



G. Pulla Reddy College of Pharmacy

ISO 9001 - 2000 Certified College

(Affiliated to Osmania University and Approved by AICTE & PCI)



B. PHARM- PROGRAM OUTCOMES

PO1 :	Gain knowledge on basics of biology, structure & function of various systems of human body, fundamentals & principles of analytical chemistry, basics & preparation of different dosage forms, monographs of inorganic drugs & pharmaceuticals, soft-skills management, and problems solving in pharmacy.
PO2:	Able to understand physiology, pathophysiological mechanisms, biochemical processes, diagnosis of various pathological conditions, understand metabolism of bioactive molecules, performing haematological tests & biochemical tests. Basic understanding of organic reactions, identification, preparation, awareness of environmental problems, application of databases in pharmacy.
PO3:	Understanding stability, reactivity, standardisation & medicinal uses of organic compounds. Physical, physico-chemical properties & unit operations involved in dosage forms. Basics and pharmaceutical applications of microbiology.
PO4:	Gain knowledge on stereochemical aspects, synthesis of organic compounds & derivatives, chemistry, mechanism of action, pharmacology & therapeutic uses of natural & synthetic medicinal compounds. Fundamentals of crude drugs and their medicinal properties, understand & demonstrate chemical kinetics in the formulation of dosage forms.
PO5:	Gain knowledge of physical chemistry in pharmacy, physico-chemical properties of excipients, types, formulation, manufacturing & evaluation of dosage forms. Chemistry, preparation, assay, mechanism of action & pharmacology of drugs. Fundamentals, medicinal properties, quality control & evaluation of crude drugs.
PO6:	Gain knowledge of physical, physico-chemical properties of drugs & polymers and their determination. Chemistry, isolation of phytopharmaceuticals, plant tissue culture techniques & herbal dosage forms. Pharmacology, experimental models of testing & bioassays of drugs. Application of pharmacological principles in therapeutics. Quality assurance & quality control systems, ethics, laws & regulations in practice of pharmacy.



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PO7:	Gain knowledge in chemistry, synthesis, spectroscopic studies & chromatographic techniques of drugs. Preformulation studies, designing & evaluation of novel drug delivery systems. Biopharmaceutics & pharmacokinetic applications in pharmacotherapy. Pharmaceutical industrial & business management.
PO8:	Gain knowledge in techniques, production & uses of biopharmaceuticals. Formulation, preparation & evaluation of cosmetics. Standard practices in manufacturing of pharmaceuticals. Set up & management of hospital pharmacy, clinical pharmacotherapeutics & pharmacovigilance. Simulation techniques in drug design & discovery. Management & application of databases in pharmacy.



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B.PHARM- COURSE OUTCOMES

B.Pharm- Course Outcomes PCI (SEM I,II,III,IV) CBCS (SEM V,VI,VII,VIII)			
S.No	Name	Subject name	Course outcomes
PCI (SEM I,II,III,IV)			
1	CO1	HAP I (T&P)	able to understand basic human anatomy , physiology, working pattern of different organs of each system and Know the homeostatic mechanisms and their imbalances
2	CO2	PH.ANALYSIS I (T&P)	able to understand fundamentals & principles of analytical chemistry, predict the sources of mistakes & errors and develop analytical skills and understand the knowledge about assay of pharmaceutical substances
3	CO3	PH.CEUTICS-I (T&P)	able to understand history of profession of pharmacy, prescription writing & handling, incompatibilities & calculations in preparation of dosage forms
4	CO4	PH. INORGANIC CHEMISTRY (T&P)	able to know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals, medicinal and pharmaceutical importance of inorganic compounds
5	CO5	COMMUNICATION SKILLS (T&P)	able to communicate effectively, develop interview skills, leadership qualities and manage the team.
6	CO6	REMEDIAL BIOLOGY (T&P)	gain knowledge on classification & salient features of five kingdoms of life, basic components of anatomy & physiology of plant and animal including human.
7	CO7	MATHS	gain knowledge on how to solve different types of problems by applying theory and applications of mathematics in pharmacy.
8	CO8	HAP II (T&P)	able to Identify various tissues and organs of different systems of human body and know coordinated working pattern of different organs of each system



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9	CO9	PH.ORG CHEMISTRY I (T&P)	Basic understanding of organic reactions, identification, preparation, name the reaction and orientation of reaction & reactivity or stability of compounds & Confirm the functional groups by qualitative tests
10	CO10	BIO CHEMISTRY (T&P)	Upon completion of the course student shall be able to understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes, metabolism of nutrient molecules in physiological and pathological conditions, genetic organisation of mammalian genome and functions of DNA in the synthesis of RNAs and proteins, qualitative and quantitative analysis of biochemical constituents of blood and urine.
11	CO11	PATHOPHYSIOLOGY	Upon completion of the course the students shall be able to understand etiology, pathogenesis, signs, symptoms, complications & diagnosis of selected diseases
12	CO12	COMPUTER APPLICATIONS (T&P)	To understand the various types of applications of computers in pharmacy, types of databases and applications of biological databases in pharmacy
13	CO13	ENVIRONMENTAL SCIENCES	Able to know the problems in environment and how to protect environment.
14	CO14	PH.ORG CHEMISTRY II (T&P)	The student shall be able to know the physical and chemical properties of aromatic compounds, phenols, amines, polynuclear hydrocarbons. Stability and reactions of cycloalkanes. Analyse fats and oils and prepare some aromatic compounds.
15	CO15	PHYSICAL PH CEUTICS I (T&P)	Understand the concept of solubility, surface tension, various states of matter, buffers complexation, determination physic-chemical properties
16	CO16	PH. MICROBIOLOGY (T&P)	To gain the knowledge about morphology of micro organisms (bacteria, fungi, viruses etc) their physical, chemical requirements, identification, methods of controlling MOs, evaluation of sterilization methods etc. With the above knowledge it is able to assess the existing and new antibiotics for the better treatment of diseases and maintain stringent aseptic conditions during manufacturing of pharmaceutical products.



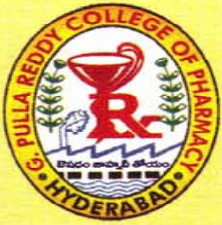
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17	CO17	PH. ENG (T&P)	To know various unit operations used in Pharmaceutical industries, material handling techniques. Pharmaceutical manufacturing process and preventive methods used for corrosion control in Pharmaceutical industries.
18	CO18	PH.ORG CHEMISTRY III	a) Basic understanding of heterocyclic compounds and their importance in medicinal chemistry. Choose the reagents depending on their application. Write the mechanisms of named reactions and apply while synthesizing new chemical entities. Discuss the concept of Stereochemistry and its importance in medicine.
19	CO19	MEDICINAL CHEMISTRY I (T&P)	Upon completion of course students shall be able to understand the chemistry of drugs with respect to their pharmacologic activity, drug metabolic pathways, adverse effect and therapeutic value of drugs, Structure activity relationship studies(SAR) of different classes of drugs and chemical synthesis of some drugs.
20	CO20	PHYSICAL PH CEUTICS II (T&P)	Gain knowledge of physico-chemical properties of drug molecules, principles of chemical kinetics and stability testing
21	CO21	PH.COLOGY I (T&P)	Understand the basic principles of drug action, pharmacology of drugs, prevention and treatment of various diseases
22	CO22	PH.COG & PHYTO CHE I (T&P)	Understand the fundamental of Pharmacognosy like scope, history, classification evaluation of crude drugs used in Indigenous systems of medicine.
		CBCS (SEM V,VI,VII,VIII)	
23	CO23	MEDICINAL CHEMISTRY I (T&P)	Upon completion of course students gain the knowledge on the chemistry of drugs with their pharmacological action, drug metabolism, adverse drug interactions and therapeutic value of drugs, Structure activity relationship studies(SAR) of different classes of drugs and chemical synthesis of some drugs.
24	CO24	PH. TECHNOLOGY (T&P)	will be able to learn the role and significance of excipients in formulations, product formulation and quality control tests for different dosage forms



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25	CO25	PHYSICAL PHARMACY I	understand the physico-chemical properties of drug molecules, properties of solutions, states of matter, phase equilibria, concept of pH, buffers and electrochemical cell, EMF
26	CO26	PH. COGNOSY I (T&P)	gain knowledge of classification, collection, quality control of crude drugs & phytochemicals. biosynthetic pathways, pharmacognostic study of drugs from plant, animal & mineral origin containing carbohydrates, fixed oils, fats, waxes, fibres, proteins, enzymes, tannins etc as active constituents.
27	CO27	PH. COLOGY I	able to understand general principles of drug action, pharmacodynamics, pharmacokinetics and also pharmacology of different classes of drugs correlate this for pharmacotherapy of various diseases
28	CO28	PHYSICAL PHARMACY II (T&P)	Gain knowledge of physico-chemical properties of drug molecules, principles of chemical kinetics and stability testing
29	CO29	PH. COLOGY II (T&P)	able to understand pathophysiology, pharmacotherapy of diseases and know the mechanism of action, adverse effects, contraindications of drugs, know principles of biological assay and toxicology
30	CO30	PH. COGNOSY II (T&P)	Gain Knowledge of various chemical classes of crude drugs, quality control and standardization of herbal drugs, isolation and identification of some phytochemicals, production of plants and phytochemicals through plant tissue culture, various herbal formulations
31	CO31	FORENSIC PHARMACY	Gain the knowledge of practice of professional ethics, Pharmaceutical Legislation of India, Drugs and Cosmetic Act and Rules, Drug Policy, Patent and Design Act, Labelling and Packaging requirements of drugs and cosmetics, Pharmacy Act, Excise duties act, Narcotic Drugs and Psychotropic Substances Act, Prevention of Food Adulteration Act, Factories Act, PCI rules and International rules.
32	CO32	PHARMACOTHERAPEUTICS	Understand the etiopathogenesis, clinical presentations, therapeutic approach to management of the diseases based on diagnosis and monitoring therapy



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33	CO33	QUALITY ASSURANCE	Gain knowledge of quality assurance systems, in process quality control, quality systems, audits and documentation in pharmaceutical industry. Basics of impurity profiling & compendias.
34	CO34	MEDICINAL CHEMISTRY II (T&P)	To gain knowledge on heterocyclic compounds and SAR of drugs
35	CO35	PH.ANALYSIS II (T&P)	Gain knowledge on instrumentation, principles, procedures of UV-Visible fluorescence and IR spectroscopic techniques and chromatographic techniques for qualitative and quantitative analysis of pharmaceutical compounds. Students also learn flame photometry, nepheloturbidometry and electrophoresis techniques and their applications in pharmaceutical industry.
36	CO36	DFD (T&P)	To gain knowledge about preformulation studies, Sustained release formulations and Novel DDS, BA & BE, Validation and QA & QC, Stability protocol for various pharmaceutical products
37	CO37	BPPK	able to understand the factors influencing the absorption, disposition of drugs and to optimize for safer and efficacious treatment. pharmacokinetic modelling
38	CO38	BUSINESS MANAGEMENT	Understanding marketing concepts, techniques and their applications in pharmaceutical industry.
39	CO39	PH.BIOTECHNOLOGY (T&P)	Upon completion of course student shall be able to apply Scientific knowledge of biotechnology in the field of genetic engineering medicine and fermentation technology
40	CO40	PHARMACoinformatics (T&P)	To understand the concept of database, biological databases, Sequence analysis and alignment; Concept of drug design and its approaches etc.,
41	CO41	COSMETIC TECH (T&P)	Gain knowledge on regulatory provisions, raw materials used, preparation & evaluation of cosmetics and herbal cosmetics.
42	CO42	HOSPITAL & CLINICAL PHARMACY	shall know the organization of hospital and hospital pharmacy, significance, role of hospital and clinical pharmacist in providing better patient care, pathophysiology and



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			pharmacotherapy of various diseases
43	CO43	PHARMACOVIGILANCE	Gain knowledge on history, importance, detection, methods of reporting, coding, evaluation and guidelines of pharmacovigilance of drugs
44	CO44	cGMP	Able to understand quality concepts, quality management, validation, regulatory guidelines and documentation



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PO CO MAPPING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	X							
CO2	X							
CO3	X							
CO4	X							
CO5	X							
CO6	X							
CO7	X							
CO8	X	X						
CO9		X						
CO10		X						
CO11		X						
CO12		X						
CO13		X						
CO14		X	X					
CO15			X					
CO16			X					
CO17			X					
CO18				X				
CO19				X				
CO20				X				
CO21				X				
CO22				X				



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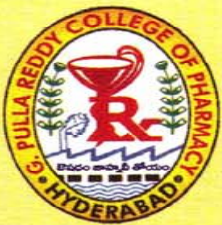
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CO23					X			
CO24					X			
CO25					X			
CO26					X			
CO27					X			
CO28						X		
CO29						X		
CO30						X		
CO31						X		
CO32						X		
CO33						X		
CO34							X	
CO35							X	
CO36							X	
CO37							X	
CO38							X	
CO39								X
CO40								X
CO41								X
CO42								X
CO43								X
CO44								X

B.PHARM- SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER I (PCI)



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SPECIFIC LEARNING OUTCOMES (SLO)			
SEMESTER I (PCI)			
S.NO	NAME	UNIT/TITLE	SPECIFIC LEARNING OUTCOMES
HAP-I (T&P)			
	SLO1/1	Introduction to human body	Understand scope of anatomy and physiology, levels of structural organization, homeostasis, Structure and functions of cell, General principles of cell communication
	SLO2/1	Integumentary system, Skeletal system, joints	Understand Structure and functions of skin, bones of axial and appendicular skeletal system, types of joints movements and its articulation
	SLO3/1	Body fluids and blood, Lymphatic system	Understand Body fluids, composition and functions of blood, mechanisms of coagulation, Lymphatic organs and tissues and functions of lymphatic system
	SLO4/1	Peripheral nervous system, Special senses	Understand Structure and functions of sympathetic and parasympathetic nervous system, functions of spinal and cranial nerves. Structure and functions of eye, ear, nose, tongue and their disorders
	SLO5/1	Cardiovascular system	Understand anatomy of heart, blood circulation, conduction system of heart, Regulation of blood pressure and disorders of heart.
	SLO6/1	Practical	able to Identify the various tissues and organs, perform hemotological experiments and measure cardiovascular parameters.
PH.ANALYSIS I (T&P)			
	SLO7/1	Pharmaceutical analysis and Errors	Understand the fundamentals of analytical chemistry, and prepare different strength of solutions and predict the sources of mistakes and errors
	SLO8/1	Acid base titration and Non aqueous titration	Understand the principles of volumetric analytical skills



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	SLO9/1	Precipitation titration, Complexometric titration and Gravimetry	Ability to understand the basic principles of volumetric analytical skills
	SLO10/1	Redox titrations	It helps to develop the fundamentals of volumetric analytical skills & understand the knowledge about assay of pharmaceutical substances
	SLO11/1	Electrochemical methods of analysis	Understand the basic principles of electrochemical analytical techniques
	SLO12/1	Practical	Ability to gain the fundamentals of volumetric analytical skills & electrochemical analytical techniques in lab and understand the knowledge about assay of pharmaceutical substances
	PH. CEUTICS-I (T&P)		
	SLO13/1	history of pharmacy profession, prescription, posology, dosage forms	Knowledge of pharmacy history, pharmacopoeias, dosage forms, prescription handling and posology.
	SLO14/1	calculations, powders, liquid dosage forms	Able to calculate doses, domestic conversions & other pharmaceutical calculations. know what are powders and liquid dosage forms
	SLO15/1	monophasic, biphasic liquid dosage forms	Knowledge of monophasic & biphasic liquid dosage forms, their preparation and stability.
	SLO16/1	suppositories, incompatibilities	Knowledge of suppositories preparation, displacement value calculations and incompatibilities in preparations.
	SLO17/1	semi solid dosage forms	Knowledge of preparation & evaluation of semi solid dosage forms.
	SLO18/1	practical	Able to do percentage calculations and prepare different dosage forms.
	PH. INORGANIC CHEMISTRY (T&P)		
	SLO19/1	Impurities in pharmaceutical substances	To gain knowledge of various sources of impurities and methods to determine impurities in inorganic drugs and pharmaceuticals
	SLO20/1	Acids, bases, buffers, major extra and intracellular electrolytes and dental products	To learn knowledge of acids, bases, buffers, methods of adjusting isotonicity and preparation, assay, properties and medicinal uses of various electrolytes and dental products



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	SLO21/1	Gastrointestinal agents	Knowledge of various gastrointestinal agents like acidifiers, antacids, cathartics, antimicrobials and preparation, assay, properties and medicinal uses of some inorganic compounds of these classes
	SLO22/1	Expectorants, emetics, haematinics, poison and antidotes, astringents	Knowledge of expectorants, emetics, haematinics, poison and antidotes, astringents and preparation, assay, properties and medicinal uses of some inorganic compounds of these classes
	SLO23/1	Radiopharmaceuticals	Able to understand basics of radioactive compounds, pharmaceutical applications of radioactive substances
	SLO24/1	Practical	Able to determine various impurities in inorganic drugs and pharmaceuticals, identify and determine test for purity of some compounds and preparation of some inorganic compounds.
	COMMUNICATION SKILLS (T&P)		
	SLO25/1	Communication process	Able to understand communication process, barriers and perspectives.
	SLO26/1	Elements of communication	Able to understand the elements and styles of communication.
	SLO27/1	Listening skills	Able to understand listening skills and written communication.
	SLO28/1	Interview skills	Able to grasp interview skills and how to give a presentation.
	SLO29/1	Effective communication	Able to communicate effectively in group discussion.
	SLO30/1	practical	Able to use words worth english language lab software.
	REMEDIAL BIOLOGY (T&P)		
	SLO31/1	Morphology of flowering plants	Understand the diversity and five kingdoms of life in living world. Morphology of flowering plants.
	SLO32/1	Anatomy & physiology of human body and animals.	Understand the anatomy & physiology of circulatory system, digestive system & respiratory system in human body and animals.
	SLO33/1	Anatomy & physiology of human body and animals.	Understand the anatomy & physiology of excretory system, nervous system, endocrine system & reproductive system in human body and animals.



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	SLO34/1	Nutrition from plants & minerals	Understand importance of nutrition from plants & minerals, photosynthesis in plants.
	SLO35/1	Cell	Understand cell, respiration, growth & tissues in plants.
	SLO36/1	practical	Able to perform section cutting, microscopic studies and determine blood group, blood pressure & tidal volume parameters.
	MATHS		
	SLO37/1	I	Able to solve problems using partial fraction, logarithms, function, limits and continuity.
	SLO38/1	II	Able to solve problems related to matrices & determinants.
	SLO39/1	III	Able to solve calculus & differentiation problems.
	SLO40/1	IV	Understand the concepts of analytical geometry in problem solving.
	SLO41/1	V	Understand differential equation, Laplace transform and apply in solving chemical kinetics & pharmacokinetics problems.



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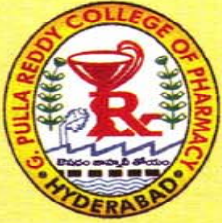
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B.PHARM (PCI) FIRST SEMESTER CO AND SLO MAPPING

B.PHARM (PCI) FIRST SEMESTER CO AND SLO MAPPING							
	CO1	CO2	CO3	CO4	CO5	CO6	CO7
SLO1/1	X						
SLO2/1	X						
SLO3/1	X						
SLO4/1	X						
SLO5/1	X						
SLO6/1	X						
SLO7/1		X					
SLO8/1		X					
SLO9/1		X					
SLO10/1		X					
SLO11/1		X					
SLO12/1		X					
SLO13/1			X				
SLO14/1			X				
SLO15/1			X				
SLO16/1			X				
SLO17/1			X				
SLO18/1			X				
SLO19/1				X			
SLO20/1				X			
SLO21/1				X			



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SLO22/1				X			
SLO23/1				X			
SLO24/1				X			
SLO25/1					X		
SLO26/1					X		
SLO27/1					X		
SLO28/1					X		
SLO29/1					X		
SLO30/1					X		
SLO31/1						X	
SLO32/1						X	
SLO33/1						X	
SLO34/1						X	
SLO35/1						X	
SLO36/1						X	
SLO37/1							X
SLO38/1							X
SLO39/1							X
SLO40/1							X
SLO41/1							X



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SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER II (PCI)

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER II (PCI)			
S.NO	NAME	UNIT/TITLE	SPECIFIC LEARNING OUTCOMES
HAP-II (T&P)			
	SLO1/2	Nervous system	Understand Organization of nervous system, action potential, functions of brain and spinal cord
	SLO2/2	Digestive system	Know the anatomy and physiology of GIT, digestion absorption of nutrients and disorders of GIT.
	SLO3/2	Respiratory system Urinary system	Understand Anatomy of respiratory system, mechanism of respirations, anatomy of kidney and nephrons, physiology of urine formation
	SLO4/2	Endocrine system	able to know structure and functions of pituitary gland, thyroid gland, parathyroid gland, adrenal gland, pancreas, pineal gland, thymus and their disorders
	SLO5/2	Reproductive system, Introduction to genetics	understand anatomy and physiology of male and female reproductive system, DNA, protein synthesis, genetic pattern of inheritance
	SLO6/2	Practical	able to Perform experiments like recording body temperature, body mass index, respiratory parameters, know anatomy and physiology of various organs
PH.ORG CHEMISTRY I (T&P)			
	SLO7/2	Classification, nomenclature and isomerism	Able to write the structure, IUPAC name and isomerism of organic compounds
	SLO8/2	Alkanes, Alkenes and conjugated dienes	Ability to understand mechanism involved in various reactions & understand the stability of compounds
	SLO9/2	Alkyl halides & Alcohols	Understand the reactions with mechanism, orientation of reaction and identification of organic compounds by qualitative tests
	SLO10/2	Carbonyl compounds	Understand the reaction, name the reaction and conformation tests for functional



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		group
SLO11/2	Carboxylic acids & Aliphatic amines	Gain knowledge to understand acidity and basicity of compounds & qualitative tests for functional groups
SLO12/2	Practical	Acquire knowledge to identify the unknown organic compounds by a systemic qualitative analysis
BIO CHEMISTRY (T&P)		
SLO13/2	Biomolecules and bioenergetics	Understand chemical nature and biological role of nutrient molecules, concept of free energy and biological significance of energy rich compounds.
SLO14/2	carbohydrate metabolism & biological oxidation	Understand the carbohydrate metabolism, related pathological conditions and their hormonal regulation. Biological oxidation, mechanism of phosphorylations and their inhibitors.
SLO15/2	Lipid & amino acid metabolism	Understand the metabolism of lipids and study the related disorders. General reactions of amino acid metabolism and the metabolic disorders.
SLO16/2	Nucleic acid metabolism & genetic information transfer	Understand the genetic organisation of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.
SLO17/2	Enzymology	Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
SLO18/2	Practicals	Analysis of biochemical constituents of blood and urine.
PATHOPHYSIOLOGY		
SLO19/2	Basic principles of cell injury & inflammation	Acquire knowledge of cell injury, adaptations, types & mechanisms of inflammation and wound healing
SLO20/2	Infectious diseases	Understand the characteristics of microorganisms, mode of transmission, etiopathogenesis, signs, symptoms, complications & diagnosis of infectious diseases



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	SLO21/2	Cardiovascular, renal, respiratory & endocrine diseases	Understand the etiology, pathogenesis, signs, symptoms, complications & diagnosis of cardiovascular, renal, respiratory & endocrine diseases
	SLO22/2	Neuronal, Gastrointestinal & hepatic diseases	Understand the etiology, pathogenesis, signs, symptoms, complications & diagnosis of neuronal, gastrointestinal and hepatic diseases
	SLO23/2	Cancer, hematological & bone diseases	Understand the etiology, pathogenesis, signs, symptoms, complications & diagnosis of cancer, hematological and bone diseases
COMPUTER APPLICATIONS (T&P)			
	SLO24/2	Number system, Concept of Information systems and software	To understand the number systems and information systems and soft wares
	SLO25/2	Web technologies, Databases	Introduction to HTML, XML, CCS and Databases and Pharmaceutical databases
	SLO26/2	Application of computers in Pharmacy	Electronic Prescription, barcode medicine identification and automated dispensing of drugs, Diagnostic System, Lab-diagnostic System, Patient Monitoring System and Pharma Information System
	SLO27/2	Bioinformatics and Computers as data analysis in Preclinical development	Objective of Bioinformatics, Bioinformatics Databases, Impact of Bioinformatics in Vaccine Discovery and CDS
	SLO28/2	Practicals	HTML, MS-Office- Word and Access etc.,
ENVIRONMENTAL SCIENCES			
	SLO29/2	I	Knowledge of the natural resources present in the environment
	SLO30/2	II	Knowledge of the ecosystems present in the environment
	SLO31/2	III	Knowledge of sources of pollution



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B.PHARM (PCI) SECOND SEMESTER CO AND SLO MAPPING

B.PHARM (PCI) SECOND SEMESTER CO AND SLO MAPPING						
	CO8	CO9	CO10	CO11	CO12	CO13
SLO1/2	X					
SLO2/2	X					
SLO3/2	X					
SLO4/2	X					
SLO5/2	X					
SLO6/2	X					
SLO7/2		X				
SLO8/2		X				
SLO9/2		X				
SLO10/2		X				
SLO11/2		X				
SLO12/2		X				
SLO13/2			X			
SLO14/2			X			
SLO15/2			X			
SLO16/2			X			
SLO17/2			X			
SLO18/2			X			
SLO19/2				X		
SLO20/2				X		



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SLO21/2				X		
SLO22/2				X		
SLO23/2				X		
SLO24/2					X	
SLO25/2					X	
SLO26/2					X	
SLO27/2					X	
SLO28/2					X	
SLO29/2						X
SLO30/2						X
SLO31/2						X

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER III (PCI)

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER III (PCI)			
S.NO	NAME	UNIT/TITLE	SPECIFIC LEARNING OUTCOMES
PH.ORG CHEMISTRY II (T&P)			
	SLO1/3	I	Discuss the structure, Nomenclature, Aromaticity, properties and reactions of Benzene and its derivatives
	SLO2/3	II	Write the Structure, Nomenclature, preparation and reactions of phenols, amines, polynuclear hydrocarbons
	SLO3/3	III	Explain the importance of fats and oils and their analytical constants
	SLO4/3	IV	Preparation, reactions and medicinal uses of polynuclear hydrocarbons.
	SLO5/3	V	Stability and reactions of cycloalkanes,
	SLO6/3	P	Determine analytical constants of fats and oils and prepare aromatic compounds.



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PHYSICAL PH CEUTICS I (T&P)			
	SLO7/3	Soubility of drugs	Know about Basic principles of solubility, solubility expressions, factors affecting solubility of drugs and concept of distribution law
	SLO8/3	States of Matter and properties of matter & Physicochemical properties of drug molecules	Understand different State of matter and their properties, to differentiate amorphous & polymorphic forms, determination and applications of various hysicochemical properties of drug molecules:
	SLO9/3	Surface and interfacial phenomenon	Gain knowledge in differentiating Surface and interfacial tension, Use of HLB scale, Concept of surfactants and their applications
	SLO10/3	Complexation and protein binding	Understand the Classification of Complexation, Applications, methods of analysis, protein binding, Complexation and drug action,
	SLO11/3	pH, buffers and Isotonic solutions	Know the use pH scale, pH determination, buffer equations, buffers in pharmaceutical and biological systems
	SLO12/3	Practical	Perform the determination of physicochemical properties of drugs like Partition coefficient, solubility, Surface tension and stability constants
PH. MICROBIOLOGY (T&P)			
	SLO13/3	Cultivation and collection	to understand methods of identification, cultivation and preservation of various microorganisms
	SLO14/3	Sterilization of pharmaceutical products	To understand the importance and implementation of sterilization in pharmaceutical processing and industry
	SLO15/3	Control of microorganism	To learn importance of disinfectants, bactericides in controlling MOs and their evaluation methods according to IP, BP and USP
	SLO16/3	Implementation of aseptic conditions	To understand the importance and implementation of aseptic conditions in pharmaceutical industries and to carry out microbiological standardization of pharmaceutical products
	SLO17/3	Cell culture technology	To gain knowledge in cell culture technology and its applications in pharmaceutical



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			industries
	SLO18/3	Practicals	To gain the practical knowledge of isolation, identification, cultivation, preservation of various MOs and to carry out microbiological standardization of pharmaceutical products
	PH. ENG (T&P)		
	SLO19/3	Flow of fluids, Size reduction and Size Separation	Understand the types of manometers, Reynolds number, Bernoulli's theorem, various flow meters, principles, mechanisms, working and applications of various instruments used in size reduction, size separation
	SLO20/3	Heat Transfer, Evaporation and Distillation	Understand the objectives, applications & Heat transfer mechanisms. Fourier's law, principles, mechanisms, working and applications of various instruments used in evaporation, distillation
	SLO21/3	Drying and Mixing	Understand the objectives, applications & mechanism of drying process, equilibrium Moisture content, rate of drying curve. principles, construction, working, uses, merits and demerits of various drying and mixing instruments
	SLO22/3	Filtration and Centrifugation	Understand the objectives, applications and mechanism of filtration & centrifugation, Construction, Working, Uses, Merits and demerits of filters and centrifuges
	SLO23/3	Materials of pharmaceutical plant construction, Corrosion and its prevention	Gain knowledge on materials selected for Pharmaceutical plant construction, Theories of corrosion, types of corrosion and there prevention and material handling systems.
	SLO24/3	Practical	To know the radiation constant of various metals, working of various mills, determination of particle size by sieve analysis, effects of various factors on evaporation, filtration and drying rate curves



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B.PHARM (PCI) THIRD SEMESTER CO AND SLO MAPPING

B.PHARM (PCI) THIRD SEMESTER CO AND SLO MAPPING

	CO14	CO15	CO16	CO17
SLO1/3	X			
SLO2/3	X			
SLO3/3	X			
SLO4/3	X			
SLO5/3	X			
SLO6/3	X			
SLO7/3		X		
SLO8/3		X		
SLO9/3		X		
SLO10/3		X		
SLO11/3		X		
SLO12/3		X		
SLO13/3			X	
SLO14/3			X	
SLO15/3			X	
SLO16/3			X	
SLO17/3			X	
SLO18/3			X	
SLO19/3				X
SLO20/3				X



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SLO21/3				X
SLO22/3				X
SLO23/3				X
SLO24/3				X

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER IV (PCI)

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER IV (PCI)			
S.No	NAME	UNIT/TITLE	SPECIFIC LEARNING OUTCOMES
PH.ORG CHEMISRTY III			
	SLO1/4	Optical isomers	Discuss the concept of Stereochemistry and sequence rules of optical isomers.
	SLO2/4	Nomenclature	cis-trans isomerism and its nomenclature.
	SLO3/4	Heterocyclic compounds	Write the Structure, Nomenclature, preparation and reactions of five membered heterocyclic compounds.
	SLO4/4	Nomenclature of fused ring system	Structure, Nomenclature, preparation and reactions of five, six and fused ring systems.
	SLO5/4	Reaction mechanisms	Reactions mechanisms and applications of named reactions and synthetic reagents.
MEDICINAL CHEMISTRY I (T&P)			
	SLO6/4	History & development of drugs	Able to understand the history & development of drugs, metabolism and physicochemical properties in relation to biological activity
	SLO7/4	Drugs of sympathetic nervous system	Able to understand the classification, mechanism of action SAR Studies , synthesis of drugs belongs to sympathetic nervous system
	SLO8/4	Drugs of parasympathetic nervous system	Able to understand the classification, mechanism of action SAR Studies and synthesis of drugs belongs to parasympathetic nervous system
	SLO9/4	Drugs of central nervous system	Able to understand the classification, mechanism of action SAR Studies and synthesis of



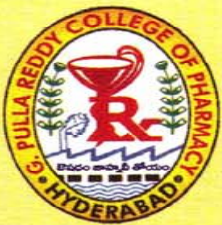
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			drugs belongs to central nervous system
	SLO10/4	Anti-inflammatory agents, narcotic analgesics	Able to understand the classification, mechanism of action SAR Studies & synthesis of general anaesthetics, anti-inflammatory agents, narcotic analgesics
	SLO11/4	Practical	able to synthesize some drugs and determine percentage purity of some drugs
PHYSICAL PH CEUTICS II (T&P)			
	SLO12/4	disperse systems	Knowledge of dispersed systems, physico-chemical properties of colloids.
	SLO13/4	rheology	knowledge of Newtonian and non-Newtonian systems, deformation of solids.
	SLO14/4	coarse dispersions	knowledge of coarse dispersions, their formulation and stability.
	SLO15/4	micromeritics	knowledge of influence of particle size, determination and derived properties of powders
	SLO16/4	stability	knowledge of chemical kinetics, factors influencing, stability testing and determination of expiry date.
	SLO17/4	practical	able to determine particle size, flow properties and stability.
PH.COLOGY I (T&P)			
	SLO18/4	General Pharmacology	Understand basic principles of drug action such as routes of administration, and pharmacokinetic concepts of drugs
	SLO19/4	General Pharmacology	Understand the Pharmacodynamic aspects of the drugs, ADRs, Drug Interactions and Drug Discovery
	SLO20/4	Pharmacology of drugs acting on peripheral nervous system	Understand the Organization and function of ANS, role of various neurotransmitters and pharmacology of drugs modulating the ANS.
	SLO21/4	Pharmacology of drugs acting on central nervous system	Understand the neurohumoral transmission in the CNS and pharmacology of anaesthetics, Sedatives, hypnotics, centrally acting muscle relaxants, and Anti-epileptics
	SLO22/4	Pharmacology of drugs acting on central nervous system	Understand the effects of psychopharmacological agents, CNS stimulants and pharmacology of drugs used in the treatment of Parkinson's disease and Alzheimer's disease
	SLO23/4	Practical	Observe the effect of drugs on animals by simulated experiments and correlation with in



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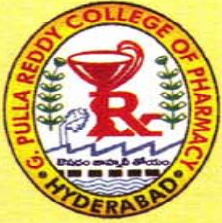
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			vivo data
PH.COG & PHYTO CHE I (T&P)			
SLO24/4	Introduction to Pharmacognosy	Learn the definitions, scope, history, classification and evaluation of crude drugs	
SLO25/4	Cultivation and collection	Understand the cultivation techniques and post harvesting techniques.	
SLO26/4	Plant tissue culture	Learn the types of culture and applications.	
SLO27/4	Indigenous systems of medicines	Learn the basic principles and concepts of various systems of AYUSH. Earn the definition and chemical test for secondary metabolites.	
SLO28/4	Plant products	Learn the sources, chemical nature and uses of plant fibers, primary metabolites and marine products.	
SLO29/4	Practical	Learn the Phytochemical screening of primary metabolites, Microscopic evaluation techniques etc.,	

B.PHARM (PCI) FOURTH SEMESTER CO AND SLO MAPPING

	CO18	CO19	CO20	CO21	CO22
SLO1/4	X				
SLO2/4	X				
SLO3/4	X				
SLO4/4	X				
SLO5/4	X				
SLO6/4		X			
SLO7/4		X			
SLO8/4		X			
SLO9/4		X			
SLO10/4		X			



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SLO11/4		X			
SLO12/4			X		
SLO13/4			X		
SLO14/4			X		
SLO15/4			X		
SLO16/4			X		
SLO17/4			X		
SLO18/4				X	
SLO19/4				X	
SLO20/4				X	
SLO21/4				X	
SLO22/4				X	
SLO23/4				X	
SLO24/4					X
SLO25/4					X
SLO26/4					X
SLO27/4					X
SLO28/4					X
SLO29/4					X



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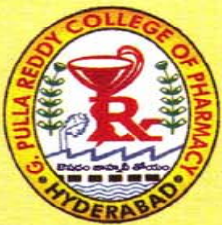
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SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER V (CBCS)

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER V (CBCS)			
S.NO	NAME	UNIT/TITLE	SPECIFIC LEARNING OUTCOMES
MEDICINAL CHEMISTRY I (T&P)			
	SLO1/5	Study of biological activity of some compounds	able to understand the history & development of drugs, metabolism and physicochemical properties in relation to biological activity
	SLO2/5	Synthesis of sympathetic and parasympathetic nervous system drugs	able to understand the classification, mechanism of action SAR Studies , synthesis of drugs belongs to sympathetic and parasympathetic nervous system
	SLO3/5	synthesis of cardiovascular system drugs	able to understand the classification, mechanism of action SAR Studies and synthesis of drugs belongs to cardiovascular system
	SLO4/5	SAR studies of immunomodulators, anti thyroid drugs and hypoglycemic agents	able to understand the classification, mechanism of action, SAR Studies and synthesis of drugs belongs to diuretics, immunomodulators, anti thyroid drugs and hypoglycemic agents
	SLO5/5	SAR of anti ulcer agents, anti histaminics and coagulants and anti	able to understand the classification, mechanism of action, SAR Studies and synthesis of drugs belongs to anti ulcer agents, anti histaminics and coagulants and anti coagulants



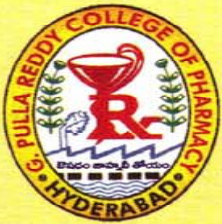
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		coagulants	
	SLO6/5	Practical	able to synthesize some drugs and determine percentage purity of some drugs
	PH. TECHNOLOGY (T&P)		
	SLO7/5	Hard and soft gelatin capsules	able to understand the role and significance of excipients in formulations. formulation and quality control of both hard and soft gelatin capsules
	SLO8/5	Suspensions and emulsions	gain the knowledge of manufacturing and evaluation of dispersion systems both suspensions and emulsions
	SLO9/5	Tablets	able to understand the formulation, manufacturing techniques and quality control of uncoated, coated tablets. tableting and coating problems
	SLO10/5	Packaging	gain the knowledge about manufacturing, evaluation of injectables and ophthalmics, sterilization procedures, packaging
	SLO11/5	Aerosols	able to understand the preparation, filling and evaluation of aerosols, types of packaging materials and their influence on dosage forms
	SLO12/5	Practical	able to manufacture some dosage forms and perform the quality control tests according to pharmacopoeia.
	PHYSICAL PHARMACY I		
	SLO13/5	States of Matter and Phase Equilibria	Understand different State of matter and their properties, phase equilibria , physicochemical properties of drug molecules and thermal analysis
	SLO14/5	Thermodynamics	Know thermodynamic terms definitions, laws of thermodynamics , Enthalpy and entropoy changes of a chemical reaction
	SLO15/5	Solutions of non-electrolytes Ionic equilibria	Understand the types , properties of solutions , colligative properties and their determination, Weak acid, weak base ionization and ionic equilibria
	SLO16/5	Buffered and Isotonic	Know the use pH scale, pH determination, buffer equations, buffers in pharmaceutical and biological



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		solutions:	systems, Buffer capacity and its calculation
	SLO17/5	Electro Motive Force and Oxidation-Reduction	Gain knowledge in constructing the electro chemical cell types of electrodes , Operation of pH meter, type and applications of Redox potentials
PH.COGNOSY I (T&P)			
	SLO18/5	introduction	Knowledge of crude drugs, cultivation of medicinal plants and collection of crude druge from medicinal plants.
	SLO19/5	plant biosynthesis	Knowledge of techniques in biosynthetic pathways and basic metabolic pathways.
	SLO20/5	hazards	Knowledge of adulterants in crude drugs, quality control of crude drugs & phytochemicals.
	SLO21/5	Pharmacognostic study of drugs	Knowledge of pharmacognostic uses of drugs containing carbohydrates, fixed oils, fats, waxes, tannins as active constituents.
	SLO22/5	Pharmacognostic study of fibres, animal & mineral origin drugs	Knowledge of pharmacognostic uses of fibres, proteins, enzymes & drugs of animal and mineral origin.
	SLO23/5	Practical	Able to identify drugs, isolate phytochemicals, determine stomatal index, palaside ratio and measurement of fibres & grains.
PH.COLOGY I			
	SLO24/5	general principles of drug action	understand basic principles of drug action such as routes of administration, pharmacodynamic and pharmacokinetic concepts and dose response relationship
	SLO25/5	drugs acting on ANS	understand physiological and pathological role of neurotransmitters in the ANS, pharmacology of drugs modulating the ANS system and its relevance to the pathophysiology and treatment of various diseases
	SLO26/5	drugs acting on CNS	understand physiological and pathological role of neurotransmitters in the CNS, pharmacology of



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			drugs acting on CNS system and its relevance to the pathophysiology and treatment of various diseases
	SLO27/5	drugs acting on CVS and respiratory system	understand pathophysiology and pharmacology of drugs used in the treatment of CVS and Respiratory diseases
	SLO28/5	drugs acting on GIT and renal systems	understand pathophysiology and pharmacology of drugs used in the treatment of GIT and Renal diseases

B.PHARM (CBCS) FIFTH SEMESTER CO AND SLO MAPPING

B.PHARM (CBCS) FIFTH SEMESTER CO AND SLO MAPPING

	CO23	CO24	CO25	CO26	CO27
SLO1/5	X				
SLO2/5	X				
SLO3/5	X				
SLO4/5	X				
SLO5/5	X				
SLO6/5	X				
SLO7/5		X			
SLO8/5		X			
SLO9/5		X			
SLO10/5		X			



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SLO11/5		X			
SLO12/5		X			
SLO13/5			X		
SLO14/5			X		
SLO15/5			X		
SLO16/5			X		
SLO17/5			X		
SLO18/5				X	
SLO19/5				X	
SLO20/5				X	
SLO21/5				X	
SLO22/5				X	
SLO23/5				X	
SLO24/5					X
SLO25/5					X
SLO26/5					X
SLO27/5					X
SLO28/5					X

**SPECIFIC LEARNING OUTCOMES (SLO)
SEMESTER VI (CBCS)**

S.No	Name	Unit/Title	Specific learning outcomes
	PHYSICAL PHARMACY II (T&P)		
	SLO1/6	Solubility and	Know about Basic principles of solubility, solubility expressions, factors affecting solubility of



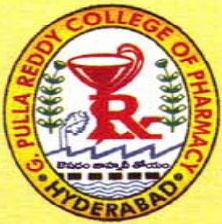
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		Distribution Phenomena	drugs and concept of distribution law
	SLO2/6	Chemical Kinetics	Learn the rate, order and molecularity of a reaction, Factors affecting rate of a reaction and accelerated stability analysis for shelf life determination
	SLO3/6	Interfacial Phenomena	Gain knowledge in differentiating Surface and interfacial tension, Use of HLB scale, Concept of surfactants and their applications
	SLO4/6	Colloids and Micromeritics	Able to differentiate different colloids and their properties, understand fundamental and derived properties of powders and determination
	SLO5/6	Rheology and Polymers	Know Newtonian and non Newtonian flow, viscosity determination, Thixotropy, polymers and applications
	SLO6/6	Physical pharmacy II practical	Determination of solubility, partition coefficient, surface tension and viscosity, phase diagram construction
PH.COLOGY II (T&P)			
	SLO7/6	Chemotherapy	Understand Pharmacological study of Anti-bacterial, Antiviral, Anti-fungal, Anti-protozoal and Anti-helmenthic drugs and Anti Cancer agents
	SLO8/6	Pharmacology of Autocoids	able to understand about local hormones, Coagulants, Anti-coagulants, Haematinics and Thrombolytic Agents
	SLO9/6	Pharmacology of Endocrine System	know about Pituitary Hormones, Pharmacology of thyroid, Anti- thyroid drugs, Insulin, Oral hypoglycemics and adrenocorticoids
	SLO10/6	Bioethics and Bioassay Of Some Selective Drugs	understand Principles of Bioethics, and basic principles of biological assay
	SLO11/6	Toxicology of Drugs and Clinical Pharmacology	Understand basic principles of toxicology know different types of poisoning and Treatment of Poisoning



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	SLO12/6	Pharmacology Practical	Able to perform various biological assay, Screening of drugs for analgesic, locomotor, mydriatic, miotic, ciliary movements activities in animals
PH. COGNOSY II (T&P)			
	SLO13/6	Alkaloids	Knowledge of classification, isolation, tests, chemical nature and uses of various alkaloids
	SLO14/6	Glycosides	Knowledge of classification, isolation, tests, chemical nature and uses of various glycosides
	SLO15/6	Phytopharmaceuticals isolation,characterisati on,volatile oils and resins	able to know the isolation, characterization and estimation of some phytopharmaceuticals, classification, isolation, tests, chemical nature and uses of volatile oils and resins
	SLO16/6	Tissue culture	gain knowledge on various tissue culture techniques, production of secondary metabolites, biotransformation and applications of plant tissue culture
	SLO17/6	Herbal medicines	Knowledge of herbal medicines in India, regulations, quality control and standardization of raw Materials, types of herbal formulation, some traditional plant medicines as a source of new drugs
	SLO18/6	Practical	Understand the various methods of evaluation of crude drugs, isolation and identification of some phytochemicals
FORENSIC PHARMACY			
	SLO19/6	Pharmaceutical Legislation of India	Able to understand the concepts and practice of professional ethics, Pharmaceutical Legislation of India, educational regulations, constitution of PCI and State Pharmacy Councils, cultivation, sale and manufacture of opium and other Narcotic Drugs and Psychotropic Substances,
	SLO20/6	Drugs and Cosmetics Act	Understand the constitution and functions of administrative bodies as per Drugs and Cosmetics Act, Import, manufacturing, sale and distribution of drugs and cosmetics as per Drugs and Cosmetics Act,
	SLO21/6	Labelling and Packaging	Gain knowledge on Labelling and Packaging requirements of drugs and cosmetics, GMP, maintenance of records as per Schedule U, concepts of Schedule Y, manufacturing of alcohol



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		requirements	containing drugs and cosmetics in bonded and non-bonded laboratory, warehousing,
	SLO22/6	Acts	Able to know about objectionable advertisements, Prevention of Food Adulteration, establishment and maintenance of factories
	SLO23/6	IPR	Understand the concept of IPR, inventions and non-inventions, Patent filling, as per Indian Patents Act, fixing of prices for drugs and cosmetics as per DPCO, pharmaceutical policy objectives.
PHARMACOTHERAPEUTICS,			
	SLO24/6	Introduction ,Cardiovascular system, Respiratory system	Understand the etiopathogenesis, clinical presentations, diagnosis and interpret the pharmacotherapy of Hypertension, CHF, Angina pectoris, MI, Hyperlipidemia, ECG, Arrhythmia, asthma, COPD, pulmonary function tests and Drug induced pulmonary disorders
	SLO25/6	Endocrine system, Ophthalmology	Understand the etiopathogenesis, clinical presentations, diagnosis and interpret the pharmacotherapy of Diabetes, Thyroid, Oral contraceptives, HRT, Osteoporosis, Glaucoma, Conjunctivitis-Viral & Bacteria
	SLO26/6	General prescribing guidelines for Paediatric patients, Geriatric patients, Pregnancy and lactation Paediatric patients, Geriatric patients, Pregnancy and lactation women	Understand and Learn various guidelines, principles and standard treatment levels of providing drugs to Pediatric patients, Geriatric patients, Pregnancy and lactation women.
	SLO27/6	Infectious Diseases: viral, fungal,	Understand the etiopathogenesis, clinical presentations, diagnosis and interpret the pharmacotherapy of Tuberculosis, Meningitis, Respiratory tract infections, Gastroenteritis,



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		protozoal, parasitic, HIV & opportunistic, gastro intestinal. RTI, UTI, TB, Meningitis.	Endocarditis, Septicemia, Urinary tract infections, Protozoal infections, Viral infections, Gonorrhoea and Syphilis
	SLO28/6	Musculo skeletal, Oncology, Dermatology	Understand the etiopathogenesis, clinical presentations, diagnosis, basic principles of cancer therapy and interpret the pharmacotherapy of various cancers and Rheumatoid arthritis, Osteoarthritis, Gout, Spondylitis, Systemic lupus erythematosus
QUALITY ASSURANCE			
	SLO29/6	Quality assurance systems	Knowledge of quality assurance for raw materials, API, packing materials and finished products.
	SLO30/6	in process quality control	Knowledge of in process quality control for tablets, suspensions, emulsions, parenterals and how to overcome problems.
	SLO31/6	quality systems	Knowledge of ISO quality systems and audits.
	SLO32/6	quality control laboratory & documentation	Knowledge of facilities and responsibilities of personnel in QC lab and documentation.
	SLO33/6	impurity profile & compendia	Knowledge of impurity profiling according to ICH & WHO, IP, USP, BP compendias.

B.PHARM (CBCS) SIXTH SEMESTER CO AND SLO MAPPING

B.PHARM (CBCS) SIXTH SEMESTER CO AND SLO MAPPING						
	CO28	CO29	CO30	CO31	CO32	CO33
SLO1/6	X					
SLO2/6	X					



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SLO3/6	X					
SLO4/6	X					
SLO5/6	X					
SLO6/6	X					
SLO7/6		X				
SLO8/6		X				
SLO9/6		X				
SLO10/6		X				
SLO11/6		X				
SLO12/6		X				
SLO13/6			X			
SLO14/6			X			
SLO15/6			X			
SLO16/6			X			
SLO17/6			X			
SLO18/6			X			
SLO19/6				X		
SLO20/6				X		
SLO21/6				X		
SLO22/6				X		
SLO23/6				X		
SLO24/6					X	
SLO25/6					X	
SLO26/6					X	



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SLO27/6					X	
SLO28/6					X	
SLO29/6						X
SLO30/6						X
SLO31/6						X
SLO32/6						X
SLO33/6						X

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER VII (CBCS)

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER VII (CBCS)			
S.No	NAME	UNIT/TITLE	SPECIFIC LEARNING OUTCOMES
MEDICINAL CHEMISTRY II (T&P)			
	SLO1/7	Local anaesthetics, anti-inflammatory and opiod analgesics	Know about classification, SAR, mechanism of action , metabolism of drugs synthesis and uses of local anaesthetics, anti-inflammatory and opiod analgesics
	SLO2/7	synthesis and uses of some drugs	Learn the classification, SAR, mechanism of action , metabolism of drugs synthesis and uses of anticancer drugs, beat lactam antibiotics, macrolides, Tetracyclins, Aminoglycosides, Quinolones
	SLO3/7	synthesis and uses of some drugs	Gain the knowledge of classification, SAR, mechanism of action , metabolism of drugs synthesis and uses of Antimalarial drugs, Antitubercular drugs, Antileprotic drugs ,Antihelmenthic drugs, Antiviral drugs, Antiprotozoal drugs, Antifungal drugs
	SLO4/7	synthesis and uses	Learn the classification, SAR, mechanism of action , metabolism of drugs synthesis and uses of



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		of some drugs	CNS stimulants, Psychotropic agents, General anesthetics, Sedatives and Hypnotics, Antipsychotics, Anticonvulsant and Antiparkinsons agents
	SLO5/7	classification and biochemical role of nutraceuticals	Know about classification and biochemical role of Vitamins and essential aminoacids and learn about protein drug development
	SLO6/7	Practical	learn the methods of synthesis of drugs, Importance of IR and TLC for confirmation of synthesis of final compounds
PH.ANALYSIS II (T&P)			
	SLO7/7	Concepts of spectroscopy	Learn basic principles and concepts of spectroscopy. Beer lambert's law. Instrumentation components of UV-Visible spectrophotometer. Application of UV-Visible spectroscopy to analyse single component and multicomponent pharmaceutical dosage forms. Theory, instrumentation and applications of fluorimetry.
	SLO8/7	Instrumentation and applications of some spectroscopic techniques	Learn theory, instrumentation and applications of IR spectroscopy, flame photometry, atomic absorption spectroscopy and nepheloturbidometry.
	SLO9/7	Chromatographic techniques	Gain knowledge on principles, theory, experimental procedure and application of paper, thin layer and column chromatographic techniques for the analysis of drugs. Students also learn theory and applications of paper, gel and capillary electrophoresis.
	SLO10/7	Chromatographic techniques	Students know all experimental details, advantages and applications of HPLC and GC
	SLO11/7	Ion exchange process	Learn about ion-exchange resins, ion exchange process and applications in pharmaceutical industry. Get knowledge on theory, instrumentation and applications of gel permeation and affinity chromatographic techniques.
	SLO12/7	Practical	Practice to handle spectrophotometers, flame photometer, HPLC and GC. Learn different methods



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			to analyse the pharmaceutical compounds using the said instruments. Practice paper and thin layer chromatographic experiments and gain the knowledge of interpretation of data obtained after the experiment to conclude the results.
DFD (T&P)			
	SLO13/7	Pre Formulation Studies	To Study the Physical Properties of Drug, Powder characteristics and Chemical characteristics of drugs
	SLO14/7	Sustained Action Pharmaceuticals, Microencapsulation	Concept, Sustained action oral products, Microencapsulation methods and its applications
	SLO15/7	New Drug Delivery Systems	Importance, Formulation and Applications of TDDS, Liposomes, Ocular DDS and Nanoparticles
	SLO16/7	Performance Evaluation Methods	Bioavailability and Bioequivalence; Concepts of Process Validation and cGMP
	SLO17/7	Quality Control and Assurance	Quality Assurance, Sources of Quality variation, Control of Quality variation, Quality Assurance at startup, Quality Assurance during packing operation; Control and Quality Control Charts, Control & Assurance of Manufacturing practices and stability testing protocols.
	SLO18/7	Practicals	To get practical knowledge about SR formulations, Microencapsulation, Microspheres and some NDDS products- Preparation and evaluation methods
BPPK			
	SLO19/7	Drug absorption	Able to get the knowledge about fate of drug in body administered by different routes of administration. drug absorption and factors influencing drug absorption
	SLO20/7	Drug distribution	Will understand the drug distribution and factors influencing protein binding, significance and kinetics.
	SLO21/7	Drug metabolism	Able to the knowledge about the metabolism of drugs by phase I and phase II reactions. renal and



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			non-renal clearance of drugs. factors influencing excretion
	SLO22/7	Dosage adjustments	Able to understand the basics of pharmacokinetics, parameters, drug interactions and individualization of therapy. dosage adjustments in organ impaired patients
	SLO23/7	Compartment modelling	Gain the knowledge about compartment modelling, derivation, calculation of pk parameters by different routes of administration
BUSINESS MANAGEMENT			
	SLO24/7	General management concepts	Understanding general management concepts, practices in production & quality control department in pharmaceutical industry and total quality management
	SLO25/7	Industrial management	Understanding industrial management regarding plant layout, building, process flow, utilities and services.
	SLO26/7	Procurement and stores management.	Understanding procedures for materials procurement and stores management.
	SLO27/7	personnel management	Understanding personnel behaviour in groups and personnel management.
	SLO28/7	Marketing management	Understanding market size, psychology of consumers in marketing management.

B.PHARM (CBCS) SEVENTH SEMESTER - CO AND SLO MAPPING

B.PHARM (CBCS) SEVENTH SEMESTER - CO AND SLO MAPPING

	CO34	CO35	CO36	CO37	CO38
SLO1/7	X				



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SLO2/7	X				
SLO3/7	X				
SLO4/7	X				
SLO5/7	X				
SLO6/7	X				
SLO7/7		X			
SLO8/7		X			
SLO9/7		X			
SLO10/7		X			
SLO11/7		X			
SLO12/7		X			
SLO13/7			X		
SLO14/7			X		
SLO15/7			X		
SLO16/7			X		
SLO17/7			X		
SLO18/7			X		
SLO19/7				X	
SLO20/7				X	
SLO21/7				X	
SLO22/7				X	
SLO23/7				X	
SLO24/7					X
SLO25/7					X



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SLO26/7				X
SLO27/7				X
SLO28/7				X

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER VIII (CBCS)

SPECIFIC LEARNING OUTCOMES (SLO)- SEMESTER VIII (CBCS)			
S.NO	NAME	UNIT/TITLE	SPECIFIC LEARNING OUTCOMES
PH.BIOTECHNOLOGY (T&P)			
	SLO1/8	History	To learn importance of genetic engineering
	SLO2/8	Fermentation technology	To gain knowledge about fermentation technology for the production of important metabolites like antibiotics, hormones and enzymes
	SLO3/8	Vaccines and sera	To gain knowledge about production of vaccines and sera
	SLO4/8	Blood and related products	To learn importance of blood and related products
	SLO5/8	Cell culture technology	To gain knowledge in cell culture technology and its applications in pharmaceutical industries
	SLO6/8	Practical	To gain the practical knowledge about Microbiological assays, isolation of RNA, DNA.
PHARMACOINFORMATICS (T&P)			
	SLO7/8	Database Design	Database and its concept and various types of databases and its organization
	SLO8/8	Information Management	Search algorithms, Algorithms for sequence alignment, HMM, Storage and retrieval of information, Bio-PERL
	SLO9/8	Drug information services	Drug information resources and services; Coding of information; Pharmacy automation and drug distribution systems
	SLO10/8	Introduction to Genomics and	Structure and Functional Genomics; Nucleotide databases, Protein analysis and DNA



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		Proteomics	sequencing etc.,
	SLO11/8	Computational Concepts in Drug Design	Drug design, SAR & QSAR and Theories of drug activity
	SLO12/8	Practical	biological databases, Databases preparation by MS-Access and Drug information resources; Chems sketch etc.,
COSMETIC TECH (T&P)			
	SLO13/8	Skin structure	Knowledge of skin structure, regulatory provisions and raw materials used in cosmetic preparations.
	SLO14/8	Cosmetic preparations	Knowledge of cosmetic preparations used for face, eye & babies. Their formulation, preparation and evaluation.
	SLO15/8	Formulations for skin	Knowledge of preparations for skin, nails, body & shaving. Their formulation, preparation and evaluation.
	SLO16/8	Dental and hair formulatiuons	Knowledge of preparations for hair & dental. Their formulation, preparation and evaluation.
	SLO17/8	Herbal cosmetics	Knowledge of herbal cosmetics used for skin, hair and face.
	SLO18/8	Practical	Able to prepare cosmetic preparations for skin, hair, nail, lips and dental.
HOSPITAL & CLINICAL PHARMACY			
	SLO19/8	Organisation of hospital pharmacy	Understand organisation of hospital and hospital pharmacy, role of hospital pharmacist, organization and functions of hospital committees, rational drug therapy
	SLO20/8	Hospital formulary and Inventory control	Understand about hospital formulary, methods of procurement, handling, inventory control, distribution and dispensing of different drug products in hospital
	SLO21/8	Clinical pharmacy	Understand methods used for diagnosis, provide better patient care, improve patient compliance and better patient outcome
	SLO22/8	Diseases and rational use of drugs	Understand the factors to be considered for rational drug use, drug interactions, drug induced diseases



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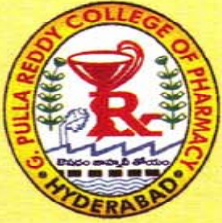


	SLO23/8	Pharmacotherapy	Gain knowledge on pharmacotherapy and critical analysis of various diseases
	PHARMACOVIGILANCE		
	SLO24/8	History of Pharmacovigilance	Understand history, definitions, detection, management, analysis, reporting and regulatory terminologies of pharmacovigilance
	SLO25/8	Establishment of pharmacovigilance program	Know about standard dictionaries and resources used for classification of diseases, coding of ADR'S, establishing pharmacovigilance programs
	SLO26/8	Surveillance	Know the methods of pharmacovigilance and safety surveillance of vaccines
	SLO27/8	Guidelines	Understand how to generate and report safety data, ICH guidelines and GCP requirements of pharmacovigilance
	SLO28/8	Regulatory requirements	Know the effect of genetics and physiological variation on ADR'S , global reporting organizations, Indian and global regulatory requirements of pharmacovigilance
	cGMP		
	SLO29/8	Guidelines	Knowledge of WHO, USFDA & Schedule M in pharmaceutical manufacturing.
	SLO30/8	Pharmaceutical equipments management	Knowledge of pharmaceutical equipments management and packaging of dosage forms.
	SLO31/8	Quality systems	Knowledge of ISO 9000, ISO 14000 & total quality management.
	SLO32/8	Validation	Knowledge of validation of equipments & material management.
	SLO33/8	Documentation	Knowledge of validation types, process validation and documentation.

B.PHARM (CBCS) EIGHTH SEMESTER - CO AND SLO MAPPING

B.PHARM (CBCS) EIGHTH SEMESTER CO AND SLO MAPPING

	CO39	CO40	CO41	CO42	CO43	CO44
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SLO1/8	X					
SLO2/8	X					
SLO3/8	X					
SLO4/8	X					
SLO5/8	X					
SLO6/8	X					
SLO7/8		X				
SLO8/8		X				
SLO9/8		X				
SLO10/8		X				
SLO11/8		X				
SLO12/8		X				
SLO13/8			X			
SLO14/8			X			
SLO15/8			X			
SLO16/8			X			
SLO17/8			X			
SLO18/8			X			
SLO19/8				X		
SLO20/8				X		
SLO21/8				X		
SLO22/8				X		
SLO23/8				X		
SLO24/8					X	



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SLO25/8					X	
SLO26/8					X	
SLO27/8					X	
SLO28/8					X	
SLO29/8						X
SLO30/8						X
SLO31/8						X
SLO32/8						X
SLO33/8						X