exercises / week	1	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	36 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	30 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	06 Hours

Course Objectives:

1. To facilitate the students to learn out of a pool of specialized courses, which provides extended scope or which enables exposure to discipline-centric courses as well as cross-disciplinary courses.
2. To encourage interdisciplinary learning and imbibe values as learners
3. To give students an opportunity to develop their attitudes and skills in a subject they may opt for making carrier

Course Outcomes:

CO No.	Affective levels	On successful completion of course the learner will be able to:
1.	Receiving	**Identify** and **describe** the aspects or issues of offered contents
2.	Responding	**Report** case study
3.	Valuing	**Justify** their ideas /opinions in relation to contents of elective
4.	Organization	**Document and present** the data collected in systematic way.
5.	Internalizing	**Display** a technical base through in depth study

Course Contents:

Units	Contents of The Course	Hours
	The detail course contents will vary as per options selected for elective and expert teaching the course will frame the contents at the beginning of semester along with objectives, outcomes, references and details for assignments.	
Total Contact Hours		

Learning Resources:

1.	As per topic chosen

SEMESTER-II

First Year B Arch. Architectural Design -II

CourseCode:KHMU21	Course Category: Professional Core		Semester: II
Credits :	6	Internal Assessment	40 Marks
Lectures per week	2	Terminal Paper	-
Studio Projects per week	2	Sessional Oral (SO	60 Marks
Workshops or studio exercises / week	2	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	108 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	90 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	18 Hours

Course Objectives:

1. To make the students familiar with design and the architectural design process as a synthesis of factors such as climate, comfort, land, technology
2. To equip the students with communication and presentation skills
3. To inculcate sensitivity towards environment through climate responsive design

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Represent** built/un-built spaces in graphic form
2.	Understanding	**Understand** the concept of form, space and structure through documentation
3.	Applying	**Use** isometric, axonometric, and rendering techniques and **demonstrate** their ideas and observations graphically as well as verbally
4.	Applying	**Develop** understanding to respond to the climate in order to achieve human comfort
5.	Analyzing	**Analyze** measured drawing with respect to structure ,form ,material, climate etc.
6.	Creating	**Design** multi activity space
7.	Creating	**Make** 3D views of design proposal

Course Contents:

Units	**Contents of The Course**	**Hours**
Unit -I	**Documentation** Measured drawing of a well-articulated structure with its surrounding context	18
Unit -II	**Pre-study: place, climate, scale, people and their activities** - Study of place and climate - Site analysis, activity and/or function analysis (Learning from primary and secondary resources such as case-studies and site visits, books, reports, articles, films and documentaries, etc.)	12
Unit -III	**Analysis** Analysis and presentation of measured drawing with respect to structure, material, planning, context, climate, geography, resources, form, function, elements of design, aesthetics, etc.	18
Unit-IV	**Architectural Design** - Context based multi-activity architectural design project (approximately 300 sq. m.)	30
Unit-V	**Time bound project** - Single-activity architectural design project: this project shall be based on values in architecture (e.g. universal design, etc.)	12
Total Contact Hours		90

Learning Resources:

1.	Akiko Busch (1991) *The Art of Architectural Models*, Hong Kong, Design Press
2.	Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and Sons
3.	Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and Sons
4.	Krishnan Arvind (2017), *Climate Responsive Architecture: A Design Handbook for Energy Efficient Buildings*, McGraw Hill Education
5.	Neufert Ernst (1970) *Neufert Architects data,* Bauwelt-Verlag (German 1st Ed.), Lockwood (English 1st Ed.)
6.	Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing
7.	Pandya Yatin (2014) *Elements of Space Making*, Ahmedabad, Mapin Publishing
8.	Pramar V. S. (1973) *Design Fundamentals in Architecture*, Somaiya Publication
9.	Rapoport Amos (1969), *House, form and culture*, Pearson
10.	Thakkar Jay, Morrison Skye, (2008) *Matra:Ways of Measuring Vernacular Built Forms of Himachal Pradesh*, SID research Cell, CEPT University

First Year B Arch. Building Construction and Materials -II

CourseCode:KHMU22	Course Category: BSAE		Semester: II
Credits :	6	Internal Assessment	40 Marks
Lectures per week	2	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO	60 Marks
Workshops or studio exercises / week	4	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	108 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	90 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	18 Hours

Course Objectives:

1. To enable students to understand materials, principles and methods of construction
2. To introduce timber construction and its elements in detail.

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Know** timber as materials in depth and its elements in building construction.
2.	Remembering	**Define** terms of different timber elements
3.	Understanding	**Describe** different flooring and roofing materials and understand the concept of spanning for roof element
4.	Applying	A**pply** appropriat**e** type of timber elements such as door windows, staircase, floor and roof in design considering form..
5.	Analyzing	**Classify** different timber elements used in construction and **compare** different types of materials for roofing ,flooring etc
6.	Evaluating	**Evaluate** suitable joinery for openings
7.	Creating	**Summarise** knowledge gained in this subject to the architecture design and **create** drawings and models

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Introduction** · Introduction to timber construction · Properties, strength, defects and preservation of timber. · Various timber joints : widening joints, halved joints, cogged joints, bearing joints, oblique joints, etc.	7
Unit -II	**Materials** · Mud blocks ,rammed earth blocks · Roofing materials - types, purpose, characteristics, advantages and disadvantages · Flooring and paving - different flooring and paving materials	7
Unit -III	**Timber doors and windows** · Terminology and construction aspects of doors and windows · Timber doors & Partitions - Design consideration and construction for single and double shutters, partly glazed and partly panelled, fully glazed, fully panelled, flush doors, ledged, braced and battened doors. · Timber windows -Design considerations, principles and construction for sash types-panelled, fixed, partly glazed, fully glazed and louvered. · Timber windows -Types of opening- centrally pivoted, top hung, side hung, casement, bay window and sliding. · Hardwares used for doors and windows	28
Unit-IV	**Timber roofs and trusses** · Timber roofs - Types of roof construction with respect to slope, span and spanning members · Terminology of sloping roof and members · Need and types of sloping roofs : lean to roof, couple roof, close couple roof and collar roof. ·Timber trusses – Principles and considerations of trusses. Forces in truss members. Construction of trusses such as king post, queen post truss, ,mansard roof and trusses for various spans	28
Unit-V	**Timber floors** · Timber flooring - General idea of timber floors in relation to spans, load transmission ·Types :Single joist, double joist, triple joist	15
Unit-VI	**Staircase** · Design Consideration and components ·Types of staircase ·Timber staircase	5
Total Contact Hours		90

Learning Resources:

1.	RangwalaS.C.(2007) Engineering Materials, Gujarat, Charator Publication House
2.	Duggal S.K.(2009) Building materials, New Delhi, New Age International
3.	Don A. Watson,(1972) Construction Materials and Processes, New York, McGraw Hill
4.	W.B. Mckay(1981)Building Construction Vol. I,II, UK,Longmans Green and Co.
5.	Barry(1958)The construction of buildings, Vol.I,II, Blackwell science
6.	Roy Chudley, Goger Greeno (1988), Buildings Construction handbook, Routledge

First Year B Arch. Theory of Structures -II

CourseCode:KHMU23	Course Category: BSAE		Semester: II
Credits :	2	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO	-
Workshops or studio exercises / week	1	Sessionals(SS)	60 Marks
No.s of Weeks in Semester	18	No.s of hours in Semester	36 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	30 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	6 Hours

Course Objectives:

1. To understand the structural concepts and behaviour of structural element
2. To introduces forces acting on members in structures

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Recognize** the significance of shear force and Bending moment diagram in structural analysis
2.	Understanding	**Categorize** the forces acting on members in structural analysis
3.	Applying	**Develop** an understanding of stresses and strain on members
4.	Analyzing	**Analyze** the behaviour and response of structural system to various loa consideration
5.	Evaluating	**Justify** the dimensions assigned to structural elements of structure for serviceability and safety criteria
6.	Creating	**Calculate** the load for various load combinations and nature of load (Dead load, Live load)

Course Contents:

Units	Contents of The Course	Hours
Unit -I	Introduction to Shear Force Diagram (SFD) and Bending Moment Diagram (BMD) for Simply supported, cantilever, and overhang. Definition of Shear Force (SF),Bending Moment (BM), Sign convention, sagging ,hogging, Point of contra flexure, contra shear, effect of couple on beams	04

Unit -II	Details of Shear Force Diagram (SFD) and Bending Moment Diagram (BMD). Details for simply supported, cantilever, overhang beam for a combination of uniformly distributed load(UDL) and point load.	06
Unit -III	Theory of Simple Bending:- Theory of simple bending and bending stress. Details based on standard section with bending stress distribution diagrams.	06
Unit-IV	Shear Stress of Beam:- Shear stress. Details based on standard section with shear stress distribution diagram. Introduction to shear centre.	06
Unit-V	Slope And Deflection:- slope and deflection in beams based on standard cases (no derivations).	04
Unit-VI	Arches:- Introduction to arches as structural element, two hinged, three hinged and fixed.	04
Total Contact Hours		**30**

Learning Resources:

1.	S B Junnarkar&Dr. H J Shah,(2012).Mechanics of Structures Vol. I &II.Anand,Charotar Publishing
2.	Deo S.S.(2013).Engineering Mechanics.Pune, NiraliPrakashan
3.	Deo S.S.(2013).Strength of Materials.Pune,NiraliPrakashan
4.	Ramamrutham S. Narayan.R.(2014)*Theory of Structures (for Engineering Degree ,Diploma).*New Delhi, Dhanpatrai Publications P.Ltd
5.	Timoshenko Stephen.(2002)*Strength of materials part I. (elementary theory and problems) IIIrd ed.* New Delhi, CBS Publishers..Timoshenko Stephen.(2002)*Strength of materials part II (elementary theory and problems) IIIrded.* NewDelhi,CBS Publishers.

First Year B Arch. History of Architecture -II

CourseCode:KHMU24	Course Category: Professional Core		Semester: II
Credits :	3	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	60 Marks
Studio Projects per week	-	Sessional Oral (SO	-
Workshops or studio exercises / week	2	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	54 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	45 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	09 Hours

Course Objectives:

1. To learn from the wisdom of traditional knowledge systems.
2. To imbibe the fundamental knowledge of the built environment
3. To study history of architecture as a response to climate, culture and socio political conditions.

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Identify** issues with reference to cultures, civilizations and settlements across the world at different periods of time
2.	Remembering	**Know** technology and its impact on built environment and building for
3.	Understanding	**Understand** evolution of various styles of art and architecture
4.	Understanding	**Differentiate** between various styles and elements of development and **describe** prominent historic buildings
5.	Applying and Analyzing	**Develop** ability to **analyze** the evolutionary aspects of stage of progress
6.	Evaluating	**Compare** architectural style across culture of that time with reference to location -geography , Social Systems, Religion ,climate, art etc.
7.	Evaluating	**Appraise** structures as a developmental process rather than simply as a product and **critique** building forms, structure
8.	Creating	**Design** buildings in historic architectural styles

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Evolution of -Hindu Temple Architecture** Evolution of architectural style, principles and major influences on development of form, Spatial organisation, structural development and ornamentation style and other architectural elements during. - Gupta period (suggestive examples Temple no 17 , Sanchi, Dasavatara Temple Deogarhetc) - Early and later Chalukyan Temple Development at Aihole , Badami Pattadakal. (suggestive examplesLadkhan and Durga temples-Aihole , Cave temple-Badami, Virupaksha and Papanath temple- Pattadakal, etc)3. - Temple Development by Rashakutas. (suggestive example Kailash Temple Ellora) - Temple Development by Pallava - Rock cut and Structural Temples (suggestive examples Rathas, Rock cut caves, Shore temple at Mamallapuram etc)	9
Unit -II	**Introduction to Dravidian style (Development in South India)** Evolution of architectural style, principles and major influences on development of form, Spatial organisation, structural development and ornamentational style and other architectural elements during - Hoysala Temple Development.(suggestive example Keshava temple at Somnathpur) - Temple development by Cholas. (suggestive example - Brihadeshwara temple, ThanjavoreEtc - Development of gopuram during Pandya Period. - Vijayanagara Period. (suggestive example -Vitthalaswami temple, Hampi, column orders etc) - Development of Temple cities during Madura period. (suggestive examples - Meenaksi temple atMadurai, Sriranganathaswami temple at srirangametc)	9
Unit -III	**Introduction to Nagara style (Development in North India)** Evolution of architectural style, principles and major influences on development of form, Spatial organisation, structural development and ornamentational style and other architectural elements in - Orissa -(suggestive examples Mukteshwar Temple, Lingaraja temples at Bhubaneswar, Sun temple at Konark) - Khajuraho- (suggestive examples –Kandariya Mahadeo temple, Khajuraho etc) - Western regions of Gujarat -(suggestive example Sun temple, Modheraetc) - Jain Temple Development in Western India. (suggestive	9

	examples Vimal Shah at Mount Abu, Chaumukh Temple at Ranakpuretc)	
Unit-IV	**Early Christian and Byzantine Architecture** Introduction to the social systems, aspects of Spatial organization, structural development, planning principles and ornamentation elements in the Evolution of Church form. Introduction to the special elements like timber trusses, clerestory, pendentives, dome construction, surface treatment, materials of construction etc. (suggestive examples -St. Peters at Rome (earlier one) Hagia Sophia at Constantinople etc)	6
Unit-V	**Romanesque** Introduction to the social systems, aspects of Spatial organization, structural development, planning principles and ornamentation elements in the Evolution of Church form. Introduction to the special elements like Wall passages, raking arcades, triforium gallery, vaulting systems etc(suggestive examples – St. Michelle Pavia, Campus at Pisa etc)	6
Unit-VI	**Gothic Phase** Introduction to the Spatial organization, planning principles and ornamentation elements in the Evolution of Church form. Introduction to the special elements like buttresses with Structural innovations, pointed arches, vaulting systems, window traceries, flying buttresses etc.(suggestive examples -Amines Cathedral, Notre dame cathedral, Salisbury cathedral, West Ministers Abbey, castles etc)	6
Total Contact Hours		**45**

Learning Resources:

1.	Percy Brown, (1983) Indian Architecture (Hindu And Buddhist). Bombay, Taraporevala and Sons.
2.	Henri Stierlin, (2002) Hindu India. ISBN 3-8228-1767-8. Taschen GmbH.
3.	George Michell, (1995) Architecture of the Islamic World. London, Thames and Hudson Ltd.
4.	Sandra Forty, (2004) Architecture. Rochester, Grange books
5.	Sir Banister Fletcher, (1996) A History of Architecture. Delhi, CBS Publishers.
6.	DhanpatRai Publications (P) Ltd, 16th Reprint

First Year B Arch. Architectural Drawing and Graphics -II

CourseCode:KHMU25	Course Category: Professional Core		Semester: II
Credits :	5	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	60 Marks
Studio Projects per week	-	Sessional Oral (SO	-
Workshops or studio exercises / week	4	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	90Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	75 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	15 Hours

Course Objectives:

1. To introduce various techniques of three-dimensional presentation of simple , complex objects and building elements.
2. To enable the students to understand and express Composite three-dimensional built forms through additive and interpenetrated elements using various graphical projection systems through sections
3. To understand scale proportions in buildings and communication through architectural drawings

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Recognize,** three dimensional drawing and its importance in architectural drawing
2.	Understanding	**Understand** interpenetration of solids and **explain** concept of isometric, axonometric projections
3.	Applying	**Develop** understanding of sciography and **apply** in plan and elevations of design
4.	Analyzing Evaluating	**Analyze** and **relate** the graphics content with Architectural Design
5.	Creating	**Create** 3D views using isometric and axonometric

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Advanced orthographic projections** - To draw and compose composite solids and its orthographic projection - Drawing Plan/s, Section/s, Elevation/s of building elements by using methods of orthographic projection	15
Unit -II	**Three dimensional drawings-I** - Drawing of isometric, axonometric and oblique views of solid objects and their compositions	15
Unit-III	**Three dimensional drawings - II** - Drawing of isometric, axonometric and oblique views of building elements	10
Unit -IV	**Interpenetration of objects** - Intersection and interpenetration of solid geometric objects and their compositions - Intersection and interpenetration of architectural elements and their compositions	15
Unit-V	**Introduction to Sciography** - Introduction to sciography of simple objects - Representation of shade and shadows in plans and elevations	8
Unit-VI	**Architectural drawings.** - Learning to make architectural drawings of Master Architect's building drawings (referred from books) in terms of plans, elevations and sections. - Architectural representation of trees, hedges, foliage, human figures, cars, etc., - Building Elements: Techniques of representing building elements such as doors, windows, steps, chajja, porch, canopy, etc.	12
Total Contact Hours		**75**

Learning Resources:

1.	F. D K. Ching (2009) Architectural Graphics, New Jersey, John and Wiley and Sons.
2.	Manual of Section, David J. Lewis, Marc Tsurumaki, and Paul Lewis.
3.	Architectural Drawing Course: Tools and Techniques for 2D and 3D Representation, by Mo
4.	N.D.Bhatt (2012) Engineering Drawing, Gujrat, Charotar Publishing House.

5.	Hugh C. Browning (1996) The Principles of Architectural Drafting, New York, Watson-Guptill
6.	Calvin F. Schmid, Stanton E. Schmid, (1954) Handbook on Graphic Presentation, New York,
7.	David Littlefield (2012) Matric Handbook, London and New York, Routledge Taylor and
8.	Sleeper R.(2000)Architectural Graphic Standards, New York, John Wiely and Sons.
9.	Gill R.W.(2011) Rendering with Pen and Ink, London, Thames &Hudson ltd.

First Year B Arch. Climatology

CourseCode:KHMU26	Course Category: Professional Core		Semester: II
Credits :	3	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO)	-
Workshops or studio exercises / week	2	Sessionals(SS)	60 Marks
No.s of Weeks in Semester	18	No.s of hours in Semester	54 Hours
No.s of Weeks for Teaching + Sessional Work	15	No.s of Hours for Teaching + Sessional Work	45 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	09 Hours

Course Objectives:

1. To understand climate and its impact on Architectural Design
2. To encourage sensitivity towards environments

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Outline** elements of climate, nature of climate and its zone and **recognize** importance of climate in architecture
2.	Understanding	**Understand** the climatic influences on built environment and comfort conditions for inhabitants
3.	Applying	**Use** the surrounding environment as one of the strategic design parameters
4.	Applying	**Employ** solar charts and sun path and **apply** fundamentals of climatology in building design
5.	Analyzing	**Analyse** characteristic of climatic zone in India
6.	Evaluating	**Justify** opening position, its size in building design by considering air movement
7.	Creating	**Relate** climate, other environmental parameters and built form at individual and settlement level
8.	Creating	**Design** climate responsive building

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Introduction:** - Climate, weather, earth- sun relationship - Elements of climate: Temperature, rainfall, humidity, wind, solar radiation etc. - Importance of climate in Architecture - Global, Macro and Micro climate	6
Unit -II	**Human Comfort:** - Human heat balance and comfort - Thermal comfort and means of thermal comfort - Heat stress, Effective temperature	6
Unit -III	**Comfort conditions:** - Bioclimatic chart - Subjective variables - Thermal Comfort Indices - Active & Passive means of thermal control - Degree of control.	9
Unit-IV	**Solar charts & Sun-path:** - Study of Sun-path, Azimuth & Altitude Angle - Structural control : Sun control and shading devices	9
Unit-V	**Ventilation & Air movement:** - Study of ventilation & its functions in buildings - Air flow through buildings - Position & size of opening	6
Unit-VI	**Study of Climatic zones & Built environment:** - Study of nature of climate, its physiological objectives and design criteria - Planning Principles of internal and external spaces, surface treatments and openings etc. for various climatic zones	9
Total Contact Hours		**45**

Learning Resources:

1.	Koenigsberger, Ingersoll,Mayhew, Szokolay, (1996) Manual of Tropical Housing and Building - Climatic Design, Orient Longman Limited
2.	G. Z. Brown and Mark Dekay, John Wiley and Sons,(2001) Sun, Wind and Light, 2nd Edition, New York
3.	Baruch Givoni,(1976) Man, Climate and Architecture, U.K., Applied science Publishers, 2nd Edition
4.	T. N. Sheshadri,(2001) Climatological and Solar Data for India, Meerat,SaritaPrakashan
5.	A. Krishan,(2001), Climate Responsive Architecture, Tata Mcgraw Hill

First Year B Arch. Basic Design-II

CourseCode:KHMU27	Course Category: Professional Core		Semester: II
Credits :	3	Internal Assessment	40 Marks
Lectures per week	1	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO	60 Marks
Workshops or studio exercises / week	2	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	54 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	45 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	09 Hours

Course Objectives:

1. To introduce to the design process as a synthesis of a variety of factors, analysed and studied.
2. To enhance creative thinking skill

Course Outcomes:

CO No.	Cognitive levels	On successful completion of course the learner will be able to:
1.	Remembering	**Acquire** ,creative thinking and theory of Rasa
2.	Understanding	**Understand** various techniques for improving creativity
3.	Applying	**Use** the sources of inspiration for creating concepts for design
4.	Analyzing	**Select** tools for concept Building
5.	Evaluating	**Decide** inspiration for concept Building
6.	Creating	**Synthesis** knowledge gained in this subject with Architectural Design

Course Contents:

Units	Contents of The Course	Hours
Unit -I	**Techniques for improving Creativity I:** - Theories by Edward De Bono: Six thinking hats, lateral thinking - Brainstorming, - Random Combinations - Tree of Possibilities	08

Unit -II	**Techniques for improving Creativity II** - Abstraction - Transformation - Matrix of Ideas	08
Unit -III	**Sources of inspiration for Creativity:** - Role of experience - Mimesis - Literature	08
Unit-IV	**Inspiration for concept building:** - Material - Geometry - History	08
Unit-V	**Tools for Concept building:** - Nature and geometry - Visual Memory - Association with other arts	08
Unit-VI	**Indian Aesthetics**: Introduction to theories of Indian aesthetics specifically the 'Rasa' theory by Abhinavgupta, Bharatmuni, Abhinavbharati, etc., with examples from Natyashastra	05
Total Contact Hours		**45**

Learning Resources:

1.	Akiko Busch (1991) The Art of Architectural Models, Hong Kong, Design Press
2.	Bacon E.N. (1974) *Design of Cities*, England, Penguin Books
3.	Barry A Berkus (2000) *Architecture, Art – Parallels and Connections*, Australia, Watson-
4.	Ching Francis, D. K. (2007) *Architecture: Form Space & Order, New* Jersey, John Willy and
5.	Ching Francis, D. K. (1999) *Visual Dictionary of Architecture, New* Jersey, John Willy and
6.	Edward De Bono (1990) *Lateral Thinking*, London, Penguin Books
7.	Gupta Neerja (2017), *A Student's Handbook of Indian Aesthetics,* Cambridge Scholars
8.	Nick Bunn (2010) *Architectural Model Making*, London, Laurence King Publishing
9.	Paul Jackson, Angela A Court, Marion Elliot (1993) *The Ultimate Papercraft and Origami*
10.	ShirishVasant Bapat (1993) *Basic Design and Anthropometry*, Pune, Bela Books
11.	Thompson I (1999) *Frank Lloyd Wright: A Visual Encyclopedia*, London, Grange Book Plc

First Year B Arch. Elective-II

CourseCode:KHMU28	Course Category: Open Elective		Semester: II
Credits :	2	Internal Assessment	100 Marks
Lectures per week	1	Terminal Paper	-
Studio Projects per week	-	Sessional Oral (SO	-
Workshops or studio exercises / week	1	Sessionals(SS)	-
No.s of Weeks in Semester	18	No.s of hours in Semester	36 Hours
No.s of Weeks for Teaching+ Sessional Work	15	No.s of Hours for Teaching+ Sessional Work	30 Hours
No.of weeks for Assessment	3	No.of Hours for Assessment	06 Hours

Course Objectives:

1. To facilitate the students to learn out of a pool of specialized courses, which provides extended scope or which enables exposure to discipline-centric courses as well as cross-disciplinary courses.
2. To encourage interdisciplinary learning and imbibe values as learners
3. To give students an opportunity to develop their attitudes and /or skills in a subject they may opt for making carrier

Course Outcomes:

CO No.	Affective levels	On successful completion of course the learner will be able to:
1.	Receiving	**Identify and describe** the aspects or issues of offered contents
2.	Responding	**Report** case study
3.	Valuing	**Justify** their ideas /opinions in relation to contents of elective
4.	Organization	**Document and present** the data collected in systematic way.
5.	Internalizing	**Display** a technical base through in depth study

Course Contents:

Units	Contents of The Course	Hours
	The detail course contents will vary as per options selected for elective and expert teaching the course will frame the contents at the beginning of semester along with objectives, outcomes, references and details for assignments.	
Total Contact Hours		

Learning Resources:

1.	As per topic chosen

AGENDA

(LVII Meeting)

ACADEMIC COUNCIL

DATE : January 22, 2019
TIME : 3.00 p.m.

VENUE : 8th FLOOR,
BHARATI VIDYAPEETH BHAVAN,
LBS MARG, PUNE 30.

BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY),
PUNE 30 (INDIA)

BHARATI VIDYAPEETH
(Deemed to be University),
PUNE (INDIA)

ACADEMIC COUNCIL

Date: 22-1-2019 Time: 3.00 p.m.

MEETING LVII

INDEX

Thereafter, Hon'ble Vice Chancellor made power point presentation of the achievements and the major activities taken place between 26th March, 2018 to 4th December, 2018.

Leave of absence was granted to Dr. Parag Sancheti, Dr. Mukund Sarda Dr. (Mrs.) Nilima Bhore, Dr. (Mrs.) V. S. Sohoni, Dr. (Mrs.) T. A. Khan and Dr. Amol S. Patil, as they had expressed their inability to attend the meeting.

Item No. (56-1) :

Welcome & a brief report on the important activities that took place during the period from 26-3-2018 to 4-12-2018.

Hon'ble Vice Chancellor welcomed all the members of the Academic Council and briefed the important activities of the University that took place during the period from 26/03/2018 to 4/12/2018. A copy of the report of the important activities was distributed to all members of the Academic Council.

Thereafter, the agenda items were taken up for consideration.

Item No. (56-2.1) :

Confirmation of the minutes of the 55th meeting of the Academic Council held on 26-3-2018.

Resolution :

The Minutes of the 55th meeting of the Academic Council held on 26-3-2018 were read and confirmed with adding the name of Dr. S. S. Vernekar, Dean Faculty of Management Studies in the list of Members present.

Item No. (56-2.2) :

Consideration of the report on the action taken on the decisions of the Academic Council at its meeting held on 26-3-2018.

Resolution :

Report on the action taken on the decisions of the Academic Council at its 55th meeting held on 26-3-2018 was noted.

Item No. (56-3.1) :

Reporting of the action taken by the Hon'ble Vice Chancellor in approving the revised syllabus of B.Arch. and M.Arch. programme as per the Council of Architecture.

Resolution :

Action taken was noted and ratified.

G. Rajeshwaran

BHARATI VIDYAPEETH
(Deemed to be University)
PUNE, INDIA

Academic Council **Meeting : LVII**

Date : 22-1-2019

Item No. (57-2.2) : Consideration of the report on the action taken on the decisions of the Academic Council at its meeting held on 4-12-2018.

Sr. No.		Particulars	Action Taken
56-1		Welcome & a brief report on the important activities that took place during the period from 26-3-2018 to 4-12-2018.	Noted
56-2	56-2.1	Confirmation of the minutes of the 55th meeting of the Academic Council held on 26-3-2018.	Minutes confirmed
	56-2.2	Consideration of the report on the action taken on the decisions of the Academic Council at its meeting held on 26-3-2018.	Report Noted
56-3		**Items for Reporting**	
	56-3.1	Reporting of the action taken by the Hon'ble Vice Chancellor in approving the revised syllabus of B.Arch. and M.Arch. programme as per the Council of Architecture.	Issued Notification No. 925
	56-3.2	Reporting of the action taken by the Hon'ble Vice Chancellor in approving the proposal for establishing a new Department of Photography in BVDU Yashwantrao Mohite College of Arts, Science and Commerce, Pune.	Issued Notification No. 927
	56-3.3	Reporting of the action taken by the Hon'ble Vice Chancellor in approving the proposal for commencement of a new program Bachelor of Visual Arts (Applied Arts) in BVDU Yashwantrao Mohite College of Arts, Science and Commerce, Pune.	Issued Notification No. 928

AGENDA

(LVI Meeting)

ACADEMIC COUNCIL

DATE : December 4, 2018
TIME : 11.00 a.m.

VENUE : 8th FLOOR,
BHARATI VIDYAPEETH BHAVAN,
LBS MARG, PUNE 30.

BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY),
PUNE 30 (INDIA)

BHARATI VIDYAPEETH
(Deemed to be University),
PUNE (INDIA)

ACADEMIC COUNCIL

Date: 4-12-2018 Time: 11.00 a.m.

MEETING LVI

INDEX

BHARATI VIDYAPEETH
(Deemed to be University)
PUNE, INDIA

Academic Council

Meeting : LVI

Date : 4-12-2018

Item No. (56-3.1) : Reporting of the action taken by the Hon'ble Vice Chancellor in approving the revised syllabus of B.Arch. and M.Arch. programme as per the Council of Architecture.

The Board of Studies and the Faculty of Engineering & Technology at their meeting held on 9-5-2018 and 9-6-2018 respectively, have resolved to approve the revised syllabus of M.Arch. programme and B.Arch. programme by adopting the Council of Architecture's amendments in the existing B.Arch. 2015 CBCS syllabus (Sem VII-X) to be implemented from the academic year 2018-19.

Hon'ble Vice Chancellor had approved the revised syllabi of M.Arch. programme and B.Arch. programme on behalf of the Academic Council.

The Academic Council may kindly ratify the action taken by the Hon'ble Vice Chancellor.

Subject: Approval for syllabus revision of B Arch and M Arch courses

From: Dean Faculty of Engineering and Technology <dean.fet@bharatividyapeeth.edu> on Wed, 04 Jul 2018 10:57:17

To: VC Office BV Deemed University <vcoffice.bvdu@bharatividyapeeth.edu>, "manikrao.salunkhe@gmail.com" <manikrao.salunkhe@gmail.com>, bajarang sutar <sbajarang@hotmail.com>, Archana Gaikwad <Archana.Gaikwad@bharatividyapeeth.edu>

Cc: Iyer Jayakumar Gopalakrishnan <kumarjaya51@rediffmail.com>, "sdj@live.in" <sdj@live.in>

Ref. No. : BVDU/FET/2018/39
Date : July 04, 2018

To,
The Hon. Vice Chancellor,
Bharati Vidyapeeth (Deemed to be University),
Pune

Sub : Approval for Changes in Syllabi of B Arch and M Arch Courses

Dear sir,

BoS (Architecture) had conducted BoS meeting on 9th May 2018 for revision of B Arch and M Arch Syllabus. As Council of Architecture had revised norms for registration of B Arch students as Registered Architects, it is necessary to revise the existing B Arch syllabus by reducing internship from one year to six months. M Arch syllabus is routine revision for existing syllabus.

Further, this revised syllabi have been approved in the meeting of Faculty of Engineering and Technology, which was conducted on 9th June 2018. MoM for BoS and Faculty meeting had been already submitted to BVDU Pune.

BVDU College of Architecture, Pune needs to implement this revised syllabus from current academic year. This syllabus needs to get approved in the Academic Council. Earlier AC meeting was scheduled on 20th July 2018, which later cancelled. Therefore, it could not be get approved in the said AC meeting.

You are kindly requested to approve this syllabus revision on behalf of Academic Council so that B Arch and M Arch examinations can be smoothly conducted.

You are kindly requested to take further necessary actions.

Thanking you with Warm Regards,

BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY) ★ PUNE-30, INDIA ★
Inward No. 761
Date 19/7/18

Dr. Shashank Joshi
Dean,
Faculty of Engineering and Technology,
Bharati Vidyapeeth Deemed University,
Bharati Vidyapeeth Bhavan,
Pune - 411 030

dean.fet@live.in

Approved on behalf of A.C. Be ratified in next A.C.
D.R.C.
15.7.18

29

BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY)

COLLEGE OF ARCHITECTURE, PUNE-43

REVISED

CBCS 2018 COURSE

FOR

POST GRADUATE DEGREE PROGRAMME

IN

M. ARCH. (Sustainable Architecture)

Under Faculty of Engineering

Rules Regarding Passing, Continuous Assessment and Award of Class:

Rule 1: Eligibility Criteria:

A student seeking admission to Master of Sustainable Architecture must have passed B.Arch. or equivalent streams from a recognized university securing minimum 50% or above, aggregate marks. Common Entrance Test (CET) shall be conducted as per rules and regulations of Bharati Vidyapeeth Deemed University.

Rule No. 2: Scheme of Assessment

The candidate eligible for Master's degree shall appear for and pass examinations as under:

First Year Masters: Semester I and II

Second Year Masters: Semester III and IV

Rule No. 3: Granting of Term

Academic year shall consist of two semesters of 18 weeks each (15 weeks teaching+3 weeks internal assessment work).

The student shall be permitted to appear for examinations at the end of each semester only if he/she meets the following:

A. 75% attendance in each head of passing of as prescribed by the university.

B. Satisfactory completion of Sessional Work prescribed in the syllabus.

C. Good Conduct.

1. For all courses there shall be Internal Assessment (IA) conducted by the institution and at the end of term University Examination (UE) for the courses specified in the structure. UE and IA constitute two separate heads of passing.

2. In order to pass and to earn the assigned credits:
   a) The candidate must obtain a minimum grade point of 6.0 (50% marks) at UE and also a minimum of 6.0 (50% marks) at IA.

      Or

      If he/she fails in IA, the student passes in the course provided he/she obtains a minimum of 25% in IA and grade point average(GPA) for course is at least 6.0 (50% in aggregate).The GPA for a course will be calculated only if student passes at UE.

   b) A candidate who fails in UE in a course has to reappear only at UE as a backlog candidate and clear head of passing. Similarly a candidate who fails in a course in IA has to reappear only at IA as a backlog candidate and clear head of passing.

3. It is mandatory for the student enrolled for the M.Arch. Course to complete his/her degree within a maximum of 5 years from his/her date of joining the course. If he/she fails to complete within 5 years, candidate has to take re-admission to the course.

Rule No. 4: Examinations

Evaluation Criteria for University Examination (UE) and Internal Assessment (IA)

Contact Hours and Credits assigned under various heads are as follows:

For lectures	1hour of lecture	1 credit	(UE + IA)
For studio	1 hour of studio	1 credit	(UE +IA)
For subject with Internal Assessment	15 hour of lectures	1 credit	(IA)
• Total number of credits for four semesters M.Arch. Course will be: 120			
• Total Marks for all semesters together = 2200			
• Additional Credits: 05 (These are over and above total credits for the marks and will appear separately in the mark list)			

a. **Internal Assessment (IA):** The performance of the students shall be assessed progressively by an internal teacher for IA during the semester. The distribution under Internal Assessment is as follows:

Sr. No	Parameter considered	Marks awarded for 40 marks	Marks awarded for 100 marks
1	Unit Tests / Research or design Proposals/Report	20	50
2	Tutorials / Assignments / Case-Studies/ Climatic Analysis	10	25
3	Attendance	10	25
	Distribution for internal assessment: 20 + 10 + 10 = 40		50+25+25=100

b. **University Examination (Viva Voce):**

- For university examinations of all semesters, assessment shall be done jointly by internal and external examiners in equal weightage.

c. **University Examination (Theory):**

- The question paper for theory subject will carry **60 marks** and will be of **2 hours**.

Evaluation criteria for additional credits:

Participation in activities such as research publications, conferences, seminars, workshops, etc or professional development (passing GRIHA, ECBC, IGBC, Accredited Professional exam) can be claimed to earn maximum 5 extra credits which are over and above the minimum number of credits (total 120 credits) the student has to complete for award of the degree. These credits would be awarded for type of activity undertaken from the joining of course till end of course as mentioned in the table below. Students have to submit the necessary documents at the end of IV semester.

Award of extra credits

Sr.No	Type of Activity	Credits awarded per participation
1	Publication in International/ national Journal(for 1st or 2nd author only)	01
2	Participation with presentation in seminar, workshop, conference, etc (national/ international/state/ local))	01
3	Participation in seminar, workshop, conference, etc (national/ international /state/ local)	0.5
4	Sending entry to design competition held at state / national / international level	01
5	Winning award at the contest mentioned above	02
6	Passing professional exams like LEED-IGBC,GRIHA – Trainer, Energy Manager, ECBC-Master Trainer, etc.	01
7	MOOC Courses for period of minimum 4 weeks with certificate	0.5

The student has to accumulate and submit the respective documents to the PG coordinator, to become eligible for getting the credits as mentioned above.

Rule no. 5: Performances and grading system

Award of Grades (Ten point Grading systems):

The assignment of score obtained by the candidate (out of maximum 100) to a grade may be done as follows:

.Range of % of marks	Grade Point	Grade Letter
80<= Marks <100	10	O
70<= Marks <80	9	A+
60<= Marks <70	8	A
55<= Marks <60	7	B+
50<= Marks <55	6	B
Marks <50	0	D

Eligibility for Passing:

The University rules and standards define the result (Pass/Fail) of a candidate. It is in the form of obtaining minimum CGPA (Cumulative Grade Point Average) calculated across all the semesters at the end of the course. Also the SGPA (Semester Grade Point Average) is calculated separately after every end-semester examination which is reflected in the grade card issued to the student after the completion of the course.

Award of Honors at the End of the Course (CGPA):

Range of CGPA	Final Grade	Performance Descriptor
9.50<= CGPA <= 10.00	O	Outstanding
9.00<= CGPA <= 9.49	A+	Excellent
8.00<= CGPA <=8.99	A	Very Good
7.00<= CGPA <= 7.99	B+	Good
6.00<= CGPA <= 6.99	B	Average
5.00<= CGPA <= 5.99	C	Satisfactory
CGPA below 5.00	F	Fail

Grade Card:

The grade cards shall be issued to the students in a uniform format given by the University. The grade card will reflect the marks obtained by the student, Credit points of the individual paper as well as Semester, conversion of marks into grades, calculation of SGPA for each individual semester and the CGPA for the complete course at the end of the final semester.

*** * * * * * * * * * ***

SUMMARY OF M.ARCH (SA) -2018 CBCS COURSE

Semester I	
Sub. Code	**Subjects**
SA101	Sustainable Development
SA102	Energy management and Audit
SA103	Sustainable Design Studio-I
SA104	Energy Conservation I (Thermal)
SA105	Sustainable Materials and Technology
SA106	Elective I

Semester II	
Sub. Code	**Subjects**
SA201	Green Building Assessment & Certification
SA202	Energy Systems and Utilities
SA203	Sustainable Design Studio-II
SA204	Energy Conservation II(Luminous)
SA205	Research Design and Methods
SA206	Elective II

Semester III	
Sub. Code	**Subjects**
SA301	Advanced Simulation Modeling
SA302	Clean Technologies
SA303	Sustainable Design Studio-III
SA304	Energy Conservation III (Acoustics and Aqueous)
SA305	Dissertation I
SA306	Elective III

Semester IV	
Sub. Code	**Subjects**
SA401	Dissertation II
SA402	Self Study
SA403	Seminar
SA404	Internship

	M.ARCH (SA) -2018 CBCS COURSE Semester I	**Total Duration: 30 Hrs/Week Total Marks: 600 Total Credits: 30**									
		Examination Scheme				**Teaching Scheme**			**Credits**		
Sub. Code	**Subjects/ Courses**	UE		IA	Total	Lecture per week	Studios per week	Total no. of classes / semester (week x 15)	Lecture	Studio	**Total Credits**
		Theory	Oral	Sessional							
SA101	Sustainable Development	60	-	40	100	04	00	60	4	0	4
SA102	Energy management and audit	60	-	40	100	04	00	60	4	0	4
SA103	Sustainable Design Studio-I	-	60	40	100	02	08	150	2	8	10
SA104	Energy Conservation I (Thermal)	60	-	40	100	06	00	90	6	0	6
SA105	Sustainable Materials and technology	60	-	40	100	04	00	60	4	0	4
SA106	Elective I	-	-	100	100	02	00	30	2	0	2
	Lectures/ week				**600**	22	8				**30**

	M.ARCH (SA) -2018 CBCS COURSE Semester II	**Total Duration: 30 Hrs/Week Total Marks: 600 Total Credits:30**									
		Examination Scheme				**Teaching Scheme**			**Credits**		
Sub. Code	**Subjects/ Courses**	UE		IA	Total	Lecture per week	Studios per week	Total no. of classes / semester (week x 15)	Lecture	Studio	**Total Credits**
		Theory	Oral	Sessional							
SA201	Green Building Assessment & Certification	-	60	40	100	04	00	60	4	0	4
SA202	Energy systems and Utilities	60	-	40	100	04	00	60	4	0	4
SA203	Sustainable Design Studio-II	-	60	40	100	02	08	150	2	8	10
SA204	Energy Conservation II(Luminous)	60	-	40	100	06	00	90	6	0	6
SA205	Research Design and Methods	60	-	40	100	04	00	60	4	0	4
SA206	Elective II	-	-	100	100	02	00	30	2	0	2
	Lectures/ week				**600**	22	08				**30**

	M.ARCH (SA) -2018 CBCS COURSE Semester III	**Total Duration: 30 Hrs/Week Total Marks: 600 Total Credits: 30**									
		Examination Scheme				**Teaching Scheme**			**Credits**		
Sub. Code	**Subjects/ Courses**	UE		IA	Total	Lecture per week	Studios per week	Total no. of classes / semester (week x 15)	Lecture	Studio	**Total Credits**
		Theory	Oral	Sessional							
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SA304	Energy Conservation III (Acoustic and Aqueous)	60	-	40	100	06	00	90	6	0	6
SA305	Dissertation I	-	60	40	100	04	00	60	0	4	4
SA306	Elective III	-	-	100	100	02	00	30	2	0	2
	Lectures/ week				**600**	22	08				**30**

	M.ARCH (SA) -2018 CBCS COURSE Semester IV	**Total Duration: 30 Hrs/Week Total Marks: 400 Total Credits: 30**									
		Examination Scheme				**Teaching Scheme**			**Credits**		
Sub. Code	**Subjects/ Courses**	UE		IA	Total	Lecture per week	Studios per week	Total no. of classes / semester (week x 15)	Lecture	Studio	**Total Credits**
		Theory	Oral	Sessional							
SA401	Dissertation II	-	60	40	100	04	14	270	4	14	18
SA402	Self Study	-	-	100	100	01	03	60	1	3	4
SA 403	Seminar	-	-	100	100	01	03	60	1	3	4
SA404	Internship		60	40	100	*	*		0	0	4
	Lectures/ week				**400**	06	20				**30**

*Internship (40 working days;8 hours each) to be undertaken during intermediate time between I ,II & III Semester, details of which are mentioned in the detailed syllabus. The Assessment of the same will be held during Semester IV.

Annexure

A. Guidelines for Sessional work and Internal assessment

Sessional work prepared by students shall be continuously assessed by internal faculty members throughout the semester.

Theory Subjects

Internal Assessment shall be done on the basis of performance in the unit tests and assignments as follows.

a. Unit Tests

A minimum of 3 unit tests will be conducted of 20 marks each for theory subject preferably one test per two modules. The schedule for the same will be declared in the teaching schedule of that subject. To calculate final marks of the unit test for IA following procedure is followed:

- Out of the three unit tests conducted during the semester, the marks of only two unit tests in which the candidate has shown his/her best performance shall be considered. These marks will be averaged to convert out of 20 marks for IA.
- If the candidate appears only for two unit tests conducted during the semester, he/she will not be given the benefit of the best performance in the tests.
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b. Awards for Tutorials / Assignments

Minimum two number of assignments in the form of tutorials/case-studies/ literature review/climatic analysis, etc should be submitted under the respective subject. The assignments should be designed to apply theory and explore the thinking and research ability of the student.

c. Awards for Attendance

The student will be eligible for acquiring the marks under this criterion, subject to fulfilling the minimum attendance in the respective subject required to grant the term.

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Internal Assessment shall be done on the basis of presentations and interim making done throughout the semester.

Three (3) nos. of intermediate juries and presentations shall be conducted throughout the semester at three stages for design development and review.

Stage 1 : Climate data collection, site selection and analysis

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Stage 3: Performance assessment with the help of manual calculations and simulation softwares

a. Design or research proposal

Work produced by the student should be assessed based on the performance to arrive at final design solution or research output.

b. Awards for Assignments / Case-Studies/ Climatic analysis/ Program analysis

Minimum two numbers of assignments in the form of case-studies/ literature review/climatic analysis, etc should be submitted.

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The student will be eligible for acquiring the marks under this criterion, subject to fulfilling the minimum attendance in the respective subject required to grant the term.

Allied subjects (Electives, seminar, self study)

Internal Assessment shall be done on the basis of presentations done throughout the semester and final report submitted.

B. List of Electives

The subject of electives is being introduced with an intention of an in depth study of a particular subject of students liking in greater detail but in larger context of overall scope of the course. It also helps the student to acquire expertise in his choice of subject.

Following is the list of topics from which the students would have an option to choose a topic and undertake study. Every semester student can opt from only one group. As far as possible the topics are

limited to below mentioned topics only. However under exceptional circumstances, if deemed necessary and opted for by minimum stipulated number of students and agreed to by the principal and the coordinator, any additional topic may also be chosen and undertaken for study.

Strength of any preferred subject to be minimum 10 per topic chosen.

Core Electives	**Allied Electives**	**Open Electives**
Energy efficient lighting of interiors	Building Information Modeling	Swachh Bharat
Urban Wetlands	Visual communication	Traditional knowledge systems related to conservation of resources
Zero energy development	Advanced HVAC systems	Humanities and social sciences
Energy Efficient Envelope Design	Disaster Management	Community Services
Vernacular architecture	Digital Architecture	Writing and verbal skills

C. Guidelines for structure of the research and dissertation report

Report should be submitted to the subject coordinator in A4 size portrait format as a hardbound copy (red color for RP and black for design dissertation) with title page embossed on Front cover and only title on the edge. The report must be accompanied by a CD containing full text pdf and MS word. All images should be saved in jpeg format in a separate folder. Use **Times New Roman 12 fonts** for main body and 14 bold for headings with 1.5 spacing. All references, quotes, images, graphs, tables should be cited properly and duly acknowledged. Permission should be taken for copyright material. Two numbers of copies should be submitted.

CONTENTS OF THE REPORT

1. Cover page: It should contain title of the course, name of the institute, title of the project, student's name, year of submission and guide's name
2. Certificate from the Institute
3. Declaration for authenticity
4. Acknowledgements
5. Abstract : A summary of report (not more than 150 words)
6. Table of contents- A numbered list of headings and subheadings with page numbers
7. List of figures and tables with page numbers
8. Main body of report arranged in various sections
    a. Introduction
    b. Aim and objectives
    c. Scope and limitations
    d. Methodology
    e. Literature review
    f. Case studies and data presentation
    g. Analysis and conclusions
    h. Program brief and analysis
    i. Site analysis
    j. Design solution
    k. References (use APA 6)
9. Annexure

BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY)

COLLEGE OF ARCHITECTURE, PUNE-43

REVISED

CBCS 2018 COURSE

FOR

POST GRADUATE DEGREE PROGRAMME

IN

M. ARCH. (Sustainable Architecture)

Under Faculty of Engineering

Rules Regarding Passing, Continuous Assessment and Award of Class:

Rule 1: Eligibility Criteria:

A student seeking admission to Master of Sustainable Architecture must have passed B.Arch. or equivalent streams from a recognized university securing minimum 50% or above, aggregate marks. Common Entrance Test (CET) shall be conducted as per rules and regulations of Bharati Vidyapeeth Deemed University.

Rule No. 2: Scheme of Assessment

The candidate eligible for Master's degree shall appear for and pass examinations as under:

First Year Masters: Semester I and II

Second Year Masters: Semester III and IV

Rule No. 3: Granting of Term

Academic year shall consist of two semesters of 18 weeks each (15 weeks teaching+3 weeks internal assessment work).

The student shall be permitted to appear for examinations at the end of each semester only if he/she meets the following:

A. 75% attendance in each head of passing of as prescribed by the university.

B. Satisfactory completion of Sessional Work prescribed in the syllabus.

C. Good Conduct.

1. For all courses there shall be Internal Assessment (IA) conducted by the institution and at the end of term University Examination (UE) for the courses specified in the structure. UE and IA constitute two separate heads of passing.

2. In order to pass and to earn the assigned credits:
   a) The candidate must obtain a minimum grade point of 6.0 (50% marks) at UE and also a minimum of 6.0 (50% marks) at IA.

      Or

      If he/she fails in IA, the student passes in the course provided he/she obtains a minimum of 25% in IA and grade point average(GPA) for course is at least 6.0 (50% in aggregate).The GPA for a course will be calculated only if student passes at UE.

   b) A candidate who fails in UE in a course has to reappear only at UE as a backlog candidate and clear head of passing. Similarly a candidate who fails in a course in IA has to reappear only at IA as a backlog candidate and clear head of passing.

3. It is mandatory for the student enrolled for the M.Arch. Course to complete his/her degree within a maximum of 5 years from his/her date of joining the course. If he/she fails to complete within 5 years, candidate has to take re-admission to the course.

Rule No. 4: Examinations

Evaluation Criteria for University Examination (UE) and Internal Assessment (IA)

Contact Hours and Credits assigned under various heads are as follows:

For lectures	1hour of lecture	1 credit	(UE + IA)
For studio	1 hour of studio	1 credit	(UE +IA)
For subject with Internal Assessment	15 hour of lectures	1 credit	(IA)
• Total number of credits for four semesters M.Arch. Course will be: 120			
• Total Marks for all semesters together = 2200			
• Additional Credits: 05 (These are over and above total credits for the marks and will appear separately in the mark list)			

a. **Internal Assessment (IA):** The performance of the students shall be assessed progressively by an internal teacher for IA during the semester. The distribution under Internal Assessment is as follows:

Sr. No	Parameter considered	Marks awarded for 40 marks	Marks awarded for 100 marks
1	Unit Tests / Research or design Proposals/Report	20	50
2	Tutorials / Assignments / Case-Studies/ Climatic Analysis	10	25
3	Attendance	10	25
	Distribution for internal assessment: 20 + 10 + 10 = 40		50+25+25=100

b. **University Examination (Viva Voce):**

- For university examinations of all semesters, assessment shall be done jointly by internal and external examiners in equal weightage.

c. **University Examination (Theory):**

- The question paper for theory subject will carry **60 marks** and will be of **2 hours**.

Evaluation criteria for additional credits:

Participation in activities such as research publications, conferences, seminars, workshops, etc or professional development (passing GRIHA, ECBC, IGBC, Accredited Professional exam) can be claimed to earn maximum 5 extra credits which are over and above the minimum number of credits (total 120 credits) the student has to complete for award of the degree. These credits would be awarded for type of activity undertaken from the joining of course till end of course as mentioned in the table below. Students have to submit the necessary documents at the end of IV semester.

Award of extra credits

Sr.No	Type of Activity	Credits awarded per participation
1	Publication in International/ national Journal(for 1st or 2nd author only)	01
2	Participation with presentation in seminar, workshop, conference, etc (national/ international/state/ local))	01
3	Participation in seminar, workshop, conference, etc (national/ international /state/ local)	0.5
4	Sending entry to design competition held at state / national / international level	01
5	Winning award at the contest mentioned above	02
6	Passing professional exams like LEED-IGBC,GRIHA – Trainer, Energy Manager, ECBC-Master Trainer, etc.	01
7	MOOC Courses for period of minimum 4 weeks with certificate	0.5

The student has to accumulate and submit the respective documents to the PG coordinator, to become eligible for getting the credits as mentioned above.

Rule no. 5: Performances and grading system

Award of Grades (Ten point Grading systems):

The assignment of score obtained by the candidate (out of maximum 100) to a grade may be done as follows:

.Range of % of marks	Grade Point	Grade Letter
80<= Marks <100	10	O
70<= Marks <80	9	A+
60<= Marks <70	8	A
55<= Marks <60	7	B+
50<= Marks <55	6	B
Marks <50	0	D

Eligibility for Passing:

The University rules and standards define the result (Pass/Fail) of a candidate. It is in the form of obtaining minimum CGPA (Cumulative Grade Point Average) calculated across all the semesters at the end of the course. Also the SGPA (Semester Grade Point Average) is calculated separately after every end-semester examination which is reflected in the grade card issued to the student after the completion of the course.

Award of Honors at the End of the Course (CGPA):

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CGPA below 5.00	F	Fail

Grade Card:

The grade cards shall be issued to the students in a uniform format given by the University. The grade card will reflect the marks obtained by the student, Credit points of the individual paper as well as Semester, conversion of marks into grades, calculation of SGPA for each individual semester and the CGPA for the complete course at the end of the final semester.

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SUMMARY OF M.ARCH (SA) -2018 CBCS COURSE

Semester I	
Sub. Code	**Subjects**
SA101	Sustainable Development
SA102	Energy management and Audit
SA103	Sustainable Design Studio-I
SA104	Energy Conservation I (Thermal)
SA105	Sustainable Materials and Technology
SA106	Elective I

Semester II	
Sub. Code	**Subjects**
SA201	Green Building Assessment & Certification
SA202	Energy Systems and Utilities
SA203	Sustainable Design Studio-II
SA204	Energy Conservation II(Luminous)
SA205	Research Design and Methods
SA206	Elective II

Semester III	
Sub. Code	**Subjects**
SA301	Advanced Simulation Modeling
SA302	Clean Technologies
SA303	Sustainable Design Studio-III
SA304	Energy Conservation III (Acoustics and Aqueous)
SA305	Dissertation I
SA306	Elective III

Semester IV	
Sub. Code	**Subjects**
SA401	Dissertation II
SA402	Self Study
SA403	Seminar
SA404	Internship

	M.ARCH (SA) -2018 CBCS COURSE Semester I	**Total Duration: 30 Hrs/Week Total Marks: 600 Total Credits: 30**									
		Examination Scheme				**Teaching Scheme**			**Credits**		
Sub. Code	**Subjects/ Courses**	UE		IA	Total	Lecture per week	Studios per week	Total no. of classes / semester (week x 15)	Lecture	Studio	**Total Credits**
		Theory	Oral	Sessional							
SA101	Sustainable Development	60	-	40	100	04	00	60	4	0	4
SA102	Energy management and audit	60	-	40	100	04	00	60	4	0	4
SA103	Sustainable Design Studio-I	-	60	40	100	02	08	150	2	8	10
SA104	Energy Conservation I (Thermal)	60	-	40	100	06	00	90	6	0	6
SA105	Sustainable Materials and technology	60	-	40	100	04	00	60	4	0	4
SA106	Elective I	-	-	100	100	02	00	30	2	0	2
	Lectures/ week				**600**	22	8				**30**

	M.ARCH (SA) -2018 CBCS COURSE Semester II	**Total Duration: 30 Hrs/Week Total Marks: 600 Total Credits:30**									
		Examination Scheme				**Teaching Scheme**			**Credits**		
Sub. Code	**Subjects/ Courses**	UE		IA	Total	Lecture per week	Studios per week	Total no. of classes / semester (week x 15)	Lecture	Studio	**Total Credits**
		Theory	Oral	Sessional							
SA201	Green Building Assessment & Certification	-	60	40	100	04	00	60	4	0	4
SA202	Energy systems and Utilities	60	-	40	100	04	00	60	4	0	4
SA203	Sustainable Design Studio-II	-	60	40	100	02	08	150	2	8	10
SA204	Energy Conservation II(Luminous)	60	-	40	100	06	00	90	6	0	6
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SA206	Elective II	-	-	100	100	02	00	30	2	0	2
	Lectures/ week				**600**	22	08				**30**

	M.ARCH (SA) -2018 CBCS COURSE Semester III	**Total Duration: 30 Hrs/Week Total Marks: 600 Total Credits: 30**									
		Examination Scheme				**Teaching Scheme**			**Credits**		
Sub. Code	**Subjects/ Courses**	UE		IA	Total	Lecture per week	Studios per week	Total no. of classes / semester (week x 15)	Lecture	Studio	**Total Credits**
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SA301	Advanced Simulation Modeling	-	60	40	100	04	00	60	4	0	4
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SA305	Dissertation I	-	60	40	100	04	00	60	0	4	4
SA306	Elective III	-	-	100	100	02	00	30	2	0	2
	Lectures/ week				**600**	22	08				**30**

	M.ARCH (SA) -2018 CBCS COURSE Semester IV	**Total Duration: 30 Hrs/Week Total Marks: 400 Total Credits: 30**									
		Examination Scheme				**Teaching Scheme**			**Credits**		
Sub. Code	**Subjects/ Courses**	UE		IA	Total	Lecture per week	Studios per week	Total no. of classes / semester (week x 15)	Lecture	Studio	**Total Credits**
		Theory	Oral	Sessional							
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SA 403	Seminar	-	-	100	100	01	03	60	1	3	4
SA404	Internship		60	40	100	*	*		0	0	4
	Lectures/ week				**400**	06	20				**30**

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Strength of any preferred subject to be minimum 10 per topic chosen.

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    e. Literature review
    f. Case studies and data presentation
    g. Analysis and conclusions
    h. Program brief and analysis
    i. Site analysis
    j. Design solution
    k. References (use APA 6)
9. Annexure

Bharati Vidyapeeth Deemed to be University's College of Architecture,Pune-43

Internal Communication Sheet

Minutes of the Meeting of Board of Studies in Architecture held on 5th May 2020

The meeting of Board of studies in architecture was held on 5th May 2020 online on Skype platform from 11:30 am to 12:30 pm.

AGENDA of the meeting was as follows:

1. Confirmation of minutes of the previous meeting
2. Approval of proposed B. Arch CBCS 2020 syllabus
3. Practical Training/Internship for UG and PG
4. Any other item with permission of the chair.

In attendance:

1) Prof. Archana Gaikwad
2) Prof. Dr. Ashwini Pethe
3) Prof. Mukta Latkar-Talwalkar
4) Assoc. Prof Vaijayanti Pandit
5) Assoc. Prof Priya Bangle
6) Assoc. Prof Aditi Lanke
7) Asst. Prof. Meghana Malve
8) Prof. Dr. Vasudha Gokhale, external expert

The meeting started with the welcome address by the chairperson Prof. Archana Gaikwad. Chairperson read out the agenda for meeting and opened it for discussion. Each item was discussed in detail. Resolution for the same is given below:

1. Confirmation of minutes of the previous meeting

The Chairperson put forth the action taken report of the previous minutes of meeting.

Resolution: The minutes of the previous meeting were confirmed by the BOS.

2. Approval of proposed B. Arch CBCS 2020 syllabus

The syllabus framed for B.Arch CBCS 2020 course to be implemented from academic year 2020-21 was discussed in detail for rules, structure for all 5 years, paper pattern and contents of first year B.Arch. Exert member Dr. Gokhale suggested following modifications:

1. To incorporate Intellectual Property Rights as an elective course

2. To ensure objective for Research Project course to learn technical writing and presentation of empirical work in standard format of research paper as an outcome along with others as assignment.

Resolution: The syllabus for B.Arch CBCS 2020 course(including rules, structure for 5 years, paper pattern and contents for first year) was approved unanimously by the members with incorporating modification suggested by the expert.

3. Practical Training/Internship for UG and PG

As the entire world is affected by pandemic of COVID 19, the need to revise guidelines for practical training for B.Arch (2015 CBCS course) and M.Arch (CBCS 2018 course) was felt for batches going for practical training as per their respective courses in the first term of academic year 2020-21 for B.Arch and M.Arch summer break of May 2020 or Winter break of 2020. The detailed discussion regards the same were carried regards advisory provided by UGC and CoA. Reflecting on the difficulties that would be faced by students going for practical training and to ensure safety, following resolution has been passed to give fair chance to all the students.

Resolution:

1. For B.Arch(2015 course amended in 2018),

a. *The students are allowed to join late for training in the IX semester and complete at least 70 working days instead of 90 working days in the offices or preferably working online.*

b. Students should not join college for semester X late than 2 weeks after the start of the semester in order to facilitate completion of training period if joined late. The IA for the same should be preferably completed before 6^{th} *Week review of semester X to ensure completion of academics of semester X.*

c. The examination for practical training will be conducted at the end of Semester X.

d. Training coordinators to workout various options for students who are not able to get appointments in offices to work physically or online in the form of assignments suggested by UGC and CoA. They should also prepare a detail advisory and communicate to students.

2. For M.Arch (CBCS 2018 course)

a. *The students are allowed to undertake training during winter break or during III and IV semester as part time and complete at least 30 working days instead of 40 working days in the offices or preferably working online.*

b. *Students should not join college for semester IV late than 2 weeks after the start of the semester in order to facilitate completion of training period if joined late.*

c. *Training coordinators to workout various options for students who are not able to get appointments in offices to work physically or online in the form of assignments suggested by UGC and CoA. They should also prepare a detail advisory and communicate to students.*

4. Any other item with permission of chair

Two points were discussed as follows:

1. *Due to sudden lockdown, students are not having access to resources such as drafting tools and materials to complete their assignments. This was discussed at length and resolved that alternative ways of submission should be accepted for assignments in the given situation as allowed by respective teachers.*

Resolution: The teachers of respective subjects are allowed to change the form of assignment or form of submission if required in response to current situation of national lockdown due to unavailability of resources.

2. *It was proposed to orient both faculty and students regards the proposed syllabus CBCS 2020.*

Resolution: BoS chairperson to conduct orientation for faculty after the approval of the syllabus. Academic coordinators to orient the students at the beginning of every implementation year of the course.

Prof. Archana Gaikwad

Chairperson

BOS in Architecture

Bharati Vidyapeeth Deemed to be University's College of Architecture, Pune-43

Internal Communication Sheet

Minutes of the meeting of Board of Studies in Architecture held on 9th May 2018

A meeting of board of studies in Architecture was conducted on 9th May 2018 with prior notice on 5th May 2018 by the university office. Principal Dr. Sutar welcomed all the members of BOS, invitees and congratulated newly appointed Chairperson, Prof. Gaikwad. The chairperson thanked the Principal and Hon. Vice-Chancellor for the appointment and proceeded further.

The chairperson read out the agenda items and briefed about the entire process of revision and reasons for revision. M.Arch syllabus is revised to upgrade the curriculum as per UGC's recommendation of revision after every 3 years (refer to UGC letter in the annexure). The Forth year B.Arch (2015 CBCS pattern) is to be implemented from academic year 2018. The present B.Arch (2015 CBCS pattern) offered practical training of one year in VIII and IX semester, which as per Council of Architecture's recent directives need to be of six months (COA guidelines of 1983 to be followed and draft guidelines 2017). So it was proposed to amend the 2015 CBCS to accommodate six months training before implementation. The syllabus committee conducted one syllabus workshop each involving external subject experts for B.Arch and M.Arch revisions; this was followed by series of meetings to finalize the contents. Accordingly, the syllabus committee has proposed revision in the syllabus which was put forth for approval in this BOS meeting.

The agenda for the meeting was as follows:

1. Confirmation of the minutes of previous meeting
2. Approval of proposed M.Arch 2018 CBCS course
3. Approval of amendments in B.Arch 2015 CBCS course and amendments in rules accordingly
4. Equivalency of 2010 B.Arch course with 2015 course
5. Equivalency of M.Arch 2011 course to 2014 course

6. Any other item with permission of the chair

The detailed discussion and resolutions passed are given below:

AGENDA ITEM 1: Confirmation of the minutes of previous meeting

The previous meeting was held on 21st July 2017 to finalize syllabus for pre-PhD course work.

AGENDA ITEM 2: Approval of proposed M.Arch 2018 CBCS course

The chairperson presented the proposed structure to all the members and the contents were discussed. The chairperson highlighted the revisions which include diversification and skill development through introduction of various topics under subjects such as Sustainable Development, Energy Conservation and electives. Students will complete Internship during semester breaks and will acquire credits at the end of semester IV. It was suggested by Dr. Gokhale to consider extra credits earned by students for calculating CGPA**. It was decided to incorporate this suggestion in the proposed syllabus and approve the structure and contents of M.Arch 2018 CBCS course**.

Resolution: The structure and contents of M.Arch 2018 CBCS course are approved by the BOS (attached herewith). Consideration of extra credits for calculating final CGPA included under Rule no.4 d. (details attached)

AGENDA ITEM 3: Approval of amendments in B.Arch 2015 CBCS course and amendments in rules accordingly

Structure for B.Arch 2015 CBCS pattern was approved and implemented since 2015 for first year. In year 2018, the fourth year structure is to be implemented, which is revised to incorporate six months training instead of 1 year. Accordingly the proposed amendments in the B.Arch 2015 CBCS course by the syllabus committee were presented by the chairperson and discussed by the members (attached in the annexure 1). The chairperson also explained the need to amend the rule no 5 and 6 partly with amendments in the structure.

a. It was suggested to amend the last point under rule no. 5 which stated that the student is allowed to proceed for practical training in sem VIII only if he/she has cleared all the passing heads in previous semesters. As the students are now going for training in 9th semester and to adhere to the general rule it was decided to amend the last point under rule no 5 as **'A student shall be allowed to get admitted to final year B.Arch (Sem IX and Sem X) course only if he/she has cleared all subjects of passing in third year B.Arch (Sem V and VI considered together).**

b. In the current syllabus contents there was no uniformity in weightage of marks for attendance in IA. **It was decided to include weightage of marks for attendance in IA for all the subjects uniformly for all semesters irrespective of details given in the contents. Accordingly, 5 marks and 15 marks for IA of 40 marks and 100 marks respectively are proposed under rule 6. 2. 1**

c. It was decided to have validity of practical training of at least 1 year (2 examinations) after completion of training for IA and UE assessment.

e. Presently, there is no theory examination in Sem VII and VIII. It was resolved earlier in BOS meeting to have at least one theory paper (refer to MOM of BOS meeting conducted on 3rd December 2015). So it was decided to have theory paper for the subject of Urban planning I and II and Building construction and Material-VII and VIII in Sem VII and VIII respectively.

d. The contents of various subjects were discussed and finalized. Dr. Gokhale expressed the need to introduce theory and practices of urban design in the proposed syllabus. **It was decided to include a separate unit for this under subject urban planning I&II in forth year.**

Resolution: The proposed amendments to structure and rules to B.Arch 2015 CBCS course are approved by BOS (attached herewith). The contents of the course are approved after addition of introduction to urban design in the subject Urban Planning I and II. (Details attached). Theory paper is introduced for the subject of Urban planning I and II, Building construction and Material-VII and VIII in Sem VII and VIII respectively.

AGENDA ITEM 4: Equivalency of 2010 B.Arch course with 2015 course

The chairperson presented the equivalency table and it was discussed that except some subjects equivalency cannot be given due to vast difference in the contents of 2010 B.Arch course and 2015 course. It was decided to propose equivalency for some subjects where contents are similar.

Resolution: Partial equivalency to 2010 B.Arch course with B.Arch 2015 CBCS course (details attached in annexure 2) can be given

AGENDA ITEM 5: Equivalency of M.Arch 2011 course to 2014 course

As M.Arch is adopting 2018 course, it was decided not to have equivalency of M.Arch 2011 course to 2014 course and also because the 2011 course is run for 4 years after introduction of 2014 course.

Resolution: No need for equivalency of M.Arch 2011 course to 2014 course

AGENDA ITEM 6: Any other item with permission of the chair

No other item was discussed.

The meeting was concluded by summarizing the resolutions.

Sign:

Prof. Archana Gaikwad

Chairperson (BOS in Architecture)

Date: 11th May 2018

In attendance:

1. Prof. Archana Gaikwad, Chairperson, BOS in architecture
2. Prof. Dr. Vasudha Gokhale, external expert
3. Prof. Ashwini Pethe, Member, BOS in architecture
4. Assoc. Prof. Vaijayanti Pandit, Member, BOS in architecture
5. Assoc. Prof. Priya Bangle, Member, BOS in architecture
6. Assoc. Prof. Aditi Lanke, Member, BOS in architecture
7. Assist Prof. Meghana Malve, BOS in architecture
8. Dr. B.H.Sutar, Principal, Special Invitee
9. Assoc. Prof. Sushama Dhepe, Special Invitee

Apologies for absentee

1. Prof. Mukta Latkar
2. Prof. G.K. Kanhere

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.
Founder Chancellor : Dr. Patangrao Kadam

★ Accredited with 'A+' Grade (2017) by NAAC ★
★ Category-I University Status by UGC ★
★ NIRF Ranking - 66 ★

"Social Transformation Through Dynamic Education"

Prof. Dr. Shivajirao Kadam M.Sc., Ph.D.
Chancellor

Prof. Dr. M. M. Salunkhe M.Sc., Ph.D., F.R.S.C.
Vice Chancellor

Celebrating and Beyond BHARATI VIDYAPEETH

Dr. Vishwajeet Kadam B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor

G. Jayakumar M.Com., Dip.Pub.Admn.
Registrar

NOTIFICATION NO. 925

It is hereby notified for the information of all concerned that the University authorities have decided to approve the revised syllabus of M.Arch. programme and B.Arch. programme by adopting the Council of Architecture's amendments in the existing B.Arch. 2015 CBCS syllabus (Sem VII-X) to be implemented from the academic year 2018-19.

All the concerned are requested to make a note of this.

G. Jayakumar
Registrar

Ref. No. BVDU/2018-19/ 906
Date : July 20, 2018

To,

1. The Dean, Faculty of Engineering & Technology, College of Engineering, Pune 43.
2. The Principal, College of Architecture, Pune 43.
3. The Controller of Examinations, BVDU.

Notification2018-19

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13.8.2018

Bharati Vidyapeeth
(Deemed to be University)
College of Architecure, Pune-43.
Inward No.: 153
Date: 21/7/18
Sign.:

Bharati Vidyapeeth
(Deemed to be University)
Pune, India.
Founder Chancellor : Dr. Patangrao Kadam

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Chancellor

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M.Sc., Ph.D., F.R.S.C.
Vice Chancellor

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BHARATI VIDYAPEETH

Dr. Vishwajeet Kadam
B.Tech., M.B.A., Ph.D.
Pro Vice Chancellor

G. Jayakumar
M.Com., Dip.Pub.Admn.
Registrar

NOTIFICATION NO. 1055

It is hereby notified for the information of all concerned that the proposal to revise the course structure, syllabus and rules of examinations of B.Arch. programme proposed by the concerned Board of Studies and recommended by the Faculty of Engineering and Technology is considered by the authorities of the University.

The authorities of the University have approved the course structure, rules of examinations and 1st year syllabus of B.Arch. programme offered under the Faculty of Engineering and Technology to be implemented from the academic year 2020-21 :

G. Jayakumar
Registrar

Ref. No. BVDU/ 2020-21/ 1786
Date : November 5, 2020

1. The Principal, College of Architecture, Pune 43
2. The Dean, Faculty of Engineering and Technology, Pune 43
3. The Controller of Examinations, BVDU
4. The IT Cell for uploading in the Website.