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Geethanjali

Geethanjali College of Pharmacy

Approved by AICTE, PCI New Delhi, Permanently Affiliated to JNTUH & B. Pharmacy Accredited by NBA
Recognized Under UGC Section 2F & 12B of UGC Act, 1956, by DSIR-SIRO & HI/BI of MSME, Certified by ISO 9001:2015
Cheeryal (V), Keesara (M), Medchal-Malkajgiri Dist, Telangana State- 501301.

PROGRAM: M. PHARMACY (PHARMACEUTICAL ANALYSIS)

BATCH (2019-21) REGULATION R19

COURSE OUTCOMES WITH KNOWLEDGE LEVEL & ITS RELEVANCE TO PROGRAM OUTCOMES

Program: Master of Pharmacy (PHARMACEUTICAL ANALYSIS)/ First Year/ I Semester					
Course Name	Code	Course Outcome No	CO Statement	Knowledge Level	Relevance to PO's
MODERN PHARMACEUTICAL ANALTICAL TECHNIQUES	**M.PA/R19. C111**	C111.1	Differentiate samples using basic chromatographic techniques (PC, TLC etc.) and analyze samples based on its behavior.	K4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11
		C111.2	Relate the basic knowledge of liquid chromatography(GC,HPLC, etc.) and apply knowledge of liquid chromatography to analyze samples	K4	
		C111.3	Experiment on samples using UV & IR spectroscopy, and analyze and interpretdata.	K5	
		C111.4	Interpret data of Mass spectrum.	K5	
		C111.5	Evaluate evidence to identify organic samples using NMR spectroscopy	K5	

PHARMACEUTICAL AND FOOD ANALYSIS	**M.PA/R19. C112**	C112.1	Student shall be able to explain about the classification, general methods of analysis of carbohydrates and proteins	K3	PO1 PO3 PO4 PO6 PO7 PO9 PO10 PO11
		C112.2	Student shall be able to determine the adulteration in fats, oils and general methods of analysis of vitamins	K3	

		C112.3	Students would able to learn about concept of probiotis	K4	
		C112.4	To know the quantitative determination of drugs from different category of both API and dosage forms 1	K3	
		C112.5	To know the general analytical methods of milk and fermentation products and have the knowledge on food regulations and legislations	K4	
DRUG REGULATORY AFFAIRS	**M.PA/R19. C114**	C114.1	Discuss the rationale behind regulatory requirements and ways and means of complying with them in India.	K4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11
		C114.2	Point out the important aspects of GMP.	K4	
		C114.3	List various laws, legislation and guidance related to safety, efficacy ethical conductand regulatory approval of drugs in USA & Brazil.	K4	
		C114.4	Handle documentation and general principles involved in regulatory writing and submissionto agencies.	K4	
		C114.5	Organize the submissionof Drug Master Files to regulatory authorities as per their specific requirements in USA, Europe and Canada.	K4	
QUALITY CONTROL AND QUALITY ASSURANCE	**M.PA/R19. C116**	C116.1	Student shall be able to explain about the evolution and scopes of Quality Control and Quality Assurance	K3	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9
		C116.2	Student shall be able to understand the GMP guidelines, organization and personnel responsibilities	K3	
		C116.3	Students would able to	K4	

			learn about Analysis of raw materials,finished products and quality control tests of different dosage forms		PO10 PO11
		C116.4	To know the Documentation procedures in pharmaceutical industries	K3	
		C116.5	To know the concept of Manufacturing operations and controls	K4	
Research methodology and Intelletual property rights	**M.PA/R19. C119**	C119.1	Summarize Research problem, Sources of research problem	K3	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11
		C119.2	Organize the effective literature studies approaches, analysis, Plagiarism, Research ethics	K4	
		C119.3	Understand the effective technical writing, how to write report	K3	
		C119.4	Determine the Patents, Designs, Trade and Copyright.	K5	
		C119.5	Analyze the Licensing and transfer oftechnology	K4	
MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES LAB	**M.PA/R19. C1110**	C1110.1	Analyse samples using UV-Visible spectroscopy	K4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11
		C1110.2	Examine samples based on Rf values by paper chromatography, TLC & HPTLC techniques.	K4	
		C1110.3	Estimate samples using HPLC technique	K5	
		C1110.4	Determine samples by FTIR	K5	
		C1110.5	Evaluate various glassware and analytical instruments by calibration.	K5	
PHARMACEUTICAL AND FOOD ANALYSIS LAB	**M.PA/R19. C1111**	C1111.1	Student shall be able to determine the total reducing sugar and	K3	PO1 PO3

			proteins		PO4
		C1111.2	Student shall be able to determine the saponification value, Iodine value, Peroxide value, Acid value in food products	K3	PO6 PO7 PO8 PO9 PO10 PO11
		C1111.3	Students would able to determine rancidity in food products, preservatives in food and Analysis of natural and synthetic colors & food additives in food	K3	
		C1111.4	To know the determination of pesticide residue in food products and Assay of any two Analgesic & Antipyretic drugs	K1	
		C1111.5	To know the Assay ofany two Diuretics and Microbiological assay of any two.	K3	
VALUE EDUCATION	**M.PA/R19. C1115**	C1115.1	Understand human values, their significance and role in life.	K3	PO2 PO5 PO6 PO7 PO10 PO11
		C1115.2	Promote self-reflection and critical inquiry that foster critical thinking of one's value and the values of others.	K3	
		C1115.3	Practice respect for human rights and democratic principles.	K3	
		C1115.4	Emerge as responsible citizens with clear conviction to practice values and ethics in life.	K3	
		C1115.5	Develop the overall personality.	K3	
M.PHARMACY FIRST YEAR II SEM					
ADVANCED INSTRUMENTAL ANALYSIS-I	M.PA/R19.C121	C121.1	Students will come out with the thorough knowledge of various spectral aspects of X-Ray and different aspects regarding X-Ray diffraction methods.	K3	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10
		C121.2	Students would able to know Biochromatography and Super critical fluid	K3	

			chromatography their principles, Instrumentation and applications.		PO11
		C121.3	To know about the Capillary Electrophoresisthe concepts of CE in pharmaceutical analysis.	K3	
		C121.4	Describe on DSC, DTA, TGA and brief discussion about this techniques.	K3	
		C121.5	To know Scanning electron microscope andits principle, Instrumentation and applications..	K3	
MODERN BIO ANALYTICAL TECHNIQUES	M.PA/R19.C122	C122.1	Students would be able to know the Extraction of drugs from biological samples and principles, procedures.	K3	PO1 PO3 PO4 PO6 PO7 PO9 PO10 PO11
		C122.2	To know Biopharmaceutical factors affecting drug bioavailability in In-vitroand In-vivo studies.	K3	
		C122.3	Students would able to learn about Bioanalysis and Bioanalytical method validation and its concepts.	K3	
		C122.4	Students would able to learn Pre-Formulation, Physical characteristics, Chemical Characteristics – Degradation.	K4	
		C122.5	To determine Automationand computer-aided analysis, LIMS concept of auto samplers and highthrough put analysis and Drug Product performance, In Vivo. Bioavailability and Bioequivalence Studies.	K2	
Pharmaceutical validation	M.PA/R19.C123	C123.1	Students would havestudied about the different types of validation proceduresand how it can be	K3	PO1 PO2 PO3 PO4 PO5

			applied to various instruments and equipments at different stages of usage.		PO6 PO7 PO8 PO9 PO10 PO11
		C123.2	To know a complete procedures involved in qualification of various analytical instrumentsand Glass ware	K4	
		C123.3	Students would able to learn about the steps involved in qualificationof laboratory equipments and validation of utilitysystems.	K4	
		C123.4	Carryout validation of analytical method used in cleaning. Cleaning of equipments, facilitiesand cleaning in place.	K3	
		C123.5	Apply the knowledge of validation of analytical method as per ICH guidelines and USP.	K4	
CLININCAL RESEARCH AND PHARMACOVIGILENCE	M.PA/R19.C128	C128.1	Explain the regulatory requirements for conducting clinical trails	K6	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11
		C128.2	Classify the types of clinical trial designs	K4	
		C128.3	Explain the responsibilities of key players involved in clinical trials	K6	
		C128.4	Explain the priniciples of pharmacovigilance	K6	
		C128.5	Explain adverse drug reactions and their management	K6	
ADVANCED INSTRUMENTAL ANALYSIS-I LAB	M.PA/R19.C129	C129.1	Students would be able to know about Determination of chlorides and sulphates by Nephelo – Tubmidimetry.	K4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11
		C129.2	Students would be able to learn compounds of sodium,potassium and calcium by Flame photometry and Estimation of riboflavin/quininesulphate by flourimetry.	K4	

		C129.3	Students would able to learn about assay of official compounds by potentiometric titrations and conductimetric titrations.	K4	
		C129.4	To know about Demonstration on ELISA, Quenching of fluorescence.	K3	
		C129.5	Students would be able to study phosphate interference on absorption of calcium.	K3	
MODERN BIO ANALYTICAL TECHNIQUES LAB	M.PA/R19.C1210	C1210.1	Analyse samples quantitatively using gel electrophoresis & isolate analgesics from biological fluids	K4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11
		C1210.2	Analyse samples using HPLC technique & develop method for API using HPLC	K4	
		C1210.3	Determine anti-histaminic drugs using TLC	K5	
		C1210.4	Estimate drugs from biological matrices by SPE/LLE technique	K5	
		C1210.5	Assess the drug from Diclofenac formulationby HPLC technique	K5	
DISASTER MANAGEMENT	M.PA/R19.C1113	C1113.1	Understand key conceptsof disasters and its relationships with development and disaster prone areas in India.	K3	PO2 PO10 PO11
		C1113.2	Explain repercussions of disasters and hazards.	K3	
		C1113.3	Promote prevention and preparedness for disaster.	K3	
		C1113.4	Understand the techniques of risk reduction	K3	
		C1113.5	Enhance awareness of disaster risk management and build skills to respond todisasters.	K3	
M. Pharmacy/ Second Year/ I Semester					
SCALEUP	M.PT	C212.1	Design the pilot scale up	K6	

AND TECHNOLOGY TRANSFER	/ R19. C 212		technology		PO1 PO3 PO4 PO6 PO7 PO9 PO10 PO11
		C212.2	Judge the documentation process	K5	
		C212.3	Conclude in choosing of equipment for dosage form production	K4	
		C212.4	Summarize the process validation	K2	
		C212.5	Describe safety and hazards in industries	K2	
AUDITS AND REGULATORY COMPLIANCE	M.PT / R19. C 218	C218.1	Discuss briefly about audit objectives and their management.	K4	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11
		C218.2	Understand the role of quality systems and audits in pharmaceutical manufacturing environment.	K4	
		C218.3	Prepare checklist of auditing of vendors and production department.	K4	
		C218.4	Organize the auditing ofa microbiological laboratory.	K4	
		C218.5	List the basics of auditing various engineering systems in a manufacturing plant.	K4	