

Course Outcome – Programme Outcome - MATRICES

Correlation levels 1, 2 or 3 as defined below:

- 1: Slight (Low)
- 2: Moderate (Medium)
- 3: Substantial (High)
- : No correlation

B. PHARM. I YEAR**SEMESTER – I****Human Anatomy & Physiology I (PY1Y109)**

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Recall, illustrate and explain general body organization, anatomical structure and terminology.

CO-2: Relate, and explain structure and normal components of various body systems on cellular and organ levels.

CO-3: Relate and explain normal functions of the components of various body systems on cellular and organ levels.

CO-4: Interpret correlation of all body systems with each other and their contributions to homeostasis.

CO-5: Demonstrate laboratory procedures used to examine anatomical structures and evaluate physiological functions of the integumentary, skeletal, muscular, haemopoietic, lymphatic/immune, peripheral nervous system and special senses, and cardiovascular system.

Human Anatomy & Physiology I (PY1Y109)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y109 -1	3	2	1	1	-	3	-	1	1	-	2
PY1Y109 -2	2	1	1	1	1	3	1	2	2	1	2
PY1Y109 -3	2	1	1	1	1	3	1	2	2	1	2
PY1Y109 -4	3	3	3	3	2	3	2	3	2	2	3
PY1Y109 -5	3	2	3	3	3	3	3	2	3	2	3
Set target of PO attainments	2.6	1.8	1.8	1.8	1.4	3	1.4	2	2	1.2	2.4

Pharmaceutical Analysis I (PY1Y110)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Learn and understand the principles of different qualitative and quantitative analytical tests.

CO-2: Identify different chemicals using various techniques such as acid-base, redox, volumetric and electrochemical analysis and titrations.

CO-3: Summarise theoretical concepts of pharmaceutical analysis for expressing their utility in pharmaceutical sciences.

CO-4: Interpret and compare the Pharmacopoeial standards for quality control of drug products.

CO-5: Plan and apply different analytical tests to be performed in laboratory.

Pharmaceutical Analysis I (PY1Y110)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y110 -1	3	3	3	3	3	3	3	3	3	3	3
PY1Y110 -2	3	2	3	2	1	1	3	1	2	1	3
PY1Y110 -3	3	2	3	1	1	1	3	3	2	2	3
PY1Y110 -4	3	2	3	1	1	1	3	1	2	2	3
PY1Y110 -5	3	2	3	3	1	1	3	1	2	1	3
Set target of PO attainments	3	2.2	3	2	1.4	1.4	3	1.8	2.2	1.8	3

Pharmaceutics I (PY1Y111)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Provide an overview of pharmacy discipline, its development, and scope. Knowing the history of modern pharmacy and its development. Understanding various systems of medicine and official literature of pharmacy.
- CO-2:** Identify appropriate dosage forms and route of administration for particular therapy.
- CO-3:** Explain various dosage forms, systems of medicine, various routes of drug administration and their therapeutic importance.
- CO-4:** Familiarize with basic requirements in preparation of different simple dosage forms and provide fundamental knowledge of formulation methodologies and techniques.
- CO-5:** Illustrate the basic understanding and training of dose calculation. Formulation and packaging of dosage forms.

Pharmaceutics I (PY1Y111)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y111 -1	3	3	-	1	1	1	2	3	3	3	1
PY1Y111 -2	1	2	3	2	1	1	2	1	2	3	1
PY1Y111 -3	3	3	3	2	2	2	3	1	3	3	2
PY1Y111 -4	2	2	3	2	2	3	3	2	2	2	3
PY1Y111 -5	2	3	3	2	2	3	3	2	1	2	3
Set target of PO attainments	2.2	2.6	2.4	1.8	1.6	2	2.6	1.8	2.2	2.6	2

Pharmaceutical Inorganic Chemistry (PY1Y112)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Learn and identify different inorganic compounds useful in the field of pharmaceuticals.
- CO-2:** Understand the pharmaceutical importance and uses of inorganic compounds.
- CO-3:** Explain the method of preparation and properties of different inorganic compounds in relation to pharmaceuticals.
- CO-4:** Estimate and identify different inorganic compounds by performing their assay & titrations.
- CO-5:** Relate the knowledge of inorganic compounds, radioactive compounds and other chemicals with respect to the human health.

Pharmaceutical Inorganic Chemistry (PY1Y112)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y112 -1	3	1	3	1	2	3	3	2	2	1	2
PY1Y112 -2	3	1	3	1	2	3	3	2	2	1	1
PY1Y113 -3	3	1	3	1	1	3	3	2	1	1	2
PY1Y114 -4	3	1	3	1	1	3	3	3	2	1	2
PY1Y115 -5	3	1	3	1	2	2	2	1	2	1	2
Set target of PO attainments	3	1	3	1	1.6	2.8	2.8	2	1.8	1	1.8

Communication skills (HU1Y005)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Understand the behavioural needs for a pharmacist to function effectively in the areas of pharmaceutical operation.

CO-2: Communicate effectively (verbal and non-verbal) which will enhance the self-confidence and employability

CO-3: Exhibit leadership and be able to manage the team effectively.

CO-4: Develop interview skills and listening comprehension.

CO-5: Apply the skills to speak and express effectively.

Communication skills (HU1Y005)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
HU1Y005 -1	3	2	2	-	3	3	2	3	3	3	3
HU1Y005 -2	1	2	3	-	3	2	1	3	2	-	3
HU1Y005 -3	1	3	3	-	3	2	-	3	1	1	2
HU1Y005 -4	1	3	3	-	3	2	1	3	1	-	2
HU1Y005 -5	1	3	3	-	3	2	1	3	1	1	3
Set target of PO attainments	1.4	2.6	2.8	0	3	2.2	1	3	1.6	1	2.6

Remedial Biology (PY1Y006)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Classify and discuss the salient features of five kingdoms of life and morphology of flowering plants.

CO-2: Describe the basic component of anatomy and physiology of organ systems of human body.

CO-3: Describe the types of mineral nutrition and role of photosynthesis in plants.

CO-4: Discuss the essential components and their functions for plant growth and development.

CO-5: Demonstrate the structural components of cell and tissues.

Remedial Biology (PY1Y006)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y006 -1	2	2	2	-	1	1	1	1	1	1	1
PY1Y006 -2	2	2	1	1	1	1	1	1	1	1	1
PY1Y006 -3	1	-	1	1	-	1	1	1	1	1	1
PY1Y006 -4	1	1	1	-	-	1	1	1	1	1	1
PY1Y006 -5	2	1	1	1	-	1	1	1	1	1	1
Set target of PO attainments	1.6	1.2	1.2	0.6	0.4	1	1	1	1	1	1

Remedial Mathematics (MA1Y007)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Impart fundamental aspects of mathematics in various subjects of B. Pharm. degree course.
- CO-2:** Develop basic knowledge of Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform.
- CO-3:** Develop the ability to solve differential equations and its applications.
- CO-4:** Calculate the different ways of analytical geometry.
- CO-5:** Summarize basic knowledge of laplace transform and its pharmaceutical applications.

Remedial Mathematics (MA1Y007)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
MA1Y007 -1	3	2	3	1	1	1	-	2	2	-	3
MA1Y007 -2	1	3	3	1	2	1	-	1	2	-	2
MA1Y007 -3	1	2	2	1	2	1	-	2	2	-	3
MA1Y007 -4	2	2	2	1	2	1	-	2	2	-	3
MA1Y007 -5	1	3	3	1	1	1	-	1	1	-	3
Set target of PO attainments	1.6	2.4	2.6	1	1.6	1	0	1.6	1.8	0	2.8

B. PHARM. I YEAR**SEMESTER - II****Human Anatomy and Physiology II (PY1Y610)**

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Explain the gross morphology, structure and functions of various organs of the human body.

CO-2: Extend and relate significance of human anatomy and physiology to understand pharmaceutical sciences.

CO-3: Identify the various tissues and organs of different systems of human body.

CO-4: Explain and summarize components of respective body systems, their coordinated functions and principles of genetics.

CO-5: Perform experiment related to urinary, respiratory and endocrine system.

Human Anatomy and Physiology II (PY1Y610)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y610 -1	3	2	2	2	1	3	2	2	3	2	3
PY1Y610 -2	3	2	2	2	2	2	2	2	2	1	2
PY1Y610 -3	3	1	1	1	1	3	-	2	2	-	2
PY1Y610 -4	3	2	2	2	2	2	-	2	2	1	2
PY1Y610 -5	3	2	2	3	3	3	1	2	2	2	2
Set target of PO attainments	3	1.8	1.8	2	1.8	2.6	1	2	2.2	1.2	2.2

Pharmaceutical Organic Chemistry I (PY1Y611)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Learn the structures, their IUPAC names and the type of reactions of organic compounds.

CO-2: Outline the methods of preparation, uses and reaction of different functional groups.

CO-3: Explain the qualitative and quantitative tests for identification of organic compounds.

CO-4: Perform & interpret qualitative and quantitative analysis of unknown organic compounds.

CO-5: Summarize and apply information of organic compounds in relation to pharmaceuticals

Pharmaceutical Organic Chemistry I (PY1Y611)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y611 -1	3	1	2	3	-	2	1	1	3	1	2
PY1Y611 -2	3	2	2	1	1	2	1	1	3	1	2
PY1Y611 -3	3	1	3	1	-	2	1	3	3	1	2
PY1Y611 -4	3	1	3	1	-	2	1	2	3	1	2
PY1Y611 -5	3	2	3	2	-	3	2	3	3	1	2
Set target of PO attainments	3.00	1.40	2.60	1.60	0.20	2.20	1.20	2.00	3.00	1.00	2.00

Biochemistry (PY1Y613)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Identify the catalytic role of enzymes, importance of enzyme inhibition, therapeutic and diagnostic applications of enzymes.
- CO-2:** Illustrate the structure of various biomolecules and their role in physiological and pathological conditions.
- CO-3:** Define and summarize the importance of biomolecules and genetic material in the synthesis of enzyme, RNAs and DNAs.
- CO-4:** Explain various biological process and relate their significance in biological context.
- CO-5:** Perform qualitative and quantitative analysis of different biomolecules in relation to normal physiology.

PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y613 -1	3	3	3	1	3	3	3	3	3	3	3
PY1Y613 -2	3	2	3	1	1	1	3	1	2	1	3
PY1Y613 -3	3	2	3	1	2	1	3	3	2	2	2
PY1Y613 -4	3	2	3	1	1	2	3	1	1	2	3
PY1Y613 -5	3	1	3	1	1	1	3	1	2	1	3
Set target of PO attainments	3	2	3	1	1.6	1.6	3	1.8	2	1.8	2.8

Pathophysiology (PY1Y612)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Develop understanding of molecular basis of modulation in normal anatomy and physiology during initiation and progression of diseases.
- CO-2:** Extend and utilize pathophysiological phenomenon while studying pharmacology of drug molecule.
- CO-3:** Explain the mechanism of tissue repair process and relate with treatment of various disease.
- CO-4:** Discover, classify causes, symptoms and contributing factor in occurrence and progression of given diseases along-with the identification of pathways that require modulation in disease treatment
- CO-5:** Apply the understanding of pathophysiology during designing and testing of drug molecules and dosage forms.

Pathophysiology (PY1Y612)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y612 -1	3	-	3	1	2	3	1	2	1	-	1
PY1Y612 -2	3	3	3	3	2	2	3	3	-	2	3
PY1Y612 -3	3	-	1	3	-	1	2	3	1	-	2
PY1Y612 -4	3	-	2	3	2	3	3	1	3	1	3
PY1Y612 -5	3	3	3	3	2	2	3	2	-	1	3
Set target of PO attainments	3	1.2	2.4	2.6	1.6	2.2	2.4	2.4	1	-	2.4

Computer Applications in Pharmacy (CT1Y503)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Understand various applications of computer in pharmacy.

CO-2: Impart knowledge about various types and applications of databases.

CO-3: Develop skills related to different software and web technologies.

CO-4: Outline the basic concepts of bioinformatics and its applications.

CO-5: Define the importance of computers in preclinical data analysis.

Computer Applications in Pharmacy (CT1Y503)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CT1Y503 -1	3	3	3	3	2	3	1	3	2	-	3
CT1Y503 -2	2	3	3	3	3	1	1	3	2	-	3
CT1Y503 -3	2	3	2	3	3	2	1	3	1	-	3
CT1Y503 -4	2	2	2	2	2	2	2	3	2	1	2
CT1Y503 -5	3	3	3	3	3	2	3	3	2	1	2
Set target of PO attainments	2.4	2.8	2.6	2.8	2.6	2	1.6	3	1.8	0.4	2.6

Environmental Sciences (PY1Y504)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Create the awareness about environmental problems among learners.

CO-2: Impart basic knowledge about the environment and its allied problems.

CO-3: Develop an attitude of concern for the environment and strive to attain harmony with Nature.

CO-4: Motivate learner to participate in environment protection and environment improvement.

CO-5: Build skills to help the concerned individuals in identifying and solving environmental problems.

Environmental Sciences (PY1Y504)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY1Y504 -1	3	3	3	1	2	3	3	3	3	3	3
PY1Y504 -2	3	2	1	-	2	3	3	2	3	3	3
PY1Y504 -3	3	2	1	-	2	3	3	2	3	3	3
PY1Y504 -4	3	2	1	-	2	3	3	2	3	3	3
PY1Y504 -5	3	2	1	-	2	3	3	2	3	3	3
Set target of PO attainments	3	2.2	1.4	0.2	2	3	3	2.2	3	3	3

B. PHARM. II YEAR**SEMESTER – III****Pharmaceutical Organic Chemistry II (PY2Y015)**

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Understand the structures and basic fundamentals of aromaticity.

CO-2: Summarise and elaborate the reactivity/stability of organic compounds.

CO-3: Outline the methods of preparation, uses and reaction of organic compounds,

CO-4: Articulate the need of writing structure, type of reactions, reactivity; identify conformational isomerism and stability of organic compounds in relation to development of drug.

CO-5: Prepare and standardize various reagents for determination of aromatic compounds.

Pharmaceutical Organic Chemistry II (PY2Y015)												PO attainment
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	
PY2Y015 -1	1	1	2	2	3	3	2	3	3	3	3	
PY2Y015 -2	2	3	3	3	3	3	1	3	3	3	3	
PY2Y015 -3	3	3	3	3	3	3	1	3	3	3	3	
PY2Y015 -4	3	3	3	3	3	3	2	3	3	3	3	
PY2Y015 -5	1	2	3	2	3	3	2	3	3	3	3	
Set target of PO attainments	2	2.4	2.8	2.6	3	3	1.6	3	3	3	3	

Physical Pharmaceutics I (PY2Y014)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Define and relate various physicochemical properties of drug molecules in the designing the dosage forms.

CO-2: Learn and explain the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations.

CO-3: Demonstrate use of surface and interfacial phenomenon in the formulation development and evaluation of dosage forms.

CO-4: Relate the physicochemical properties of the drug molecules with its therapeutic effect, protein binding and complexation.

CO-5: Express the solubility and electrochemical behaviour of liquid in pharmaceutical and biological system.

Physical Pharmaceutics I (PY2Y014)												PO attainment
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	
PY2Y014 -1	3	2	3	2	-	1	-	1	1	1	2	
PY2Y014 -2	3	2	3	1	2	2	1	1	2	3	3	
PY2Y014 -3	2	1	2	2	1	1	2	1	1	1	2	
PY2Y014 -4	3	1	3	2	1	-	-	1	-	2	1	
PY2Y014 -5	3	1	3	3	1	-	-	1	-	2	2	
Set target of PO attainments	2.8	1.4	2.8	2	1	0.8	0.6	1	0.8	1.8	2	

Pharmaceutical Microbiology(PY2Y013)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Learn and understand the methods of identification, cultivation and preservation of various microorganisms.

CO-2: Demonstrate the techniques of sterilization in pharmaceutical processing and industry.

CO-3: Explain and apply the methods for sterility testing of pharmaceutical products.

CO-4: Implement the techniques for microbiological standardization of Pharmaceuticals.

CO-5: Describe the cell culture technology and its applications in pharmaceutical industries.

Pharmaceutical Microbiology(PY2Y013)												PO attainment
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	
PY2Y013 -1	2	1	2	2	1	3	3	2	3	2	1	
PY2Y013 -2	3	3	3	2	-	3	3	2	3	-	2	
PY2Y013 -3	3	3	3	2	2	3	3	2	3	-	2	
PY2Y013 -4	3	3	3	2	2	3	3	2	3	-	2	
PY2Y013 -5	3	3	3	2	2	3	3	2	3	2	2	
Set target of PO attainments	2.8	2.6	2.8	2	1.4	3	3	2	3	0.8	1.8	

Pharmaceutical Engineering (PY2Y012)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Recognize the concepts of unit operations in pharmaceutical process.

CO-2: To identify the principles involved in working of pharmaceutical machineries.

CO-3: Apply his knowledge in selecting appropriate equipment for unit operations.

CO-4: Develop his engineering concepts in finding solutions of pharmaceutical process.

CO-5: Evaluate the critical manufacturing process and provide improvement with better solutions.

Pharmaceutical Engineering (PY2Y012)												PO attainment
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	
PY2Y012 -1	3	3	3	3	2	2	-	1	2	1	2	2.2
PY2Y012 -2	3	3	3	3	2	2	-	2	2	2	2	2.4
PY2Y012 -3	3	3	3	3	2	2	1	2	1	2	2	2.2
PY2Y012 -4	3	3	3	3	3	3	1	1	2	2	2	2.4
PY2Y012 -5	3	3	3	3	2	3	2	2	1	2	2	2.4
Set target of PO attainments	3	3	3	3	2.2	2.4	1.3	1.6	1.6	1.8	2.0	2.3

B. PHARM. II YEAR**SEMESTER – IV****Pharmaceutical Organic Chemistry-III (PY2Y629)**

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Learn about the properties of organic/ heterocyclic compounds and reagents and their methods of preparation.
- CO-2:** Explain the importance of stereochemistry of organic compounds and stereochemical reactions
- CO-3:** Sketch the structure/ isomeric structure, explain synthesis and medicinal uses of different heterocycles/ organic compounds
- CO-4:** Perform the chemical test & evaluation test for organic compounds and reagents.
- CO-5:** Articulate the importance of synthetic chemistry, reactions mechanisms and reagents in relation to drug synthesis.

Pharmaceutical Organic Chemistry-III (PY2Y629)												
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO attainment
PY2Y629 -1	1	1	2	2	3	3	2	3	3	3	3	
PY2Y629 -2	2	3	3	3	3	3	2	3	3	3	3	
PY2Y629 -3	3	3	3	3	3	3	2	3	3	3	3	
PY2Y629 -4	3	3	3	3	3	3	2	3	3	3	3	
PY2Y629 -5	1	2	3	2	3	3	2	3	3	3	3	
Set target of PO attainments	2	2.4	2.8	2.6	3	3	2	3	3	3	3	

Medicinal Chemistry – I (PY2Y627)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Recognize the need for medicinal chemistry principles in understanding the impact of drug discovery on human health.
- CO-2:** Draw and relate the chemical structure of drugs and their pharmacological properties
- CO-3:** Understand the therapeutic value of drugs, drug metabolism and drug adverse effect in relation to professional pharmacy practice.
- CO-4:** Systematically outline the Structural Activity Relationship (SAR) of different class of drugs.
- CO-5:** Sketch and explain the chemical synthesis of drugs which is very important learning for a medicinal chemist.

Medicinal Chemistry – I (PY2Y627)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY2Y627 -1	3	1	3	2	2	3	3	3	2	2	2
PY2Y627 -2	3	3	3	3	-	3	2	2	1	1	1
PY2Y627 -3	3	-	3	1	1	3	3	2	2	-	1
PY2Y627 -4	3	1	3	3	-	3	1	1	1	1	1
PY2Y627 -5	3	-	2	3	-	3	1	1	-	3	-
Set target of PO attainments	3.0	1.0	2.8	2.4	0.6	3.0	2.0	1.8	1.2	1.4	1

Physical Pharmaceutics-II (PY2Y620)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Explain the basic concept of interfacial phenomena, colloids, rheology and micromeritics and their pharmaceutical application.
- CO-2:** Understand the knowledge of basic principles and theories of emulsions, suspensions and semi-solids with their pharmaceutical applications.
- CO-3:** Relate the various pharmaceutical characteristics of drug and formulation for designing of dosage forms
- CO-4:** Apply the principles of chemical kinetics and to use them for stability testing and determination of expiry date of the formulations
- CO-5:** Perform different pharmaceutical experiment related to drug and dosage forms.

Physical Pharmaceutics-II (PY2Y620)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY2Y620 -1	3	3	3	3	3	3	-	2	1	1	3
PY2Y620 -2	3	2	3	3	2	3	-	3	2	1	3
PY2Y620 -3	3	3	2	3	2	2	1	2	1	2	2
PY2Y620 -4	3	3	3	2	3	3	2	1	2	2	2
PY2Y620 -5	3	3	3	3	2	3	1	2	1	2	2
Set target of PO attainments	3	2.8	2.8	2.8	2.4	2.8	0.8	2.0	1.4	1.6	2.4

Pharmacology-I (PY2Y628)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Enlist the pharmacokinetic parameters to monitor drugs kinetics/effectiveness in the living system.
- CO-2:** Describe the pharmacodynamic aspects of various mechanisms involved in receptor & ligand (Agonist, antagonist), drug interaction, adverse drug reaction and steps involved in drug discovery process.
- CO-3:** Explain the mechanism of action, interaction and adverse effects of drugs used in treatment of peripheral nervous system and central nervous system disorders.
- CO-4:** Develop the basic practical skills of animal handling and experimentation.
- CO-5:** Define the terminologies like drug addiction, drug abuse, tolerance and dependence

Pharmacology-I (PY2Y628)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY2Y628 -1	3	2	3	3	1	2	2	2	2	2	2
PY2Y628 -2	3	2	3	2	1	2	1	2	2	1	2
PY2Y628 -3	3	2	2	2	1	2	1	2	2	1	2
PY2Y628 -4	3	3	3	3	2	2	3	2	2	2	2
PY2Y628 -5	3	-	2	-	1	2	2	2	2	2	2
Set target of PO attainments	3	1.8	2.6	2	1.2	2	1.8	2	2	1.6	2

Pharmacognosy and Phytochemistry-I (PY2Y621)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Understand scope of pharmacognosy with their pharmaceutical significance.
CO-2: Explain the sources, uses, chemical nature, characteristic features and evaluation techniques of herbal drugs.
CO-3: Illustrate different techniques of cultivation, collection, storage and conservation of herbal drugs.
CO-4: Apply different techniques of plant tissue culture in relation to their pharmaceutical applications.
CO-5: Relate importance of crude drugs in ayurvedic and alternative system of medicine.

Pharmacognosy and Phytochemistry-I (PY2Y621)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY2Y621 -1	3	2	1	3	-	2	-	1	-	2	3
PY2Y621 -2	3	3	2	-	-	1	-	2	2	2	3
PY2Y621 -3	3	3	3	2	-	-	-	1	2	3	3
PY2Y621 -4	3	3	3	2	-	1	-	1	1	3	3
PY2Y621 -5	2	-	1	3	-	2	-	2	3	3	3
Set target of PO attainments	2.8	2.2	2	2	-	1	-	1.4	1.6	2.6	3

B. PHARM. III YEAR

SEMESTER - V											
Medicinal Chemistry-II (PY3Y016)											
Course Outcomes: Upon completion of the course, student shall be able to:											
CO-1: Explain the principles of medicinal chemistry related with synthesis, SAR and MOA.											
CO-2: Learn and extend the basic knowledge associated with chemical structure of drugs and their pharmacological actions.											
CO-3: Understand the relationship of structure of medicinal compounds with their ADME properties and adverse drug reactions.											
CO-4: Assess the quantum of lifestyle disorders and their treatment with modern therapeutic agents.											
CO-5: Analyze and communicate the overall profile of a drug with health care professionals.											
Medicinal Chemistry-II (PY3Y016)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y016 -1	3	2	2	1	3	3	3	3	3	2	3
PY3Y016 -2	3	1	3	3	3	3	3	1	2	2	2
PY3Y016 -3	3	1	3	2	1	3	1	2	1	1	1
PY3Y016 -4	3	1	1	2	2	3	2	1	1	1	1
PY3Y016 -5	3	3	3	2	3	3	3	3	3	1	3
Set target of PO attainments	3	1.6	2.4	2	2.4	3	2.4	2	2	1.4	2
Industrial Pharmacy- I (PY3Y017)											
Course Outcomes: Upon completion of the course, student shall be able to:											
CO-1: Describe the principles of formulation, manufacturing, packaging and evaluation of tablet, capsule, liquid, ophthalmic, aerosol and cosmetic formulations.											
CO-2: Familiarize with the formulation additives, their properties and appropriate use in above dosage forms.											
CO-3: Develop skills related to production methods, formulation problems and their trouble shooting.											
CO-4: Identify the critical formulation requirements of ophthalmic products, and aerosols.											
CO-5: Perform formulation and evaluation of cosmetics based on powders, creams, lotions, shampoo, hair colors, lipstick and sunscreen products.											
Industrial Pharmacy- I (PY3Y017)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y017 -1	3	3	2	3	2	3	1	2	3	1	3
PY3Y017 -2	3	3	2	2	2	3	2	1	2	2	3
PY3Y017 -3	3	3	3	3	3	3	2	1	2	2	3
PY3Y017 -4	3	2	2	3	2	3	2	1	2	2	3
PY3Y017 -5	3	2	3	3	2	2	2	1	2	1	2
Set target of PO attainments	3	2.6	2.4	2.8	2.2	2.8	1.8	1.2	2.2	1.6	2.8

Pharmacology-II (PY3Y020)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Explain the classification, mechanism of action, interaction and adverse effects of drug assigned for cardiovascular disorders.
- CO-2:** Discuss the mechanism of action, interaction and adverse effects of drug used in Urinary track system.
- CO-3:** Classify autacoids, discuss the mechanism of action, interaction and adverse effects of autacoid related drugs.
- CO-4:** Enlist disorders related to imbalance in hormone system and discuss their drug treatment strategies.
- CO-5:** Learn, perform and interpret the bioassay and compare the various drug response to receptor using isolated tissue preparation.

Pharmacology-II (PY3Y020)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y020 -1	3	-	1	3	-	2	-	3	1	2	3
PY3Y020 -2	3	-	1	2	1	2	-	2	1	2	3
PY3Y020 -3	3	-	1	3	-	2	-	3	1	2	3
PY3Y020 -4	3	-	1	2	1	2	-	3	1	2	3
PY3Y020 -5	3	2	3	3	-	-	3	1	-	2	3
Set target of PO attainments	3	-	1.4	2.6	-	1.6	-	2.4	-	2	3

Pharmacognosy & Phytochemistry II (PY3Y009)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Understand biosynthetic pathways for production of secondary metabolites and their pharmaceutical and industrial applications.
- CO-2:** Describe utilization of radioactive isotopes in the investigation of Biogenetic studies
- CO-3:** Explain composition, chemical classes, biosources and uses of secondary metabolites.
- CO-4:** Apply the modern extraction techniques, characterization, analysis and identification of the herbal drugs and phytoconstituents.
- CO-5:** Develop skill of performing different chromatographic techniques for isolation of phytoconstituents.

Pharmacognosy & Phytochemistry II (PY3Y009)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y009 -1	3	-	1	3	-	-	-	-	3	1	2
PY3Y009 -2	3	-	2	3	-	2	-	2	3	2	3
PY3Y009 -3	3	1	3	3	-	2	2	2	3	2	2
PY3Y009 -4	2	1	3	3	1	2	2	2	1	1	2
PY3Y009 -5	3	-	3	3	-	2	-	-	-	-	3
Set target of PO attainments	2.8	-	2.5	3	-	1.5	-	1	2	1	2.4

Pharmaceutical Jurisprudence (PY3Y008)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Describe the Pharmaceutical legislations and their implications in the development, Production and marketing of pharmaceuticals

CO-2: Explain various Indian pharmaceutical Acts and Laws

CO-3: Employ the guidelines of regulatory authorities and agencies governing the manufacture, sale and production of pharmaceuticals

CO-4: Identify the code of ethics during the pharmaceutical practice.

CO-5: Express the Pharmaceutical Legislations, code of ethics and IPR.

Pharmaceutical Jurisprudence (PY3Y008)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y008 -1	3	3	3	3	3	3	-	2	1	1	3
PY3Y008 -2	3	2	3	3	2	3	-	3	2	1	3
PY3Y008 -3	3	3	2	3	2	1	1	2	1	2	2
PY3Y008 -4	3	3	2	2	3	3	2	1	2	2	2
PY3Y008 -5	3	3	3	3	2	3	1	2	1	1	2
Set target of PO attainments	3	2.8	2.8	2.8	2.4	2.8	0.8	2.0	1.4	1.6	2.4

B. PHARM. III YEAR**SEMESTER - VI****MEDICINAL CHEMISTRY-III (PY3Y517)**

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Understand and describe the structures, classification, mode of action, stereochemistry, synthesis and uses of different classes of drugs.

CO-2: Articulate the importance of structure activity relationship in the field of drug design

CO-3: Summarize & interpret the results of ADMET of drugs to correlate with therapeutic efficacy.

CO-4: Comprehend, write reports, make presentations and documentation on a given drug molecule.

CO-5: Understand & analyze the results of drug profile in favour of health and safety of human being.

MEDICINAL CHEMISTRY-III (PY3Y517)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y517 -1	1	3	3	1	2	3	3	2	2	1	2
PY3Y517 -2	2	2	3	1	2	3	3	2	2	1	3
PY3Y517 -3	2	2	3	1	2	3	3	2	1	1	3
PY3Y517 -4	3	1	3	1	2	3	3	3	2	1	3
PY3Y517 -5	3	1	3	2	2	2	2	2	2	2	3
Set target of PO attainments	2.2	1.8	3	1.2	2	2.8	2.8	2.2	1.8	1.2	2.8

Pharmacology-III (PY3Y518)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Discuss the mechanism of action, interaction and adverse effects of drugs used for the treatment of respiratory and gastrointestinal tract system.

CO-2: Discuss the mechanism of action, interaction and adverse effects of drugs used in treatment of chemotherapy.

CO-3: Describe the components of immunopharmacology and chronopharmacology

CO-4: Employ the principles of toxicology and outline the treatment of various poisonings.

CO-5: Learn, perform and interpret the advanced pharmacological experiments.

Pharmacology-III (PY3Y518)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y518 -1	3	-	1	3	-	2	-	3	1	2	3
PY3Y518 -2	3	-	1	2	1	2	-	2	1	2	3
PY3Y518 -3	3	-	1	3	-	2	-	3	1	2	3
PY3Y518 -4	3	-	1	2	1	2	-	3	1	2	3
PY3Y518 -5	3	2	3	3	-	-	3	1	-	2	3
Set target of PO attainments	3	-	2.5	2.6	-	1.6	-	2.4	-	2	3

Herbal Drug Technology (PY3Y519)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Describe and identify the sources of herbal drugs, processing of raw materials for herbal drug products and Implement the good agricultural practices.

CO-2: Explain the herb-food interaction and nutraceuticals.

CO-3: Examine the sources and applications of herbal cosmetics, herbal excipients and herbal formulations.

CO-4: Implementing the WHO and ICH guidelines for evaluation of herbal drugs, justifying the patenting of herbal drugs and GMP.

CO-5: Describe the requirements of herbal drug industries for the preparation and development of medicinal and aromatic plants in India.

Herbal Drug Technology (PY3Y519)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y519 -1	3	2	-	3	-	2	2	2	3	2	2
PY3Y519 -2	3	-	3	3	-	2	2	1	3	1	1
PY3Y519 -3	3	2	3	2	-	2	2	-	2	2	3
PY3Y519 -4	2	-	2	2	-	-	2	1	3	-	2
PY3Y519 -5	3	2	2	2	2	2	2	-	2	-	3
Set target of PO attainments	2.5	1.5	2	2.5	-	1.5	2	-	3	-	2.5

Biopharmaceutics & Pharmacokinetics (PY3Y520)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Describe the basic concepts and significance of biopharmaceutics and pharmacokinetics.

CO-2: Identify the physiological, physicochemical and dosage form-related factors that affect drug absorption from different dosage forms.

CO-3: Use the plasma drug concentration-time data to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.

CO-4: Calculate of pharmacokinetic parameters and understand compartment modeling in pharmacokinetics.

CO-5: Assess absolute and relative bioavailability of drugs from different dosage forms and understand the concept of bioavailability and bioequivalence of drug products.

Biopharmaceutics & Pharmacokinetics (PY3Y520)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y520 -1	3	2	2	1	-	3	3	2	2	2	2
PY3Y520 -2	3	2	1	1	-	2	1	2	3	2	2
PY3Y520 -3	3	3	2	2	2	2	3	3	3	2	3
PY3Y520 -4	3	2	3	2	-	2	3	2	2	2	2
PY3Y520 -5	3	3	3	2	3	3	3	3	2	2	3
Set target of PO attainments	3	2.4	2.2	1.6	1	2.4	2.6	2.4	2.4	2	2.4

Pharmaceutical Biotechnology (PY3Y521)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Recall the historical development in Pharmaceutical biotechnology and relating their application in pharmaceutical industry.
- CO-2:** Summarize the latest development in the field of Pharmaceutical biotechnology.
- CO-3:** Explain various applications of r-DNA technology, genetic engineering, fermentation technology and Protein Engineering in relation to production of pharmaceuticals.
- CO-4:** Analyze the application of MABs and antigen antibody reactions in the field of medical science.
- CO-5:** Recommend the needs of implementing biotechnological techniques for sustainable development in pharmaceutical science on an ongoing basis.

Pharmaceutical Biotechnology (PY3Y521)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y521 -1	3	2	1	-	-	1	2	-	1	1	3
PY3Y521 -2	3	1	2	3	-	2	-	-	1	1	3
PY3Y521 -3	3	1	1	2	-	1	-	2	1	1	3
PY3Y521 -4	3	3	1	2	1	2	-	-	1	1	3
PY3Y521 -5	3	2	1	2	1	1	-	1	1	1	3
Set target of PO attainments	3	1.8	1.2	1.8	0.4	1.4	0.4	0.6	1	1	3

Quality Assurance (PY3Y542)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Compare concept/scope of quality control and quality assurance.
- CO-2:** Understand the significance of quality and tools to ensure the quality of pharmaceutical products.
- CO-3:** Identify the regulatory requirements related to GMP (as per schedule-M), GLP & pharmaceutical documents
- CO-4:** Familiarize with requirements of national/international regulatory agencies and their quality audit process.
- CO-5:** Prepare and interpret various types of pharmaceutical regulatory documents related to pharmaceutical R&D and production plant.

Quality Assurance (PY3Y542)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY3Y542 -1	3	2	3	3	3	2	2	2	2	1	3
PY3Y542 -2	3	2	2	3	2	2	3	1	3	-	2
PY3Y542 -3	3	2	3	2	3	3	3	3	2	2	2
PY3Y542 -4	3	1	2	2	3	1	2	3	2	1	3
PY3Y542 -5	3	2	3	2	1	2	3	2	3	-	3
Set target of PO attainments	3	1.8	2.6	2.4	2.4	2	2.6	2.2	2.4	0.8	2.6

B. PHARM. IV YEAR**SEMESTER - VII****Instrumental Methods of Analysis (PY4Y021)**

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Understand the principles & applications of advanced analytical techniques i.e UV, IR, HPLC, GC and other analytical techniques.

CO-2: Perform basic analytical experiments for the identification and determination of drug substances.

CO-3: Analyze, interpret and communicate the results of different analytical tests performed for characterization of drug substance and formulation.

CO-4: Develop various analytical skills for qualitative and quantitative determination of various chemicals.

CO-5: Develop and implement plans to organize work for different analytical tests to be performed in laboratory and industry

Instrumental Methods of Analysis (PY4Y021)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y021 -1	3	3	3	3	3	3	3	3	3	3	3
PY4Y021 -2	3	3	3	3	3	3	3	3	3	3	3
PY4Y021 -3	3	3	3	3	3	3	3	3	3	3	3
PY4Y021 -4	3	3	3	3	3	3	3	3	3	3	3
PY4Y021 -5	3	3	3	3	3	3	3	3	3	3	3
Set target of PO attainments	3	3	3	3	3	3	3	3	3	3	3

Industrial Pharmacy II (PY4Y022)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Know the process of pilot plant and scale up of pharmaceutical dosage forms.

CO-2: Understand the process of technology transfer from lab scale to commercial batch.

CO-3: Summarize different Laws and Acts that regulate pharmaceutical industry.

CO-4: Understand the approval process and regulatory requirements for drug products.

CO-5: Analyze quality management systems of pharmaceutical industry in connection to Indian regulatory requirements.

Industrial Pharmacy II (PY4Y022)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y022 -1	3	3	3	3	3	3	2	3	2	1	3
PY4Y022 -2	2	3	3	3	3	2	1	2	1	1	3
PY4Y022 -3	3	3	2	2	3	3	2	2	2	-	2
PY4Y022 -4	3	2	3	1	3	3	2	2	2	-	2
PY4Y022 -5	3	3	3	1	3	3	3	3	2	1	3
Set target of PO attainments	2.8	2.8	2.8	2	3	2.8	2	2.4	1.8	0.6	2.6

Pharmacy Practice (PY4Y023)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Understand changing scenario of pharmacy practice in India.
CO-2: Apply various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care.
CO-3: Develop various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling for improved patient care in the community set up.
CO-4: Assess and design budgetary requirement for managing drug store and inventory control of pharmacy.
CO-5: Interpret the significance of various clinical laboratory tests

Pharmacy Practice (PY4Y023)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y023 -1	3	3	3	1	3	3	3	3	3	3	3
PY4Y023 -2	3	3	3	2	3	3	3	3	3	3	3
PY4Y023 -3	3	3	3	3	3	3	3	3	3	3	3
PY4Y023 -4	3	3	3	2	3	3	3	3	3	3	3
PY4Y023 -5	3	3	3	3	3	3	3	3	3	3	3
Set target of PO attainments	3	3	3	2.2	3	3	3	3	3	3	3

Novel Drug Delivery System (PY4Y024)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** State the fundamentals of novel drug delivery systems.
CO-2: Describe the mechanism of latest technology driven formulations.
CO-3: Apply his knowledge in making strategies of formulating novel drug delivery systems.
CO-4: Assess the various evaluation parameters involved in analyzing the novel drug delivery systems.
CO-5: Develop the concept to increase the efficacy of drug at site of action.

Novel Drug Delivery System (PY4Y024)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y024 -1	3	3	2	3	2	3	2	2	1	2	3
PY4Y024 -2	3	3	3	3	2	2	2	3	2	2	2
PY4Y024 -3	3	3	3	2	3	2	1	2	2	2	3
PY4Y024 -4	3	3	3	3	3	2	1	2	2	1	3
PY4Y024 -5	3	3	3	2	3	3	1	1	2	2	3
Set target of PO attainments	3	3	2.8	2.6	2.6	2.4	1.4	2	1.8	1.8	2.8

Practice School (PY4Y483)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Enables students to have a smooth transition from academics to professional world.

CO-2: Enhances interpersonal skills, communication skills, leadership qualities etc.

CO-3: Provides an opportunity to apply some of the ideas/skill sets that students learn during the academic program.

CO-4: Enables students to have awareness of personal strengths and limitations as a professional.

CO-5: Increases marketability of students after graduation. Provides link with potential future employers.

Practice School (PY4Y483)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y438 -1	3	3	2	-	3	3	3	3	3	1	2
PY4Y438 -2	3	3	3	-	3	3	3	3	3	-	3
PY4Y438 -3	3	3	2	1	3	3	3	3	3	1	3
PY4Y438 -4	3	3	3	-	3	3	3	3	3	1	3
PY4Y438 -5	3	3	2	1	3	3	3	3	3	-	2
Set target of PO attainments	3	3	2.4	0.4	3	3	3	3	3	0.6	2.6

B. PHARM. IV YEAR**SEMESTER - VIII****Biostatistics and Research Methodology (PY4Y521)**

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Develop understanding of various statistical methodologies and data analysis tools with respect to pharmaceutical sciences.

CO-2: Understand the basic utility and operations of M.S. Excel, SPSS, R and MINITAB[®], DoE (Design of Experiment) softwares.

CO-3: Apply reasoning for design of research projects and prepare work plan for assigned research problem.

CO-4: Create effective project reports, presentations and documentation related to pharmaceutical sciences.

CO-5: Generate and/or analyze different data/trends/results obtained from various sources such as research data and demographic analysis etc.

Biostatistics and Research Methodology (PY4Y521)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y521 -1	3	1	2	3	-	1	1	2	3	1	2
PY4Y521 -2	1	3	2	2	1	2	2	3	3	3	3
PY4Y521 -3	1	3	2	1	3	3	2	1	1	3	3
PY4Y521 -4	1	1	2	3	1	3	2	1	2	3	3
PY4Y521 -5	2	1	3	2	3	1	1	2	2	3	3
Set target of PO attainments	1.6	1.8	2.2	2.2	1.6	2	1.6	1.8	2.2	2.6	2.8

Social And Preventive Pharmacy (PY4Y522)

Course Outcomes: Upon completion of the course, student shall be able to:

CO-1: Understand the national network and programs for disease prevention and treatment.

CO-2: Develop understanding of current issues related to health and pharmaceuticals within the country and worldwide.

CO-3: Have a critical way of thinking based on current healthcare development and existing diseases in community.

CO-4: Evaluate alternative ways of solving problems related to health and pharmaceutical issues.

CO-5: Develop new insights related to community services in rural, urban and school health.

Social And Preventive Pharmacy (PY4Y522)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y522 -1	3	3	3	3	2	3	-	2	1	1	3
PY4Y522 -2	3	2	3	3	2	3	-	3	2	1	3
PY4Y522 -3	3	3	2	1	2	1	1	2	1	2	2
PY4Y522 -4	3	3	2	2	3	3	2	1	2	2	2
PY4Y522 -5	3	3	3	3	2	3	1	2	1	1	2
Set target of PO attainments	3	2.8	2.8	2.8	2.4	2.8	0.8	2.0	1.4	1.6	2.4

Pharmacovigilance (PY4Y607 / PY4Y713)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Define and explain basics of pharmacovigilance including importance, terminology and current national and international scenario, ICH Guidelines, CDSCO and CIOMS.
- CO-2:** Analyze adverse drug reactions and classify them as per the guidelines.
- CO-3:** Apply the skills of classifying drugs, diseases, clinical studies of drugs, adverse drug reactions and regulatory guidelines.
- CO-4:** Utilize basic procedures of pharmacovigilance like detection and reporting of new adverse drug reactions, methods to generate safety data during preclinical, clinical and post approval phases of drugs' life cycle.
- CO-5:** Interpret and communicate data related to drug safety evaluation in specific population

Pharmacovigilance (PY4Y607 / PY4Y713)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y607 -1	3	-	-	1	-	1	-	3	3	3	3
PY4Y607 -2	3	-	3	3	3	3	2	3	1	3	3
PY4Y607 -3	3	3	3	3	1	3	1	3	3	2	3
PY4Y607 -4	3	3	3	3	2	2	3	3	3	2	3
PY4Y607 -5	3	3	3	3	3	2	3	3	2	2	2
Set target of PO attainments	3	3	3	2.6	2.2	2.2	2.2	3	2.4	2.4	2.8

Dietary Supplements and Nutraceuticals (PY4Y702)

Course Outcomes: Upon completion of the course, student shall be able to:

- CO-1:** Describe the value of dietary supplements and nutraceuticals in health problems and various diseases and discuss the source, marker compounds of nutraceuticals/ functional foods.
- CO-2:** Discuss the characteristic features of phytochemicals as nutraceuticals.
- CO-3:** Explain the role of reactive oxygen species and free radicals on different structural components of the cell.
- CO-4:** Explain the mechanism of free radicals generation in various diseases and significance of endogenous antioxidants and functional food in prevention of diseases.
- CO-5:** Discuss the regulatory and commercial aspects of dietary supplements and nutraceuticals including health claims.

Dietary Supplements and Nutraceuticals (PY4Y702)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y702 -1	3	3	3	3	2	3	-	2	1	1	3
PY4Y702 -2	3	2	3	3	2	3	-	3	2	1	3
PY4Y702 -3	3	3	2	1	2	1	1	2	1	2	2
PY4Y702 -4	3	3	2	2	3	3	2	1	2	2	2
PY4Y702 -5	3	3	3	3	2	3	1	2	1	1	2
Set target of PO attainments	3	2.8	2.8	2.8	2.4	2.8	0.8	2.0	1.4	1.6	2.4

Pharma Marketing Management (Elective) (MB4Y612 / MB4Y717)

Course Outcome: On completion of this subject, students are expected to be able to:

CO-1: Learn specialized knowledge in marketing of pharmaceutical products.

CO-2: Develop the standards of the pharmaceutical industry in the current global scenario.

CO-3: Analyze and synthesize specific issues within pharmaceutical marketing by using the concepts, theories, methods and models.

CO-4: Assess and communicate problem-solving on a reflective, scientific basis.

CO-5: Understand the roles and responsibilities of pricing authorities in India.

Pharma Marketing Management (Elective) (MB4Y612 / MB4Y717)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
MB4Y612 -1	3	3	3	1	3	2	3	3	3	1	3
MB4Y612 -2	3	3	3	2	3	3	3	3	3	2	3
MB4Y612 -3	3	3	3	1	3	2	3	3	3	2	3
MB4Y612 -4	3	3	3	2	3	2	2	3	3	1	2
MB4Y612 -5	3	3	3	1	3	3	3	3	3	1	3
Set target of PO attainments	3	3	3	1.4	3	2.4	2.8	3	3	1.4	2.8

Pharmaceutical Regulatory Science (Elective) (PY4Y606/ PY4Y708)

Course outcomes: On completion of this subject, students are expected to be able to:

CO-1: Learn the various stages of the new drug discovery and development process.

CO-2: Explain the process and requirements for regulatory approval of new drugs and drug products in regulated markets of India & other countries.

CO-3: Understand the regulatory requirements, documentation requirements, and registration procedures for marketing the drug products.

CO-4: Get acquainted with the various aspects of clinical trials.

CO-5: Learn the basic concepts, terminology and guidelines of regulatory agencies.

Pharmaceutical Regulatory Science (Elective) (PY4Y606/ PY4Y708)											
PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y606 -1	3	3	3	1	1	3	1	1	1	2	3
PY4Y606 -2	3	3	3	2	3	3	2	3	3	1	2
PY4Y606 -3	3	3	3	2	3	3	1	3	3	1	2
PY4Y606 -4	3	3	3	2	3	3	3	3	2	1	2
PY4Y606 -5	3	3	3	1	3	3	2	3	3	1	2
Set target of PO attainments	3	3	3	1.6	2.6	3	1.8	2.6	2.4	1.2	2.2

Pharmaceutical Product Development (Elective) (PY4Y615/ PY4Y716)

Course outcomes: On completion of this subject, students would be able to:

CO-1: Understand the importance of preformulation studies.

CO-2: Able to describe formulation development including stability and quality control of different dosage forms.

CO-3: Describe different excipients used in pharmaceutical product development along with their selection and applications.

CO-4: Learn the application of optimization techniques for quality by design in pharmaceutical product development.

CO-5: Articulate the regulatory aspects of packaging materials in pharmaceutical product development with their selection and quality control.

Pharmaceutical Product Development (Elective) (PY4Y615/ PY4Y716)

PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PY4Y716 -1	3	3	3	3	2	2	1	1	1	1	2
PY4Y716 -2	3	3	3	3	2	2	2	2	2	2	3
PY4Y716 -3	3	2	3	2	3	1	1	2	2	1	2
PY4Y716 -4	3	3	3	3	2	2	2	1	1	1	3
PY4Y716 -5	3	3	3	3	3	3	1	3	3	2	3
Set target of PO attainments	3	2.8	3	2.8	2.4	2	1.4	1.8	1.8	1.4	2.6