

**BHARATI VIDYAPEETH (DEEMED TO BE UNIVERSITY)**  
**POONA COLLEGE OF PHARMACY, PUNE**  
**CO-PO mapping for B. Pharm. (CBCS-2019 Course PCI) (Program Code: 922)**

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Human anatomy and Physiology-I (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20653

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Explain the terminologies related to human anatomy and physiology.	3	1	2	1	2	3	1	3	2	1	3
CO2: Discuss the anatomy and physiology of various systems of the human body.	3	2	1	3	2	3	1	3	2	1	3
CO3: Identify bones, joints and study their anatomy and physiology.	3	2	1	1	2	2	1	3	2	1	3
CO4: Relate the synchronous working of organs and use of modern technologies for evaluating physiological functions.	3	3	3	3	3	3	3	3	3	3	3
CO5: Interpret the imbalance of homeostasis responsible for various diseases.	3	3	3	3	3	3	3	3	3	3	3
CO6: Outline environmental conditions implied in lifestyle disorders.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.3</b>	<b>2.2</b>	<b>2.3</b>	<b>2.5</b>	<b>2.8</b>	<b>2.0</b>	<b>3.0</b>	<b>2.5</b>	<b>2.0</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Pharmaceutical Analysis (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20654

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the classification of different analytical techniques useful in drug analysis	3	2	3	2	2	2	3	3	1	3	3
CO2: Integrate physicochemical and electrochemical properties of drugs with analytical methods	3	2	3	2	2	2	2	3	1	2	3
CO3: Comprehend the importance of potential errors and apply strategies for its reduction	3	2	3	2	2	2	2	3	1	3	3
CO4: Remember the principle, advantages, challenges, and applications of electrochemical analysis	3	2	3	2	2	2	2	3	1	2	3
CO5: Describe principle and application of titrimetric methods	3	2	3	2	2	2	2	3	1	2	3
CO6: Choose the appropriate titrimetric/instrumental technique for evaluation of samples.	3	3	3	3	2	2	3	3	1	1	3
<b>Average</b>	<b>3.0</b>	<b>2.2</b>	<b>3.0</b>	<b>2.2</b>	<b>2.0</b>	<b>2.0</b>	<b>2.3</b>	<b>3.0</b>	<b>1.0</b>	<b>2.2</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Pharmaceutics (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20655

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Evaluate the prescription for rational drug therapy	3	2	3	2	1	2	1	2	3	2	2
CO2: Explain principles of modern dispensing practices	2	2	3	3	2	2	2	2	2	2	2
CO3: Recommend patients about pharmaceutical dosage forms	2	3	2	2	2	3	3	2	3	2	2
CO4: Compound and dispense dosage forms	3	1	3	2	2	2	2	2	2	2	2
CO5: Practice ethics in community pharmacy	3	2	3	2	2	1	2	2	2	3	2
CO6: Apply basic principles and calculations in formulation development	3	2	2	2	3	3	2	3	2	2	2
<b>Average</b>	<b>2.7</b>	<b>2.0</b>	<b>2.7</b>	<b>2.2</b>	<b>2.0</b>	<b>2.2</b>	<b>2.0</b>	<b>2.2</b>	<b>2.3</b>	<b>2.2</b>	<b>2.0</b>

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Pharmaceutical Inorganic Chemistry (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20656

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Describe the relevance and significance of inorganic chemistry with reference to pharmaceutical sciences	3	2	2	3	3	2	3	3	3	3	3
CO2: Refer official Pharmacopoeias to detect impurities.	3	3	3	3	3	2	3	3	2	3	3
CO3: Understand monographs of inorganic pharmaceuticals.	3	3	3	3	2	2	3	3	2	3	3
CO4: Review the official electrolytes intended for replacement therapy and maintaining acid-base balance.	3	3	2	3	2	3	3	3	3	2	2
CO5: Discuss and apply the physicochemical properties, assay, and uses of inorganic gastrointestinal agents.	3	3	3	3	2	3	3	2	2	2	3
CO6: Gain information about measurement of radioactivity and handling of radioactive pharmaceutical substances	3	3	2	3	3	2	3	3	2	2	2
<b>Average</b>	<b>3.0</b>	<b>2.8</b>	<b>2.5</b>	<b>3.0</b>	<b>2.5</b>	<b>2.3</b>	<b>3.0</b>	<b>2.8</b>	<b>2.3</b>	<b>2.5</b>	<b>2.7</b>

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Communication Skill (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21322

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Develop behavioural traits to function effectively in pharmaceutical operations.	3	3	2	3	3	3	3	3	3	3	3
CO2: Develop effective communication skill.	3	3	3	3	3	3	3	3	3	2	3
CO3: Organize and manage the team as a team player	3	3	3	3	3	3	3	3	3	2	2
CO4: Apply effective writing and listening skill at personal and professional level.	3	3	2	3	3	3	3	3	3	2	3
CO5: Communicate in interviews confidently.	3	3	3	2	3	3	3	3	3	2	3
CO6: Demonstrate entrepreneurship capabilities meticulously to succeed in today's competitive world.	3	3	2	2	3	3	2	3	3	2	2
<b>Average</b>	<b>3.0</b>	<b>3.0</b>	<b>2.5</b>	<b>2.7</b>	<b>3.0</b>	<b>3.0</b>	<b>2.8</b>	<b>3.0</b>	<b>3.0</b>	<b>2.2</b>	<b>2.7</b>

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Remedial Mathematics (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21326

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: To apply the theory and application statistics in Pharmacy	3	1	2	2	3	2	1	3	3	2	2
CO2: To develop problem solving approach by applying statistical theories	3	3	3	3	2	3	2	2	2	3	2
CO3: To apply of calculus differentiation and analytical geometry in pharmaceutical statistical data analysis.	2	3	3	3	2	2	2	2	2	3	2
CO4: To understand basic statistical concepts such as partial fraction, logarithms, function, limit and continuity and their application for problem solving.	2	2	2	2	3	3	3	2	3	2	3
CO5: To analyze matrices and determinant and their related equations.	3	2	3	3	3	3	2	2	3	3	3
CO6: To apply chemical kinetics and solving pharmacokinetics equations for given set of data	3	3	2	2	2	2	2	3	2	2	2
<b>Average</b>	<b>2.7</b>	<b>2.3</b>	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>	<b>2.0</b>	<b>2.3</b>	<b>2.5</b>	<b>2.5</b>	<b>2.3</b>

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Human anatomy and Physiology-I (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20657

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Examine blood samples for haematological parameters and correlate with clinical conditions	3	1	3	3	3	3	3	3	3	3	3
CO2: Measure and interpret the blood pressure and heart rate by different techniques.	3	2	3	3	3	3	3	3	3	3	3
CO3: Identify bones and explain their anatomy and physiology.	3	1	3	1	1	2	2	3	2	1	3
CO4: Describe the histology of various tissues.	3	1	1	2	1	1	1	3	1	1	3
CO5: Determine blood group and explain its significance.	3	2	3	3	3	3	3	3	3	3	3
CO6: Communicate effectively the importance of haematological parameters and healthcare to the society.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>1.7</b>	<b>2.7</b>	<b>2.5</b>	<b>2.3</b>	<b>2.5</b>	<b>2.5</b>	<b>3.0</b>	<b>2.5</b>	<b>2.3</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Pharmaceutical Analysis (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20658

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the significance of calibration in analytical chemistry and aware of safety measures	3	2	3	2	2	2	3	2	2	2	2
CO2: Identify inorganic impurities and discuss the principles of limit tests as per IP	2	1	2	2	1	3	1	2	2	2	3
CO3: Describe the principle involved in various electrochemical analytical methods for drug analysis	3	3	3	2	3	3	2	2	2	2	2
CO4: Prepare and standardize different reagents as per IP	2	2	3	2	3	3	2	2	2	2	2
CO5: Demonstrate analytical skills for evaluation of drugs by titrimetric methods	2	2	3	2	2	1	2	3	2	2	2
CO6: Observe, record and communicate experimental data	2	2	2	3	2	2	2	3	3	3	2
<b>Average</b>	<b>2.3</b>	<b>2.0</b>	<b>2.7</b>	<b>2.2</b>	<b>2.2</b>	<b>2.3</b>	<b>2.0</b>	<b>2.3</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>



**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Pharmaceutics (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20659

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Interpret prescription	3	2	3	2	1	2	1	2	3	2	2
CO2: Apply skills in compounding and dispensing of pharmaceutical dosage forms	2	2	3	3	2	2	2	2	2	2	2
CO3: Counsel the patients for appropriate use of medicines	2	3	2	2	2	3	3	2	3	2	2
CO4: Understand the fundamentals of dosage forms	3	1	3	2	2	2	2	2	2	2	2
CO5: Maintain patient medication records	3	2	3	2	2	1	2	2	2	3	2
CO6: Create patient counselling aids	3	2	2	2	3	3	2	3	2	2	2
<b>Average</b>	<b>2.7</b>	<b>2.0</b>	<b>2.7</b>	<b>2.2</b>	<b>2.0</b>	<b>2.2</b>	<b>2.0</b>	<b>2.2</b>	<b>2.3</b>	<b>2.2</b>	<b>2.0</b>

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Pharmaceutical Inorganic Chemistry (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21321

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Comprehend basic practical terms and concepts used inorganic chemistry.	3	3	3	2	3	3	3	2	3	3	3
CO2: Apply the monograph of pharmaceuticals from official compendia.	3	3	3	3	3	2	3	2	3	3	3
CO3: Prepare and determine purities of inorganic compounds.	3	3	3	3	3	3	3	3	3	3	3
CO4: Identify impurities in pharmaceutical compounds as per Indian Pharmacopoeia	3	3	3	3	3	3	3	3	3	2	3
CO5: Apply expertise intended for identification of official compounds	3	3	2	3	3	3	3	3	3	2	3
CO6: Compute, analyse and record data.	3	3	3	2	3	2	3	2	3	2	2
<b>Average</b>	<b>3.0</b>	<b>3.0</b>	<b>2.8</b>	<b>2.7</b>	<b>3.0</b>	<b>2.7</b>	<b>3.0</b>	<b>2.5</b>	<b>3.0</b>	<b>2.5</b>	<b>2.8</b>

**Year Semester:** First Year B. Pharm. Semester I

**Subject Name:** Communication Skill (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21323

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Develop behavioral traits to function effectively in pharmaceutical operations.	3	3	2	3	3	3	3	3	3	3	3
CO2: Communicate confidently with a good understanding of people's skills.	3	3	3	3	3	3	3	3	3	2	3
CO3: Apply effective writing and listening skills at personal and professional level.	3	3	3	3	3	3	3	3	3	2	3
CO4: Illustrate presentation skills.	3	3	3	3	3	3	3	3	3	2	3
CO5: Communicate in interviews confidently.	3	3	2	3	3	3	2	3	3	2	3
CO6: Apply email etiquette in professional set up.	3	3	3	3	3	3	2	3	3	2	3
<b>Average</b>	<b>3.0</b>	<b>3.0</b>	<b>2.7</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>	<b>2.7</b>	<b>3.0</b>	<b>3.0</b>	<b>2.2</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Human Anatomy and Physiology-II (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20660

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Explain the structure and functions of various systems of the human body.	3	1	1	2	1	2	1	3	3	1	3
CO2: Describe the synchronous working of various organs and systems.	3	3	2	3	2	2	1	3	3	1	3
CO3: Outline modern technologies for evaluating physiological functions.	3	3	3	3	3	3	2	3	3	1	3
CO4: Understand the concept of imbalance of homeostasis in diseases.	3	3	3	3	3	3	3	3	3	3	3
CO5: Correlate the impact of social and environmental factors on body systems.	3	3	3	3	3	3	3	3	3	3	3
CO6: Comprehend the common disorders prevalent in the society.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.7</b>	<b>2.5</b>	<b>2.8</b>	<b>2.5</b>	<b>2.7</b>	<b>2.2</b>	<b>3.0</b>	<b>3.0</b>	<b>2.0</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Pharmaceutical Organic Chemistry-I (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20661

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Write the structure and IUPAC name of the organic compound.	3	1	3	1	1	1	1	3	2	2	3
CO2: Understand method of preparation, reactions, kinetics, stereochemistry and stability of alkanes, alkenes, and conjugated dienes.	3	2	3	3	2	3	2	3	3	3	3
CO3: Illustrate and differentiate nucleophilic substitution reactions.	3	2	3	3	2	3	3	3	3	3	3
CO4: Demonstrate method of preparation and reactions of carbonyl compounds.	3	2	3	3	2	3	2	3	3	3	3
CO5: Interpret acidity and basicity of different carboxylic acids and aliphatic amines.	3	3	3	3	3	3	3	3	3	3	3
CO6: Describe structure, uses and qualitative tests of different organic compounds.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.7</b>	<b>2.5</b>	<b>2.8</b>	<b>2.5</b>	<b>2.7</b>	<b>2.2</b>	<b>3.0</b>	<b>3.0</b>	<b>2.0</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Biochemistry (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20662

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Paraphrase structure- function relationship of bio-molecules from living system.	3	1	2	2	1	1	1	3	1	1	3
CO2: Recognize the importance of metabolism and regulation of pathways with reference to homeostasis of key metabolites.	3	3	3	3	1	2	1	3	2	2	3
CO3: Identify the structural elements of carbohydrates, proteins and lipids along with their physiological role.	3	3	3	3	2	3	1	3	3	2	3
CO4: Summarize enzymes as biocatalyst	3	3	3	3	3	3	3	3	3	3	3
CO5: Understand bioenergetics in biochemical reaction.	3	3	3	3	3	3	3	3	3	3	3
CO6: Describe DNA manipulation, inheritance and recombinant DNA technology.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.7</b>	<b>2.8</b>	<b>2.8</b>	<b>2.2</b>	<b>2.5</b>	<b>2.0</b>	<b>3.0</b>	<b>2.5</b>	<b>2.3</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Pathophysiology (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20663

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the etiopathogenesis of diseases.	3	1	3	3	1	2	1	3	3	3	3
CO2: Correlate the pathological changes with clinical course and identify therapeutic targets.	3	2	3	3	1	2	2	3	3	3	3
CO3: Summarize the signs and symptoms of diseases.	3	1	2	2	1	2	2	3	3	3	3
CO4: Describe conventional and modern techniques for diagnosis of diseases.	3	2	3	3	2	2	2	3	3	3	3
CO5: Interpret the complications of diseases and their implications in society.	3	3	3	2	3	3	3	3	3	3	3
CO6: Communicate effectively the measures for prevention of diseases to the society.	3	3	3	2	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.0</b>	<b>2.8</b>	<b>2.5</b>	<b>1.8</b>	<b>2.3</b>	<b>2.2</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Computer Applications in Pharmacy (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21433

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand applications of computer in pharmacy.	3	1	3	2	3	3	2	3	3	3	3
CO2: Describe the types of databases and number systems	3	2	3	3	2	3	2	3	3	3	3
CO3: Apply Information Systems and Softwares in planning and project management	3	2	3	3	2	3	3	3	3	3	3
CO4: Employ use of bioinformatics in vaccine discovery	3	2	3	3	2	3	2	3	3	3	3
CO5: Use various Web technologies	3	2	3	3	3	3	2	3	3	3	3
CO6: Analyze preclinical data using Computer	3	2	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>1.8</b>	<b>3.0</b>	<b>2.8</b>	<b>2.5</b>	<b>3.0</b>	<b>2.3</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>



**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Environmental Sciences (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21434

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand basics of environment and its associated problems.	3	2	3	1	2	1	2	1	3	3	3
CO2: Summarise the ethical, cross-cultural, and historical context of environmental issues	3	2	3	3	2	3	3	2	3	3	3
CO3: Develop concern and awareness about environmental problems.	3	2	3	2	3	3	2	3	3	3	3
CO4: Evaluate and apply the tools to attain harmony with Nature.	3	3	3	3	2	3	2	3	3	3	3
CO5: Apply knowledge in environment protection and environment improvement.	3	2	3	3	3	3	3	3	3	3	3
CO6: Recommend solution for identified environmental problems.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.3</b>	<b>3.0</b>	<b>2.5</b>	<b>2.5</b>	<b>2.7</b>	<b>2.5</b>	<b>2.5</b>	<b>3.0</b>	<b>3.0</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Human Anatomy and Physiology-II (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20664

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the role of special sense organs.	3	1	1	1	1	1	1	3	1	1	3
CO2: Explain the anatomy and physiology of various human systems with simulated models.	3	3	3	3	3	3	3	3	2	3	3
CO3: Interpret the physiological feedback mechanisms.	3	3	3	3	3	3	3	3	3	3	3
CO4: Describe the histology of various organs and tissues.	3	1	1	2	1	1	1	3	1	1	3
CO5: Determine the respiratory volumes and assess its implications in respiratory diseases.	3	3	3	3	3	3	2	3	3	3	3
CO6: Communicate effectively the importance of different family planning devices to the society.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.3</b>	<b>2.3</b>	<b>2.5</b>	<b>2.3</b>	<b>2.3</b>	<b>2.2</b>	<b>3.0</b>	<b>2.2</b>	<b>2.3</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Pharmaceutical Organic Chemistry-I (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20665

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Recognize colour/Odor and detect the elements present in the organic compound.	3	1	3	1	1	1	1	3	2	2	3
CO2: Perform solubility test of different organic compounds.	3	2	3	3	2	3	2	3	3	3	3
CO3: Analyze organic compounds qualitatively having different functional groups.	3	2	3	3	2	3	3	3	3	3	3
CO4: Prepare solid derivatives of different organic compounds.	3	2	3	3	2	3	2	3	3	3	3
CO5: Identify organic compounds and their derivatives using melting and boiling point.	3	3	3	3	3	3	3	3	3	3	3
CO6: Construct molecular models.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.2</b>	<b>3.0</b>	<b>2.7</b>	<b>2.2</b>	<b>2.7</b>	<b>2.3</b>	<b>3.0</b>	<b>2.8</b>	<b>2.8</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Biochemistry (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21432

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Develop skills for handling laboratory instruments and biological samples.	3	1	1	1	1	1	1	3	1	1	3
CO2: Estimate proteins, sugars and Vitamins.	3	3	3	3	3	3	3	3	2	3	3
CO3: Isolate and characterize proteins.	3	3	3	3	3	3	3	3	3	3	3
CO4: Describe and evaluate of kinetic parameters and factors affecting enzymatic reaction.	3	1	1	2	1	1	1	3	1	1	3
CO5: Qualitative identification of carbohydrates and amino acids	3	3	3	3	3	3	2	3	3	3	3
CO6: Compute, analyze and record biochemical data.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.3</b>	<b>2.3</b>	<b>2.5</b>	<b>2.3</b>	<b>2.3</b>	<b>2.2</b>	<b>3.0</b>	<b>2.2</b>	<b>2.3</b>	<b>3.0</b>

**Year Semester:** First Year B. Pharm. Semester II

**Subject Name:** Computer Applications in Pharmacy (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21435

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Apply use of MS WORD and MS Access	3	2	2	3	2	3	1	3	3	2	3
CO2: Create web page and documents	3	2	3	3	2	3	2	3	3	2	3
CO3: Design product information leaflet using software	3	2	3	3	2	3	2	3	3	2	3
CO4: Create patient database	3	3	3	3	2	3	2	3	3	2	3
CO5: Retrieve the information of a drug using online tools	3	3	3	3	3	3	3	3	3	3	3
CO6: Create and work with queries in MS access	3	2	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.3</b>	<b>2.8</b>	<b>3.0</b>	<b>2.3</b>	<b>3.0</b>	<b>2.2</b>	<b>3.0</b>	<b>3.0</b>	<b>2.3</b>	<b>3.0</b>

**Year Semester:** Second Year B. Pharm. Semester III

**Subject Name:** Pharmaceutical Organic Chemistry-II (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20666

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Write the structure and IUPAC name of the organic compound.	3	1	3	1	1	1	1	3	2	2	3
CO2: Understand method of preparation, reactions, kinetics, stereochemistry and stability of alkanes, alkenes, and conjugated dienes.	3	2	3	3	2	3	2	3	3	3	3
CO3: Illustrate and differentiate nucleophilic substitution reactions.	3	2	3	3	2	3	3	3	3	3	3
CO4: Demonstrate method of preparation and reactions of carbonyl compounds.	3	2	3	3	2	3	2	3	3	3	3
CO5: Interpret acidity and basicity of different carboxylic acids and aliphatic amines.	3	3	3	3	3	3	3	3	3	3	3
CO6: Describe structure, uses and qualitative tests of different organic compounds.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.2</b>	<b>3.0</b>	<b>2.7</b>	<b>2.2</b>	<b>2.7</b>	<b>2.3</b>	<b>3.0</b>	<b>2.8</b>	<b>2.8</b>	<b>3.0</b>

**Year Semester:** Second Year B. Pharm. Semester III

**Subject Name:** Physical Pharmaceutics I (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20667

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand physicochemical properties of drugs and excipients.	3	2	3	1	1	2	1	3	2	1	3
CO2: Use modern analytical tools to assess physicochemical properties of drugs	3	3	3	3	1	1	2	1	1	2	3
CO3: Relate physicochemical properties of pharmaceuticals for formulation design.	3	3	3	3	2	3	2	3	3	2	3
CO4: Classify and analyse drug complexes.	3	3	3	3	2	3	3	3	2	2	3
CO5: Justify the role of stable formulations for effective therapeutic outcome.	3	3	3	3	3	3	3	2	3	2	3
CO6: Analyze and tackle problems encountered in formulation development.	3	3	3	3	3	3	3	2	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.8</b>	<b>3.0</b>	<b>2.7</b>	<b>2.0</b>	<b>2.5</b>	<b>2.3</b>	<b>2.3</b>	<b>2.3</b>	<b>2.0</b>	<b>3.0</b>

**Year Semester:** Second Year B. Pharm. Semester III

**Subject Name:** Pharmaceutical Microbiology (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20668

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Apply techniques for identification of microorganisms.	3	3	3	1	1	3	1	3	3	1	3
CO2: Understand process of sterilization and disinfection	3	3	3	3	2	3	2	3	3	3	3
CO3: Explain aseptic conditions in pharmaceutical laboratories as per GLP	3	3	3	2	2	3	3	3	3	3	3
CO4: Describe microbiological standardization and sterility testing of pharmaceuticals.	3	2	3	3	3	3	2	3	3	3	3
CO5: Review cell culture technology in pharmacy.	3	3	2	3	3	3	3	3	3	3	3
CO6: Create social awareness regarding biohazards.	3	3	2	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>3.0</b>	<b>2.7</b>	<b>2.5</b>	<b>2.3</b>	<b>3.0</b>	<b>2.3</b>	<b>3.0</b>	<b>3.0</b>	<b>2.8</b>	<b>3.0</b>



**Year Semester:** Second Year B. Pharm. Semester III

**Subject Name:** Pharmaceutical Engineering (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20669

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand and conceptualize significance of pharmaceutical unit operations.	3	2	2	2	2	2	2	2	2	3	2
CO2: Apply material handling techniques.	2	1	3	3	1	2	2	1	3	2	2
CO3: Describe unit processes involved in pharmaceutical manufacturing.	2	1	2	2	2	1	2	2	3	2	3
CO4: Employ approaches to prevent environmental pollution.	2	2	2	3	2	2	2	2	2	2	3
CO5: Design plant layout for optimum use of resources.	2	3	2	3	3	3	2	2	3	1	2
CO6: Recommend methods to minimize corrosion in pharmaceutical industries.	3	3	3	3	3	3	3	4	2	3	2
<b>Average</b>	<b>2.3</b>	<b>2.0</b>	<b>2.3</b>	<b>2.7</b>	<b>2.5</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.5</b>	<b>2.2</b>	<b>2.3</b>

**Year Semester:** Second Year B. Pharm. Semester III

**Subject Name:** Pharmaceutical Organic Chemistry II (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21436

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Recognize color/odor and detect the elements present in the organic compound.	3	1	3	1	1	1	1	3	2	2	3
CO2: Perform solubility test of different organic compounds.	3	2	3	3	2	3	2	3	3	3	3
CO3: Analyze organic compounds qualitatively having different functional groups.	3	2	3	3	2	3	3	3	3	3	3
CO4: Prepare solid derivatives of different organic compounds.	3	2	3	3	2	3	2	3	3	3	3
CO5: Identify organic compounds and their derivatives using melting and boiling point.	3	3	3	3	3	3	3	3	3	3	3
CO6: Record, compute and analyse the data.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.2</b>	<b>3.0</b>	<b>2.7</b>	<b>2.2</b>	<b>2.7</b>	<b>2.3</b>	<b>3.0</b>	<b>2.8</b>	<b>2.8</b>	<b>3.0</b>

**Year Semester:** Second Year B. Pharm. Semester III

**Subject Name:** Physical Pharmaceutics I (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21437

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Evaluate physicochemical properties of drug molecules using modern analytical tools.	3	3	3	3	1	1	1	1	1	1	3
CO2: Understand significance of physicochemical properties of pharmaceuticals in formulation development.	3	2	2	1	2	2	2	2	1	1	3
CO3: Estimate stability constant of complexes.	3	3	2	3	1	3	2	1	2	1	3
CO4: Justify use of buffers in pharmaceutical and biological systems.	3	3	2	3	3	3	1	3	3	3	3
CO5: Compute, analyse and record data.	3	3	1	3	2	3	3	2	3	3	3
CO6: Identify and tackle problems encountered in formulation development by working in a team.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.8</b>	<b>2.2</b>	<b>2.7</b>	<b>2.0</b>	<b>2.5</b>	<b>2.0</b>	<b>2.0</b>	<b>2.2</b>	<b>2.0</b>	<b>3.0</b>

**Year Semester:** Second Year B. Pharm. Semester III

**Subject Name:** Pharmaceutical Microbiology (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21438

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Use microscopes for pharmaceutical research.	3	3	3	2	1	2	1	3	2	3	3
CO2: Identify and isolate various microorganisms.	3	2	3	3	2	3	2	2	3	1	3
CO3: Apply sterilization and disinfection techniques in pharmacy.	3	3	3	2	2	3	3	2	3	3	3
CO4: Determine efficacy of antibiotics using microbial testing.	3	2	3	3	3	2	2	3	3	3	3
CO5: Implement ethical practices in microbial laboratory.	3	3	3	3	3	3	3	2	3	3	3
CO6: Compute, analyse and record data.	3	3	3	2	3	3	3	2	3	3	3
<b>Average</b>	<b>3.0</b>	<b>2.7</b>	<b>3.0</b>	<b>2.5</b>	<b>2.3</b>	<b>2.8</b>	<b>2.3</b>	<b>2.3</b>	<b>2.8</b>	<b>2.7</b>	<b>3.0</b>

**Year Semester:** Second Year B. Pharm. Semester III

**Subject Name:** Pharmaceutical Engineering (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21439

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Demonstrate pharmaceutical unit operations	3	2	2	2	2	2	2	2	2	3	2
CO2: Explain the functioning of pharmaceutical equipments.	2	1	3	3	1	2	2	1	3	2	2
CO3: Select and recommend appropriate pharmaceutical packaging materials.	2	1	2	2	2	1	2	2	3	2	3
CO4: Apply the concept of industrial safety.	2	2	2	3	2	2	2	2	2	2	3
CO5: Select cost effective process to quality products.	2	3	2	3	3	3	2	2	3	1	2
CO6: Comprehend the various safety precautions in pharmaceutical industries.	3	3	3	3	3	3	3	4	2	3	2
<b>Average</b>	<b>2.3</b>	<b>2.0</b>	<b>2.3</b>	<b>2.7</b>	<b>2.5</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>	<b>2.5</b>	<b>2.2</b>	<b>2.3</b>

**Year Semester:** Second Year B. Pharm. Semester IV

**Subject Name:** Pharmaceutical Organic Chemistry III (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20670

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1. Understand the principles and procedures of synthesis of drugs	2	3	1	3	2	3	3	2	1	3	3
CO2. Explain need and basic principle and applications of different chemical synthesis and methods thereof.	2	3	2	3	1	3	3	2	1	3	3
CO3. Have knowledge of the chemistry of the organic pharmaceuticals	2	3	1	2	1	3	3	2	3	3	3
CO4. Appreciate the importance of organic pharmaceuticals in preventing and curing the disease.	2	3	2	2	3	3	3	3	3	3	3
CO5. To highlight the nature of the organic compounds used in Pharmaceuticals as drugs	2	3	2	3	2	3	2	3	2	1	3
CO6. Critical understanding of key reactions used in synthesis of therapeutics.	2	3	2	3	1	3	3	2	3	3	2
<b>Average</b>	<b>2.00</b>	<b>3.00</b>	<b>1.67</b>	<b>2.67</b>	<b>1.67</b>	<b>3.00</b>	<b>2.83</b>	<b>2.33</b>	<b>2.33</b>	<b>2.67</b>	<b>2.83</b>

**Year Semester:** Second Year B. Pharm. Semester IV

**Subject Name:** Medicinal Chemistry I (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20671

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO 1. Understand the chemistry of drugs with respect to their pharmacological activity	3	1	3	1	1	1	1	3	2	2	3
CO 2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs alkanes, alkenes and conjugated dienes.	3	2	3	3	2	3	2	3	3	3	3
CO 3. Know the Structural Activity Relationship (SAR) of different class of drugs	3	2	3	3	2	3	3	3	3	3	3
CO 4. Write the chemical synthesis of some drugs	3	2	3	3	2	3	2	3	3	3	3
CO 5. Knowledge about the mechanism pathways of different class of medicinal compounds	3	3	3	3	3	3	3	3	3	3	3
CO6. Helps in correlating between pharmacology of a disease and its mitigation or cure.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	3	2.16	3	2.66	2.16	2.66	2.33	3	2.83	2.83	3

**Year Semester:** Second Year B. Pharm. Semester IV

**Subject Name:** Physical Pharmaceutics II (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20672

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand physicochemical properties of drugs and excipients.	3	2	2	1	1	2	1	1	1	1	3
CO2: Use modern analytical tools to assess physicochemical properties of drugs	3	3	3	3	1	1	1	1	1	1	3
CO3: Relate physicochemical properties of pharmaceuticals for formulation design.	3	3	2	2	2	3	2	2	2	2	3
CO4: Apply principles of chemical kinetics in stability testing and estimation of shelf life of formulations.	3	3	3	3	3	3	3	3	3	3	3
CO5: Understand factors governing stability of finished pharmaceutical products.	3	2	3	2	2	2	2	2	3	3	3
CO6: Analyze and tackle problems encountered in formulation development.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.67</b>	<b>2.67</b>	<b>2.33</b>	<b>2.00</b>	<b>2.33</b>	<b>2.00</b>	<b>2.00</b>	<b>2.17</b>	<b>2.17</b>	<b>3.00</b>



**Year Semester:** Second Year B. Pharm. Semester IV

**Subject Name:** Pharmacology I (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20673

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Describe the fundamental concepts of pharmacology.	3	1	1	2	1	2	2	3	2	2	3
CO2: Explain the pharmacological basis of therapeutics.	3	1	2	2	2	3	3	3	2	2	3
CO3: Comprehend the concept of adverse effects and drug interactions.	3	2	3	3	2	3	3	3	2	2	3
CO4: Justify correlation of pharmacology with other bio medical sciences.	3	2	3	3	3	3	3	3	3	3	3
CO5: Apply the pharmacological knowledge in the prevention and treatment of various diseases.	3	3	3	3	3	3	3	3	3	3	3
CO6: Recommend to the society about measures to minimize adverse drug effects and drug interactions.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.00</b>	<b>2.50</b>	<b>2.67</b>	<b>2.33</b>	<b>2.83</b>	<b>2.83</b>	<b>3.00</b>	<b>2.50</b>	<b>2.50</b>	<b>3.00</b>

**Year Semester:** Second Year B. Pharm. Semester IV

**Subject Name:** Pharmacognosy and Phytochemistry I (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20674

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the concept of Pharmacognosy, drug classification.	3	3	3	3	2	1	1	3	2	2	3
CO2: Reviewing the evaluation techniques for the herbal drug.	3	3	3	3	2	3	2	3	3	3	3
CO3: Discuss Cultivation, Collection, Processing, and storage of drugs of natural origin.	3	3	3	3	2	3	3	3	3	3	3
CO4: Explain the role of Pharmacognosy in various systems of medicine.	3	3	3	3	2	3	2	3	3	3	3
CO5: Comprehend the concept of plant tissue culture.	3	3	3	3	2	3	3	3	3	3	3
CO6: Explain about various primary, secondary metabolites, natura fibers and marine drugs.	3	3	3	3	2	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.00</b>	<b>2.66</b>	<b>2.33</b>	<b>3.00</b>	<b>2.83</b>	<b>2.83</b>	<b>3.00</b>

**Year Semester:** Second Year B. Pharm. Semester IV

**Subject Name:** Medicinal Chemistry I (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21440

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO 1. Recognize color/odor and detect the elements present in the organic compound.	3	1	3	1	1	1	1	3	2	2	3
CO 2. Perform solubility test of different organic compounds.	3	2	3	3	2	3	2	3	3	3	3
CO 3. Analyze organic compounds qualitatively having different functional groups.	3	2	3	3	2	3	3	3	3	3	3
CO 4. Prepare solid derivatives of different organic compounds.	3	2	3	3	2	3	2	3	3	3	3
CO 5. Identify organic compounds and their derivatives using melting and boiling point.	3	3	3	3	3	3	3	3	3	3	3
CO6. Record, compute and analyse the data.	3	3	3	3	3	3	3	3	3	3	3
Average	3	2.16	3	2.66	2.16	2.66	2.33	3	2.83	2.83	3

**Year Semester:** Second Year B. Pharm. Semester IV

**Subject Name:** Physical Pharmaceutics II (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21441

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Evaluate physicochemical properties of drug molecules using modern analytical tools.	3	3	3	3	2	1	1	2	1	1	3
CO2: Understand significance of various physicochemical properties of drug molecules in formulation development.	3	2	2	1	2	1	2	2	3	2	3
CO3: Estimate chemical kinetic parameters.	3	3	2	3	1	3	1	1	2	1	3
CO4: Calculate shelf life of pharmaceuticals.	3	3	3	3	1	3	2	1	3	3	3
CO5: Compute, analyse and record data.	3	3	3	3	2	3	3	2	3	3	3
CO6: Identify and tackle problems encountered in formulation development by working in a team.	3	3	3	3	3	2	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.83</b>	<b>2.67</b>	<b>2.67</b>	<b>1.83</b>	<b>2.17</b>	<b>2.00</b>	<b>1.83</b>	<b>2.50</b>	<b>2.17</b>	<b>3.00</b>

**Year Semester:** Second Year B. Pharm. Semester IV

**Subject Name:** Pharmacology I (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21442

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Outline the basic concepts of experimental pharmacology.	3	2	3	3	2	3	2	3	2	2	3
CO2: Explain maintenance of laboratory animals as per CPCSEA guidelines.	3	2	2	3	2	3	3	3	3	3	3
CO3: Observe the effect of drugs using simulated experiments.	3	2	3	3	2	3	3	3	1	2	3
CO4: Design appropriate laboratory technique for preclinical studies.	3	3	3	3	3	3	3	3	2	3	3
CO5: Illustrate the importance of preclinical screening in drug discovery process.	3	3	3	3	3	3	3	3	3	3	3
CO6: Apply the experimental pharmacology concepts for environmental sustainability.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.50</b>	<b>2.83</b>	<b>3.00</b>	<b>2.50</b>	<b>3.00</b>	<b>2.83</b>	<b>3.00</b>	<b>2.33</b>	<b>2.67</b>	<b>3.00</b>

**Year Semester:** Second Year B. Pharm. Semester IV

**Subject Name:** Pharmacognosy and Phytochemistry I (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21443

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Analyze and identify crude drugs based chemical tests.	3	3	3	1	1	1	1	3	2	2	3
CO2: Evaluating various leaf constants.	3	2	3	3	2	3	2	3	3	3	3
CO3: Experimenting the dimensions of starch grains.	3	2	3	3	2	3	3	3	3	3	3
CO4: Plan and execute Lycopodium spore method of evaluation.	3	2	3	3	2	3	2	3	3	3	3
CO5: Estimating dimensions of natural fibres.	3	3	3	3	3	3	3	3	3	3	3
CO6: Assessing various physicochemical properties of crude drugs.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.50</b>	<b>3.00</b>	<b>2.66</b>	<b>2.16</b>	<b>2.66</b>	<b>2.33</b>	<b>3.00</b>	<b>2.83</b>	<b>2.83</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester V

**Subject Name:** Medicinal Chemistry II (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20675

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the chemistry of drugs with respect to their pharmacological activity.	3	1	3	1	1	1	1	3	2	2	3
CO2: Understand the drug metabolic pathways, adverse effect, and therapeutic value of drugs.	3	2	3	3	2	3	2	3	3	3	3
CO3: Know the Structural Activity Relationship of different class of drugs.	3	2	3	3	2	3	3	3	3	3	3
CO4: Study the chemical synthesis of selected drugs.	3	2	3	3	2	3	2	3	3	3	3
CO5: Sketch the structure and name the drugs and their intermediates	3	3	3	3	3	3	3	3	3	3	3
CO6: Explain mechanism of action of various categories of drugs	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.16</b>	<b>3.00</b>	<b>2.66</b>	<b>2.16</b>	<b>2.66</b>	<b>2.33</b>	<b>3.00</b>	<b>2.83</b>	<b>2.83</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester V

**Subject Name:** Industrial Pharmacy I (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20676

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Know the various pharmaceutical dosage forms and their manufacturing techniques.	3	3	3	3	2	2	2	2	1	2	3
CO2: Know various considerations in development of pharmaceutical dosage forms	3	3	3	3	2	2	2	2	1	2	3
CO3: Formulate solid, liquid, and semisolid dosage forms and evaluate them for their quality	3	3	3	3	1	3	2	2	2	1	3
CO4: Review evaluation parameters of pharmaceutical dosage forms and cosmetics	3	3	3	3	1	3	3	2	3	2	3
CO5: Identify appropriate quality control equipments for pharmaceuticals.	3	3	3	3	2	2	2	2	2	2	3
CO6: Select and recommend appropriate packaging for solid dosage form	3	3	3	3	1	3	3	1	3	2	3
<b>Average</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>1.50</b>	<b>2.50</b>	<b>2.33</b>	<b>1.83</b>	<b>2.00</b>	<b>1.83</b>	<b>3.00</b>



**Year Semester:** Third Year B. Pharm. Semester V

**Subject Name:** Pharmacology-II (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20677

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Identify drug targets considering pathophysiology of diseases.	3	1	2	2	2	2	1	3	2	1	3
CO2: Correlate the molecular basis of drug action with clinical uses.	3	2	2	3	2	3	2	3	2	2	3
CO3: Understand the adverse effects and drug interactions.	3	3	3	3	3	3	3	3	3	3	3
CO4: Suggest appropriate drug therapy for diseases comparing efficacy, safety, and cost-effectiveness of drug therapy.	3	3	3	3	3	3	3	3	3	3	3
CO5: Apply appropriate bioassay to demonstrate its action on specific receptor.	3	3	3	3	3	3	3	3	3	3	3
CO6: Recommend measures for prevention and management of inflammatory and lifestyle diseases.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.50</b>	<b>2.67</b>	<b>2.83</b>	<b>2.67</b>	<b>2.83</b>	<b>2.50</b>	<b>3.00</b>	<b>2.67</b>	<b>2.50</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester V

**Subject Name:** Pharmacognosy and Phytochemistry II (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20678

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand production of secondary metabolites in higher plants.	3	3	3	3	2	2	2	3	2	2	3
CO2: Reviewing the role of radioactive isotopes in the investigation of Biogenetic studies.	3	3	3	3	2	3	2	3	3	3	3
CO3: Comprehend the composition, chemistry, and role of secondary metabolites.	3	3	3	3	2	3	3	3	3	3	3
CO4: Discuss Isolation, Identification and Analysis of Phytoconstituents.	3	3	3	3	2	3	2	3	3	3	3
CO5: Estimation, Industrial production, and utilization of phytoconstituents.	3	3	3	3	2	3	3	3	3	3	3
CO6: Explain methods of extraction and isolation.	3	3	3	3	2	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.00</b>	<b>2.83</b>	<b>2.50</b>	<b>3.00</b>	<b>2.83</b>	<b>2.83</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester V  
**Subject Name:** Pharmaceutical Jurisprudence (Theory)  
**Course:** 2019 Syllabus (PCI)  
**Course Code:** 20679

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals	3	1	2	3	1	3	3	2	3	3	3
CO2: Explain the role of regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals	3	3	1	3	2	3	3	2	3	3	3
CO3: Apply and practice the code of ethics during the pharmaceutical practice	3	3	2	2	3	3	3	3	3	3	3
CO4: Comprehend various Indian Pharmaceutical Acts and Laws	3	1	1	2	1	3	3	2	3	3	3
CO5: Discuss the Right to Information Act for the benefit of society	1	1	2	3	2	3	2	3	3	1	3
CO6: Illustrate various Intellectual Property Rights.	2	1	2	3	1	3	3	2	3	3	2
<b>Average</b>	<b>2.50</b>	<b>1.67</b>	<b>1.67</b>	<b>2.67</b>	<b>1.67</b>	<b>3.00</b>	<b>2.83</b>	<b>2.33</b>	<b>3.00</b>	<b>2.67</b>	<b>2.83</b>

**Year Semester:** Third Year B. Pharm. Semester V

**Subject Name:** Industrial Pharmacy I (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21444

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Review of marketed drug products of various dosage forms.	3	1	2	1	2	3	2	2	1	2	3
CO2: Justify the composition, containers, labels, expiry period, economy, acceptance drug Products.	3	3	3	2	3	3	3	3	3	2	3
CO3: Formulate solid, liquid, semisolid dosage forms and cosmetics preparations	3	3	3	3	2	3	3	2	2	2	3
CO4: Select appropriate manufacturing equipment's.	3	3	2	3	3	3	2	2	2	2	3
CO5: Evaluate quality of pharmaceuticals and cosmetics	3	3	3	3	3	2	3	1	3	3	3
CO6: Adapt Good Laboratory Practices	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.67</b>	<b>2.67</b>	<b>2.50</b>	<b>2.67</b>	<b>2.83</b>	<b>2.67</b>	<b>2.17</b>	<b>2.33</b>	<b>2.33</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester V

**Subject Name:** Pharmacology II (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21445

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the importance of use of animals in drug discovery and development	3	1	1	1	1	3	3	3	2	2	3
CO2: Apply ethical principles in animal experimentation.	3	2	1	1	1	3	3	3	3	3	3
CO3: Outline the principles and applications of bioassay and demonstrate various receptor actions using isolated tissue preparation.	3	3	3	3	3	3	3	3	2	3	3
CO4: Justify the need of alternatives to animals.	3	3	3	3	3	3	3	3	2	3	3
CO5: Demonstrate computer simulated animal experiments.	3	3	3	3	3	3	3	3	2	3	3
CO6: Appreciate correlation of pharmacology with related medical sciences	3	3	3	3	3	3	3	3	2	3	3
<b>Average</b>	<b>3.00</b>	<b>2.50</b>	<b>2.33</b>	<b>2.33</b>	<b>2.33</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.17</b>	<b>2.83</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester V

**Subject Name:** Pharmacognosy and Phytochemistry II (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21446

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Analyze and identify crude drugs based on Morphology, histology, and powder characteristics	3	3	3	1	1	1	1	3	2	3	2
CO2: Experimenting isolation & detection of active principles from crude drugs.	3	2	3	3	2	3	2	3	3	3	3
CO3: Experimenting separation of sugar by paper chromatography	3	2	3	3	2	3	3	3	3	3	3
CO4: Plan and execute TLC of herbal extract	3	2	3	3	2	3	2	3	3	3	3
CO5: Design Distillation of volatile oils and detection of phytoconstituents by TLC	3	3	3	3	3	3	3	3	3	3	3
CO6: Evaluate crude drugs by chemical tests	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.50</b>	<b>3.00</b>	<b>2.66</b>	<b>2.16</b>	<b>2.66</b>	<b>2.33</b>	<b>3.00</b>	<b>2.83</b>	<b>3.00</b>	<b>2.83</b>

**Year Semester:** Third Year B. Pharm. Semester VI

**Subject Name:** Medicinal Chemistry III (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20680

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the importance of drug design and different techniques of drug design	3	1	3	1	1	1	1	3	2	2	3
CO2: Understand the chemistry of drugs with respect to their biological activity.	3	2	3	3	2	3	3	3	3	3	3
CO3: Know the metabolism, adverse effects and therapeutic value of drugs.	3	2	3	3	2	3	3	3	3	3	3
CO4: Know the importance of SAR of drugs.	3	2	3	3	2	3	2	3	3	3	3
CO5: Understand the principles of drug design and QSAR.	3	3	3	3	3	3	3	3	3	3	3
CO6: Explain the principles of combinatorial chemistry and microwave assisted drug synthesis	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.16</b>	<b>3.00</b>	<b>2.66</b>	<b>2.16</b>	<b>2.66</b>	<b>2.50</b>	<b>3.00</b>	<b>2.83</b>	<b>2.83</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester VI

**Subject Name:** Pharmacology III (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20681

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the mechanism of drug action and its relevance in the treatment of different infectious diseases	3	3	3	2	2	3	1	3	3	1	3
CO2: Illustrate the clinical uses of drugs.	3	1	3	2	1	2	3	3	3	2	3
CO3: Analyze the adverse effects and drug interactions with measures to minimize them.	3	3	3	3	3	3	3	3	3	2	3
CO4: Appreciate correlation of pharmacology with related medical sciences.	3	3	3	3	3	3	3	3	3	2	3
CO5: Sensibilise the society about use of nasal decongestants and pumps used for asthma	3	3	3	3	3	3	3	3	3	3	3
CO6: Comprehend the principles of toxicology and treatment of various poisoning	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.67</b>	<b>3.00</b>	<b>2.67</b>	<b>2.50</b>	<b>2.83</b>	<b>2.67</b>	<b>3.00</b>	<b>3.00</b>	<b>2.17</b>	<b>3.00</b>



**Year Semester:** Third Year B. Pharm. Semester VI

**Subject Name:** Herbal Drug Technology (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20682

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the concept of herbal raw material its cultivation, processing, and product development	3	3	3	3	2	2	2	3	2	2	3
CO2: Describe Biodynamic Agricultural practices	3	3	3	3	2	3	2	3	3	3	3
CO3: Summarize the concept of Indian Systems of Medicine	3	3	3	3	2	3	3	3	3	3	3
CO4: Exemplify Patenting, Regulatory requirements of natural products and herbal drug industry	3	3	3	3	2	3	2	3	3	3	3
CO5: Explain about herbal cosmetics, excipients, formulations, and herb drug interactions.	3	3	3	3	2	3	3	3	3	3	3
CO6: Discuss WHO and ICH guidelines for evaluation of herbal drugs	3	3	3	3	2	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.00</b>	<b>2.83</b>	<b>2.50</b>	<b>3.00</b>	<b>2.83</b>	<b>2.83</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester VI

**Subject Name:** Biopharmaceutics and Pharmacokinetics (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20683

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the basic concepts and significance in biopharmaceutics	3	1	2	2	1	2	1	3	3	2	3
CO2: Describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.	3	1	3	3	3	3	3	3	3	2	3
CO3: Apply the concepts of bioavailability and bioequivalence of drug products.	3	3	3	3	2	3	3	3	3	2	3
CO4: Articulate pharmacokinetic parameters, their significance & applications.	3	3	3	3	2	3	3	3	3	3	3
CO5: Design Bioavailability-Bioequivalence study protocol for New Drug Application and Abbreviated New Drug Application	3	3	3	3	3	3	3	3	3	3	3
CO6: Review the role of biopharmaceutics in drug development.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3</b>	<b>2.33</b>	<b>2.83</b>	<b>2.83</b>	<b>2.33</b>	<b>2.83</b>	<b>2.66</b>	<b>3</b>	<b>3</b>	<b>2.5</b>	<b>3</b>

**Year Semester:** Third Year B. Pharm. Semester VI  
**Subject Name:** Pharmaceutical Biotechnology (Theory)  
**Course:** 2019 Syllabus (PCI)  
**Course Code:** 20684

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Recall types, characteristics, and origin of DNA, RNAs and genetic code.	3	1	3	3	1	3	1	3	2	2	3
CO2: Illustrate techniques involved in DNA manipulation	3	2	3	3	2	3	2	3	3	3	3
CO3: Demonstrate recombinant DNA technology and its applications in pharmacy	3	2	3	3	2	3	3	3	3	3	3
CO4: Review antigen-antibody reactions and immune responses	3	2	3	3	2	3	2	3	3	3	3
CO5: Explain enzyme immobilization techniques and fermentation process	3	2	3	3	3	3	3	3	3	3	3
CO6: Enculcate biotechnological aptitude and values required for self-motivated, lifelong learning and professional development.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.16</b>	<b>3.00</b>	<b>2.33</b>	<b>3.00</b>	<b>2.83</b>	<b>2.83</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester VI

**Subject Name:** Pharmaceutical Quality Assurance (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20685

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the concept of Quality control, Quality assurance and cGMP in a pharmaceutical industry	3	2	3	3	3	3	3	3	3	2	3
CO2: Understand the principles and procedures of NABL accreditation	3	2	3	3	3	3	3	3	3	2	3
CO3: Explain the concept of QbD, ISO standardization and Quality Management System	3	2	3	3	2	3	2	3	3	2	3
CO4: Apply good documentation practices and good laboratory practices in pharmaceutical industry	3	3	3	3	3	3	2	3	3	2	3
CO5: Implement knowledge in validation and calibration of pharma equipment and instruments	3	3	3	3	3	3	3	3	3	3	3
CO6: Practice ethics and inculcate human values in pharma sector	3	2	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.33</b>	<b>3.00</b>	<b>3.00</b>	<b>2.83</b>	<b>3.00</b>	<b>2.67</b>	<b>3.00</b>	<b>3.00</b>	<b>2.33</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester VI

**Subject Name:** Medicinal chemistry III (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21447

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Apply principles of organic chemistry for synthesis of intermediates and drugs.	3	3	3	2	3	2	1	3	3	3	3
CO2: Apply principles of quantitative analysis of drugs	3	3	3	2	3	2	1	3	1	2	3
CO3: Determine physicochemical parameters like partition coefficient, MR, and dissociation constant	3	3	3	2	3	2	1	3	3	1	3
CO4: Apply microwave assisted techniques for synthesis of drug and drug intermediates	3	3	3	3	3	2	1	3	2	1	3
CO5: Sketch the structures and reactions using Softwares	3	3	3	2	3	2	2	3	3	3	3
CO6: Compute, analyse and record the observations	3	3	3	2	3	3	3	3	2	1	3
<b>Average</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.17</b>	<b>3.00</b>	<b>2.17</b>	<b>1.50</b>	<b>3.00</b>	<b>2.33</b>	<b>1.83</b>	<b>3.00</b>

**Year Semester:** Third Year B. Pharm. Semester VI

**Subject Name:** Pharmacology III (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21448

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the importance of animal experimentation in drug discovery and development.	3	3	3	2	2	2	3	3	3	2	3
CO 2: Understand the ex- vivo experiments	3	3	3	2	2	2	3	3	3	2	3
CO 3 :Analyze the effect of drugs on GIT	3	3	3	3	3	3	3	3	3	2	3
CO 4: Appreciate correlation of toxicology in drug discovery	3	3	3	3	3	2	3	3	3	2	3
CO 5 : Justify the need of alternatives to animals	3	3	1	3	3	3	3	3	3	3	3
CO6: Demonstrate computer simulated animal experiments.	3	3	3	2	3	3	3	3	3	3	1
<b>Average</b>	<b>3.00</b>	<b>3.00</b>	<b>2.67</b>	<b>2.50</b>	<b>2.67</b>	<b>2.50</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.33</b>	<b>2.67</b>

**Year Semester:** Third Year B. Pharm. Semester VI

**Subject Name:** Herbal Drug Technology (Practical)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 21449

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Experimenting Phytochemical screening of crude drugs Analyze Interpret Experimenting	3	3	3	3	2	2	2	3	2	2	3
CO2: Develop and evaluate herbal cosmetics.	3	3	3	3	2	3	2	3	3	3	3
CO3: Determination of the alcohol content of Asava and Arishta	3	3	3	3	2	3	3	3	3	3	3
CO4: Formulate herbal formulations and their standardization and evaluate the excipients of natural origin.	3	3	3	3	2	3	2	3	3	3	3
CO5: Analyze monographs of herbal drugs from recent Pharmacopoeia	3	3	3	3	2	3	3	3	3	3	3
CO6: Experimenting aldehyde content, phenol content and total alkaloid.	3	3	3	3	2	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.00</b>	<b>2.83</b>	<b>2.50</b>	<b>3.00</b>	<b>2.83</b>	<b>2.83</b>	<b>3.00</b>

**Year Semester:** Final Year B. Pharm. Semester VII  
**Subject Name:** Instrumental Methods of Analysis (Theory)  
**Course:** 2019 Syllabus (PCI)  
**Course Code:** 20686

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Comprehend the basic concepts of UV visible spectroscopy and IR spectroscopy	3	1	1	3	1	2	2	2	1	1	3
CO2: Understand and apply the chromatographic separation for analysis of drugs.	3	2	2	3	2	2	2	2	1	1	3
CO3: Describe the basics of Fluorimetry, Flame photometry, atomic absorption and Nepheloturbidometry techniques and their applications	3	3	3	3	3	3	2	2	2	1	3
CO4: Explain instrumentation and their functions of spectroscopic and chromatographic instruments.	3	2	3	3	3	3	2	2	2	1	3
CO5: Elaborate the protocols for quantitative and qualitative analysis of drugs using various analytical instruments.	3	3	3	3	3	2	2	2	2	1	3
CO6: Select and apply suitable instrumental analytical techniques to assess purity and safety of pharmaceuticals for the benefit of society	3	1	3	3	3	2	2	3	2	2	3



<b>Average</b>	<b>3</b>	<b>2</b>	<b>2.5</b>	<b>3</b>	<b>2.5</b>	<b>2.33</b>	<b>2</b>	<b>2.16</b>	<b>1.66</b>	<b>1.16</b>	<b>3</b>
----------------	----------	----------	------------	----------	------------	-------------	----------	-------------	-------------	-------------	----------

**Year Semester:** Final Year B. Pharm. Semester VII

**Subject Name:** Industrial Pharmacy II (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20687

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Know the process of pilot plant and scale up of pharmaceutical dosage forms.	3	3	3	1	2	3	3	1	3	1	3
CO2: Understand the process of technology transfer from lab scale to commercial batch.	3	3	2	1	3	3	2	2	3	1	3
CO3: Know different Laws and Acts that regulate pharmaceutical industry.	3	2	2	1	1	3	3	2	3	1	3
CO4: Recognize the approval process and regulatory requirements for drug products.	3	1	1	1	2	3	3	2	3	1	3
CO5: Understand and able to apply principles of quality management systems.	3	3	3	3	2	2	3	3	3	1	3
CO6: Know organization structure and responsibilities of Indian regulatory agencies.	3	1	1	1	1	3	3	2	2	1	3
<b>Average</b>	<b>3.00</b>	<b>2.17</b>	<b>2.00</b>	<b>1.33</b>	<b>1.83</b>	<b>2.83</b>	<b>2.83</b>	<b>2.00</b>	<b>2.83</b>	<b>1.00</b>	<b>3.00</b>

**Year Semester:** Final Year B. Pharm. Semester VII

**Subject Name:** Pharmacy Practice (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20688

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Describe the stores management and inventory control	3	3	3	2	3	3	3	3	3	3	3
CO2: Recognise and explain roles and responsibilities of hospital pharmacist	3	3	3	3	3	3	3	3	3	3	3
CO3: Prepare relevant drug or medicine information and counsel the patients	3	2	3	3	3	3	3	3	3	3	3
CO4: Solve and manage Adverse Drug Reactions	3	3	3	3	3	3	3	2	3	3	3
CO5: Formulate evidence-based drug information for better practices to be followed by physicians.	3	2	3	3	3	3	3	3	3	3	3
CO6: Justify and appraise quality assurance of pharmaceutical care services	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.67</b>	<b>3.00</b>	<b>2.83</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.83</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>

**Year Semester:** Final Year B. Pharm. Semester VII  
**Subject Name:** Novel Drug Delivery System (Theory)  
**Course:** 2019 Syllabus (PCI)  
**Course Code:** 20689

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Apply different approaches for development of novel drug delivery systems.	3	2	1	2	1	1	2	1	1	1	1
CO2: Explore the criteria for selection of drugs and polymers for development of novel drug delivery systems.	3	2	2	3	3	2	3	2	2	1	3
CO3: Understand controlled and sustained drug delivery systems along with approaches for their development.	3	1	3	3	3	3	3	2	2	2	2
CO4: Evaluate various Novel drug delivery systems including transdermal, nasopulmonary, targeted and gastroprotective drug delivery system.	3	2	2	2	2	2	3	2	2	2	2
CO5: Analyse the formulation and evaluation parameters of various novel drug delivery systems.	3	1	2	2	3	2	2	3	2	1	2
CO6: Remember the need, design and concept of customized sustained and controlled release dosage forms.	3	2	3	3	3	2	2	3	2	2	2
<b>Average</b>	<b>3</b>	<b>2</b>	<b>2.16</b>	<b>2.5</b>	<b>2.5</b>	<b>2</b>	<b>2.5</b>	<b>2.16</b>	<b>1.83</b>	<b>1.33</b>	<b>2</b>

**Year Semester:** Final Year B. Pharm. Semester VII  
**Subject Name:** Instrumental Methods of Analysis (Practical)  
**Course:** 2019 Syllabus (PCI)  
**Course Code:** 20690

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Perform suitable analytical technique to assess purity and safety of pharmaceuticals	3	3	3	3	2	3	3	2	2	1	3
CO2: Design protocol for quantitative analysis of drugs and formulations	3	3	3	3	3	3	3	2	2	1	3
CO3: Handle selected analytical instruments	3	3	3	3	3	3	2	2	1	1	3
CO4: Demonstrate HPLC and Gas chromatography	3	3	3	3	2	2	3	2	1	2	3
CO5: Apply problem solving approach in pharmaceutical analysis	3	3	3	3	3	3	3	2	2	2	3
CO6: Compute, analyse and record data	3	3	3	3	3	3	3	2	2	2	3
<b>Average</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2.66</b>	<b>2.83</b>	<b>2.83</b>	<b>2</b>	<b>1.66</b>	<b>1.5</b>	<b>3</b>

**Year Semester:** Final Year B. Pharm. Semester VIII

**Subject Name:** Biostatistics and Research Methodology (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20691

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Know the operation of M.S. Excel, SPSS, R and MINITAB®	3	1	3	3	1	3	1	3	2	2	3
CO2: Understand the concept of DoE (Design of Experiment)	3	2	3	3	2	3	2	3	3	3	3
CO3: Know the various statistical techniques to solve statistical problems	3	2	3	3	2	3	3	3	3	3	3
CO4: Appreciate statistical techniques in solving the problems.	3	2	3	3	3	3	2	3	3	3	3
CO5: Develop biostatistical aptitude and values required for self-motivated, lifelong learning and professional development.	3	3	3	3	3	3	3	3	3	3	3
CO6: Apply the concept of pharmacovigilance for herbal drugs.	3	3	3	3	2	3	3	3	3	3	3
<b>Average</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2.83</b>	<b>2.5</b>	<b>3</b>	<b>2.83</b>	<b>2.83</b>	<b>3</b>

**Year Semester:** Final Year B. Pharm. Semester VIII  
**Subject Name:** Social and Preventive Pharmacy (Theory)  
**Course:** 2019 Syllabus (PCI)  
**Course Code:** 20692

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: To Identify current issues related to health and pharmaceutical problems within the country and worldwide.	3	3	3	3	3	3	3	3	3	3	3
CO2: Recognize Social causes and concept of diseases	3	2	2	3	3	3	3	3	3	3	3
CO3: Prepare relevant drug or medicine information and counsel the patients	3	3	2	3	3	3	3	2	3	3	3
CO4: Categorize ailments and provide appropriate management	3	2	3	3	3	3	3	3	3	3	3
CO5: Formulate alternative ways of solving problems related to health and pharmaceutical issues	3	3	3	3	3	3	3	3	3	3	3
CO6: Appraise critical way of thinking based on current healthcare development.	3	3	3	3	3	3	3	3	3	3	3
<b>Average</b>	<b>3.00</b>	<b>2.67</b>	<b>2.67</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.83</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>

**Year Semester:** Final Year B. Pharm. Semester VIII  
**Subject Name:** Pharma Marketing Management (Theory)  
**Course:** 2019 Syllabus (PCI)  
**Course Code:** 20693

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Understand the concept of marketing.	3	1	1	1	3	1	1	3	2	1	3
CO2: Apply the concept of product management in pharmaceutical industry.	3	3	3	2	1	3	2	3	3	1	3
CO3: Assess and design sales promotion technique for a product.	3	3	3	1	2	3	1	3	2	1	3
CO4: Recommend appropriate pricing strategy and pharmaceutical marketing channel.	3	3	2	1	1	3	1	3	2	1	3
CO5: Recognize role and responsibility of professional sales representative.	3	1	1	1	2	3	3	3	2	1	3
CO6: Review the DPCO and NNPA guidelines.	3	1	1	1	1	1	1	1	1	1	3
<b>Average</b>	<b>3.00</b>	<b>2.00</b>	<b>1.83</b>	<b>1.17</b>	<b>1.67</b>	<b>2.33</b>	<b>1.50</b>	<b>2.67</b>	<b>2.00</b>	<b>1.00</b>	<b>3.00</b>

**Year Semester:** Final Year B. Pharm. Semester VIII

**Subject Name:** Advanced Instrumentation Techniques (Theory)

**Course:** 2019 Syllabus (PCI)

**Course Code:** 20701

<b>Course Outcomes</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
CO1: Comprehend the basic concepts of NMR spectroscopy, Mass spectrometry, Thermal analytical methods, and X ray diffraction techniques.	3	1	1	3	1	2	2	2	1	1	3
CO2: Explain instrumentation and their functions of NMR spectroscopy and Mass spectrometry thermal methods and X-ray diffraction	3	2	2	3	2	2	2	2	1	1	3
CO3: Understand the principle and methods of extraction, Radioimmunoassay, and hyphenated techniques.	3	3	3	3	3	3	2	2	2	1	3
CO4: Describe procedures of calibration of different analytical instruments and validation of analytical methods following ICH and USFDA guidelines	3	2	3	3	3	3	2	2	2	1	3
CO5: Develop problem solving skills in basic interpretation aspects of analytical techniques	3	3	3	3	3	2	2	2	2	1	3
CO6: Select and apply suitable instrumental analytical techniques to asses purity and safety of pharmaceuticals for the benefit of society	3	1	3	3	3	2	2	3	2	2	3
<b>Average</b>	<b>3</b>	<b>2</b>	<b>2.5</b>	<b>3</b>	<b>2.5</b>	<b>2.33</b>	<b>2</b>	<b>2.16</b>	<b>1.66</b>	<b>1.16</b>	<b>3</b>