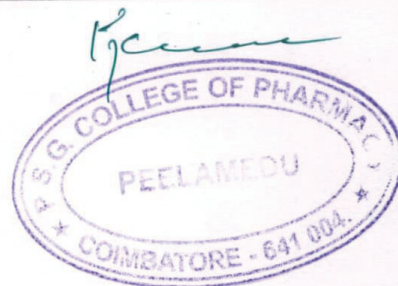# PSG COLLEGE OF PHARMACY
## 2.6.1. COURSE OUTCOME
Course outcome for M Pharm (Semester) Pharmacy Practice

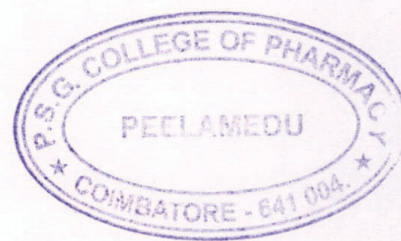| Course Code	Name of the subject and course outcome
MPP101T	**Clinical Pharmacy Practice**
CO1	Comprehension on Clinical Pharmacy services
CO2	Buildup a talent to interpret the Laboratory value
CO3	Expand the knowledge to answering query
CO4	Understanding the value of Communication skills in pharmaceutical care
MPP102T	**Pharmacotherapeutics I**
CO1	Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for **Cardiovascular system diseases.**
CO2	Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for **Respiratory system diseases.**
CO3	Understand the disease conditions and drug therapy and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for **Gastrointestinal system diseases.**
CO4	Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for **Hematological disease and bone & joint disorders.**
CO5	Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for **Ophthalmology and Dermatological disease.**
MPP103T	**Hospital and Community Pharmacy**
CO1	Knowledge on hospital pharmacy, drug committees &policies of hospital
CO2	To know the various drug distribution methods & inventory control techniques
CO3	To know the drug related problems, dispensing for minor ailments, rational use of OTC medications and to be an entrepreneur in community pharmacy
CO4	To know the community pharmacy management and value added services in community pharmacies
CO5	Understand health promotion activities as well as research in community pharmacy practice
MP104T	**Clinical research**
CO1	Understand the new drug discovery and developmental process which also involved the world wide regulatory, ethical and practicing guidelines and requirements for good conduct of clinical trials
CO2	Knowledge on various phases of clinical trials and its process from approval to market availability which involves personals in clinical trial and able to design the study appropriately.

CO3	Knowledge on personal and documents involved in clinical trial and able to prepare required trial documents and able to initiate the clinical trial.	
CO4	Knowledge on procurement and storage of investigational drugs, personal and documents involved in the clinical trial and able to conduct, monitor, close out and work appropriately in the clinical trial field.	
CO5	Knowledge on quality control, data management and safety monitoring in clinical trials.	
MP105P	**Pharmacy Practice Practical I**	
CO1	Understand the elements of pharmaceutical care, lab data interpretation, provide medicine & poison information.	
CO2	Ability to prepare individualized therapeutic plan based on diagnosis and present clinical cases for various disease conditions	
CO3	Knowledge on inventory control techniques,IV admixtires, Hospital formulary and preparation of patient information leaflet	
CO4	Understand the regulatory & ethical requirements and appreciate the conduct of clinical trials	
CO5	Ability to answer drug & poison information query	
MPP201T	**Principles of Quality use of Medicines**	
CO1	Comprehension on Quality use of Medicines	
CO2	Develop a skill to identify and resolve medication error and ADRs	
CO3	Appraise the Benefits and risks associated with use of medicines	
CO4	Expand the knowledge to apply EBM	
CO5	Impact of Regulatory aspects in the quality use of medicines	
MPP202T	**Pharmacotherapeutics II**	
CO1	Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for Pain management and nervous system diseases.	
CO2	Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for Renal system diseases and psychiatric disorders.	
CO3	Guidelines for rational use of antibiotics, surgical prophylaxis and ability to apply the drug knowledge on Infectious diseases involved respiratory and urinary tract infections, gastroenteritis, tuberculosis, malaria, bacterial endocarditis and septicemia.	
CO4	Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for Infectious diseases and Gynecological disorders.	
CO5	Understand the disease conditions and basic principal of chemotherapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for Cancer disease.	
MPP203T	**Clinical Pharmacokinetics and TDM**	
CO1	Understand drug dosage regimen, relate plasma drug concentrations with treatment outcomes	
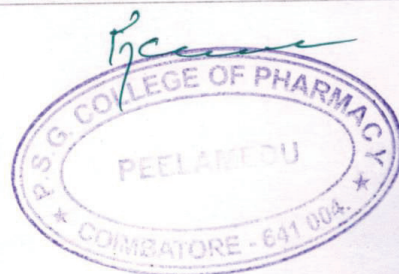
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CO2	Knowledge on Pharmacokinetics Interactions, Know impact of genetic polymorphism of individuals on pharmacokinetics & pharmacodynamic of drugs
CO3	To understand pharmacokinetic modeling using principles of pharmacometrics
CO4	Knowledge on drug dosing & dosage adjustment
CO5	To understand TDM of drugs
MPP204T	**PEPE**
CO1	Knowledge on Pharmacoepidemiology, its methods and their applications in health care
CO2	Knowledge in measuring the outcomes of drug use and the risk in pharmacoepidemiology
CO3	Understand the fundamental principles of Pharmacoeconomics and its methods
CO4	To know the cost and consequences associated with pharmacy products and pharmaceutical services
CO5	Understand the applications of Pharmacoeconomics in various pharmacy settings
MPP205P	**Pharmacy Practice Practical II**
CO1	CO1. Understand rational use of medicines, causality assessment of adverse drug reactions, identify and resolve medication related problems
CO2	CO2. Ability to prepare individualized therapeutic plan based on diagnosis and present clinical cases for various disease conditions
CO3	CO3.understand applications of pharmacokinetics in designing individualized dosage regimen and interpretation of TDM reports
CO4	CO4: Ability to calculate Bioavailability & Bioequivalence
CO5	CO5. Understand various Pharmacoeconomic outcome analysis

PSG COLLEGE OF PHARMACY
2.6.1. COURSE OUTCOME
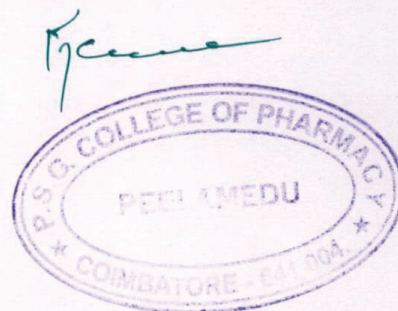### Course outcome for M Pharm (Semester) Pharmaceutical Analysis

Course code	Name of the course & Course outcome
I Sem	
MPA101T	**Modern Pharmaceutical Analytical Techniques**
CO1	Develops ability to gain the knowledge about ICH guidelines for impurity and degradation determination in drugs.
CO2	It facilitates the students to perform the analysis of elemental impurities
CO3	Understand the basics of impurity profiling and ICH stability guidelines for biological products
CO4	Able to do the sampling and stability testing of phyto pharmaceuticals
CO5	Understand the basic principles of biological tests and immunoassays
MPA102T	**Advanced Pharmaceutical Analysis**
CO1	Definition, classification and quantification as per ICH guidelines
CO2	Reporting degradation product, Listing Specification Quantification Control
CO3	Principles , classification, Analytical procedures, limits and reporting levels
CO4	Source identification Classification Control Analytical procedure C,H,N and s analysis
CO5	Selection test parameters sampling storage recording
	Method development Accelerated stability testing and Shelf life calculation as per WHO and ICH guidelines, Photo stability studies, Stability study of biological products
MPA103T	**Pharmaceutical Validation**
CO1	Student shall be able to explain the aspects of validation and qualification of equipment.
CO2	Able to perform qualification of analytical instruments and glass wares.
CO3	Learn about validation of utility systems and understand the importance of cleaning validation
CO4	It develop proper understanding of analytical method validation ICH guidelines,USP and computerized system validation
CO5	The clear information about the patent laws, intellectual property rights and drug regulation in India and abroad is gained by the students
MPA104T	**Food Analysis**
CO1	Knowledge of sources, method of analysis, metabolism and uses of carbohydrates, proteins and fat.
CO2	Able to perform qualitative and quantitative analysis of food constituents and food additives
CO3	Know the name, nature and detection of various food additives and colorants.
CO4	Proper understanding of analytical method for analysis of milk, fermented products and pesticides.
CO5	Know the Legislation regulations of food products with special emphasis on BIS, Agmark, FDA and US-FDA
MPA105P	**Pharmaceutical Analysis Practicals**
CO1	Analysis of pharmacopoeial compounds and their formulation by UV Vis spectrophotometer,HPLC.

CO2	Able to perform assay of compounds by titration and instrumental techniques
CO3	Learn about validation and perform calibration of analytical instruments and glass wares.
CO4	
CO5	
II Sem	Determination of different constituents, additives, preservatives in food products
MPA201T	**Advanced Instrumental Analysis**
CO1	Develops ability to gain the knowledge about HPLC method development and analysis of drugs using the instruments
CO2	It facilitates the students to perform the analysis of biological samples using bio chromatographic techniques
CO3	Understand the basics of super critical fluid chromatography and electrophoresis analysis of drugs
CO4	Able to do the mass spectral analysis of organic compounds
CO5	Understand the basic principles and proton analysis of organic compounds using NMR spectroscopy
MPA202T	**Modern Bio Analytical Techniques**
CO1	Bio analytical methods of sample preparation as per USFDA and EMEA guidelines
CO2	Drug bio availability, drug release test and dissolution, both in vivo and in vitro methods
CO3	PK-PD interaction, cytochrome P450 based interaction, bioactivity and proteomics
CO4	Cell culture techniques, MTT assay and cytometry
CO5	Metabolite identification : RLM , HLM
	Bioavailability and bioequivalence studies, biosimilar products
MPA203T	**Quality control and Quality Assurance**
CO1	The student should be able to understand concepts of quality control, quality assurance and good practices such as GMP,GLP in a pharmaceutical industry and about ICH guidelines
CO2	Gain knowledge about pharmaceutical industry premises, warehousing practices and Students will know how to handle animals and know about guidelines for experiment animals
CO3	Learn how to perform inprocess quality control and finished product quality control as per pharmacopoeias
CO4	To appreciate the importance of documentation, audit and electronic data.
CO5	Understand about manufacturing operations, control in industry and learn about expiry date calculation
MPA204	**Herbal and cosmetic analysis**
CO1	Knowledge on herbal remedies,herbal drug standardization and herbal drug regulations and pharmacokinetic issues.
CO2	Able to perform herbal analysis to find out the adulterants and substitutions for herbal drug industry
CO3	Know the analytical techniques and instruments for natural drug testing and standardisation.
CO4	Proper understanding of herbal drug interactions,and challenges in safety monitoring of herbal drugs
CO5	Know the Legislation regulations of BIS and evaluvation of cosmetics,dental and hair products.
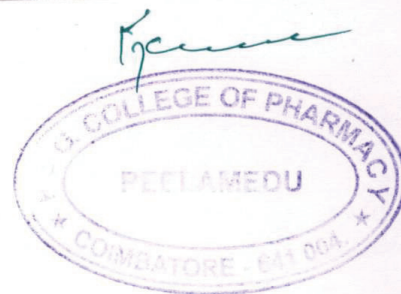
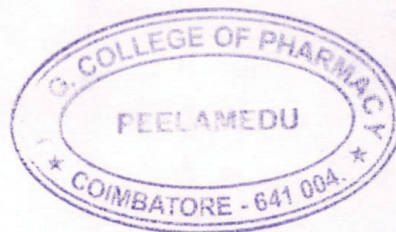| MPA205P	**Pharmaceutical Analysis Practicals 2**
CO1	Analysis of pharmacopoeial compounds and their formulation by UV Vis spectrophotometer,HPLC.
CO2	Able to perform assay of compounds by titration and instrumental techniques
CO3	Learn about validation and perform calibration of analytical instruments and glass wares.

PSG COLLEGE OF PHARMACY
2.6.1. COURSE OUTCOME
Course outcome for M Pharm (Semester) Pharmaceutics

Course code	Name of the course &Course outcome
I Semester	
MPH101T	**Modern Pharmaceutical Analytical Techniques**
CO1	Develops ability to gain the knowledge about ICH guidelines for impurity and degradation determination in drugs.
CO2	It facilitates the students to perform the analysis of elemental impurities
CO3	Understand the basics of impurity profiling and ICH stability guidelines for biological products
CO4	Able to do the sampling and stability testing of phyto pharmaceuticals
CO5	Understand the basic principles of biological tests and immunoassays
MPH102T	**Drug Delivery Systems**
CO1	Knowledge on SR & CR formulations and their factors. Different polymers & their properties also personalized medicines, bioelectronic medicines, 3D Printing, telepharmacy.
CO2	Knowledge on design and study on GRDDS & Mucosal DDS
CO3	Knowledge on barriers for ocular drug delivery & its overcome methods & Knowledge on transdermal drug delivery systems
CO4	Knowledge on barriers, formulation & evaluation of protein drug delivery
CO5	Knowledge on vaccine drug delivery systems.
MPH103T	**Modern Pharmaceutics**
CO1	Knowledge on preformulation concepts and optimization techniques
CO2	Knowledge on pharmaceutical validation
CO3	Knowledge on cGMP & Industrial Management
CO4	Knowledge on compression and compaction
CO5	Knowledge on consolidation parameters
MPH104T	**Regulatory Affairs**
CO1	To understand the document process in pharmaceutical industry and requirements for product approval
CO2	To study the regulatory requirements for product approval.
CO3	To know the regulations for combination drug products and medical devices
CO4	To grasp non clinical drug development submission requirements to regulatory agencies
CO5	To learn the clinical trial protocol and pharmacovigilance safety monitoring in clinical trials
II Semester	
MPH201T	**Molecular Pharmaceutics**
CO1	Concept and biological events in drug targeting.
CO2	Knowledge on preparation and evaluation of nanoparticles and liposomes.
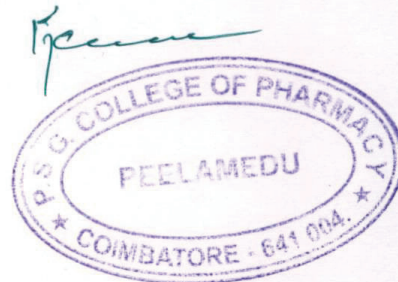
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CO3	Knowledge on preparation and evaluation of microspheres, Monoclonal antibodies, niosomes, aquasomes, phytosomes and elecrosomes.
CO4	Knowledge on propellants, preparation and evaluation of pulmonary and nasal aerosols.
CO5	Knowledge on gene therapy, antisense molecules and aspartamers as drugs of future.
MPH202T	**ABPPK**
CO1	Broader understanding about the concepts of biopharmaceutics and pharmacokinetics.
CO2	Ability to design drug product by considering various biopharmaceutical factor
CO3	Ability to select proper pharmacokinetic model based on plasma level or urinary excretion data that best describes the process of drug absorption, distribution, metabolism and elimination (ADME)
CO4	Ability to design a basic protocol for the conduct of BA/BE study and the interpretation of the BA/BE data
CO5	Ability to design dosage regimens for patients based on calculated pharmacokinetic parameters
MPH203T	**Computer Aided Drug delivery system**
CO1	To study the role of computers and quality by design concepts in pharmaceutical research and formulation development.
CO2	To learn computational modeling techniques of drug disposition
CO3	To inculcate the knowledge of innovative uses of computer in formulation development and market analysis
CO4	To interpret computer aided biopharmaceutical characterization using computer simulations during clinical development.
CO5	To apprehend the importance of artificial intelligence, robotics and computational fluid dynamics in pharmaceutical automation.
MPH204T	**Cosmetics and Cosmeceutics**
CO1	Knowledge on regulation of cosmetics
CO2	Knowledge on biological aspects of cosmetics
CO3	Knowledge on formulation Building blocks
CO4	Knowledge on design of cosmeceutical products
CO5	Knowledge on herbal Cosmetics

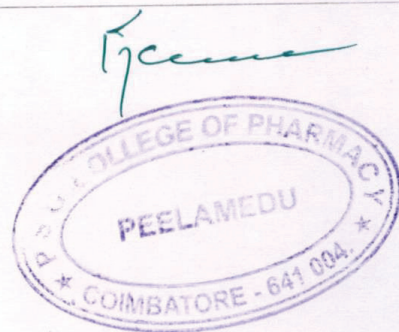| Course code	Name of the course & Course outcome
MPL101T	**Modern Pharmaceutical Analytical Techniques**
CO1	Develops ability to gain the knowledge about ICH guidelines for impurity and degradation determination in drugs.
CO2	It facilitates the students to perform the analysis of elemental impurities
CO3	Understand the basics of impurity profiling and ICH stability guidelines for biological products
CO4	Able to do the sampling and stability testing of phyto pharmaceuticals
CO5	Understand the basic principles of biological tests and immunoassays
MPL102T	**Advanced Pharmacology-I**
CO1	Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
CO2	Explain the mechanism of drug action at the organ system / subcellular/macromolecular and molecular levels.
CO3	Understand the pharmacological actions, mechanism of drug action and its relevance in the treatment of different diseases in different categories of drugs
CO4	Be aware about the pathophysiology and pharmacotherapy of certain diseases
CO5	Comprehend the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases.
MPL103T	**Pharmacological and toxicological screening methods I**
CO1	Students will be able to appraise the regulations and ethical requirement for the usage of experimental animals
CO2	Students will be able to describe the various animals used in the drug discovery process
CO3	Students will be able to describe good laboratory practices in maintenance and handling of experimental animals
CO4	Students will be able to describe the various newer pre-clinical screening methods involved in the drug discovery process
CO5	Students will be able to appreciate and correlate the preclinical data to humans
MPL104T	**CELLULAR AND MOLECULAR PHARMACOLOGY**
CO1	CO1: Explain various cellular events, functions, pathways and transduction mechanisms and how a gene is expressed
CO2	CO2: Cell signaling pathways based on receptors and second messengers in the cell
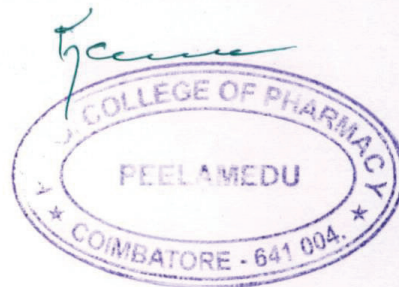
CO3	CO3: Principles and applications of genomic, proteomic tools, gene therapy and rDNA technology
CO4	CO4: Immunotherapeutics and application of omics in clinical practice
CO5	CO5: Principles and applications of various assays, biosimilars, cell culture techniques, application of flowcytometry
MPL105P	**Pharmacology Practical I**
CO1	Students were able to design & analyze the given sample of drugs using spectroscopic, chromatographic, fluorimetry and flame photometry.
CO2	Students were able to perform experiment with rodents for CNS related activities, diuretics and GI effects.
CO3	Students were able to administer drugs in the animals, withdraw blood samples and assess the efficacy & safety of the given unknown compound.
CO4	Students were able to handle molecular techniques to understand molecular biology, including in vitro cell culture techniques.
CO5	Students were able to assess the genetic alterations using molecular techniques.
MPL201T	**Advanced Pharmacology-II**
CO1	Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
CO2	Explain the mechanism of drug action at the organ system / subcellular/macromolecular and molecular levels.
CO3	Understand the pharmacological actions, mechanism of drug action and its relevance in the treatment of different diseases in different categories of drugs
CO4	Be aware about the pathophysiology and pharmacotherapy of certain diseases
CO5	Comprehend the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases.
MPL202T	**Pharmacological and toxicological screening methods II**
CO1	Students will be able to appraise the regulations and ethical requirement for the usage of experimental animals
CO2	Students will be able to describe the various animals used in the drug discovery process
CO3	Students will be able to describe good laboratory practices in maintenance and handling of experimental animals
CO4	Students will be able to describe the various newer pre-clinical screening methods involved in the drug discovery process
CO5	Students will be able to appreciate and correlate the preclinical data to humans
MPL203T	**Principles of Drug discovery**
CO1	Students were able to understand Drug discovery process and stages in the drug discovery programme.
CO2	Students were able to explain the basics of Targets, its identification, validation, protein structures & its modification in drug discovery approach.
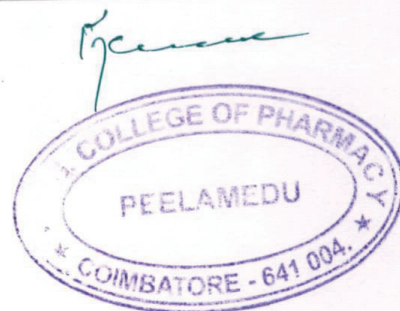
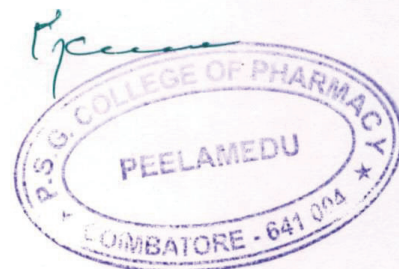|	
CO3	Students were able to develop leads and protocol to identify leads, its optimization procedures and its sources and able to differentiate lead and hits.
CO4	Drug designing protocols, application of QSAR in drug discovery and lead developments, its statistical methodology to validate QSAR equations.
CO5	Rational drug discovery, pharmacophore identification, in silico drug synthesis using softwares programmes and significance of prodrug concepts.
MPL204T	**CLINICAL RESEARCH AND PHARMACOVIGILANCE**
CO1	The students will be capable of explaining the regulatory requirement for conducting clinical trial
CO2	The students will be able to demonstrate the type of clinical trial design
CO3	The students will understand the responsibilities of key players in clinical trials
CO4	The students will understand principles of pharmacovigilance and safety monitoring system
CO5	The students will understand Pharmcoepidemiology & economics
MPL205P	**Pharmacology Practical II**
CO1	Students were able to design and perform in vitro pharmacological experiments using various isolated tissue preparations
CO2	Students were able to quantitatively estimate the biological samples using isolated tissue preparations and interpret to calculate the PD_2 & PA_2 values
CO3	Students were able to understand the OECD guidelines and perform acute toxicity studies for safety evaluations and able to interpret the pharmacokinetic profile of the given drug.
CO4	Students will able to understand Cardiovascular responses using proper experimental techniques, drug efficacy and able to design & conduct clinical trials and ADR monitoring.
CO5	Understanding the drug discovery process and able to develop a new drug through *in silico* techniques.

Name of the Course	Course outcome
Modern Pharmaceutical Analytical Techniques [Common for all branches]	
CO1	Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis using various analytical instruments
CO2	Develops ability to involve in the quantitative & qualitative chromatographic separation and analysis of drugs
CO3	It facilitates the students to perform the thermal method of analysis of drugs using different instruments
CO4	Understand the principles of Nmr, Mass, X Ray Techniques and assays
CO5	Able to do the statistical analysis using student T test,F test,chi-square test
M.Pharm Pharmacology	
Biological Standardisation and Pharmacological Screening Methods	
CO1	Students will be able to appraise the regulations and ethical requirement for the usage of experimental animals
CO2	Students will be able to describe the various animals used in the drug discovery process
CO3	Students will be able to describe good laboratory practices in maintenance and handling of experimental animals
CO4	Students will be able to describe the various newer pre-clinical screening methods involved in the drug discovery process
CO5	Students will be able to appreciate and correlate the preclinical data to humans
Drug Design and Molecular Pharmacology	
CO1	Students were able to understand drug receptor theory, physio-chemical property.
CO2	Students were able to explain the general approaches and new approaches to drug design like combinatorial chemistry, proteomics & genomics and array technology
CO3	Students were able to understand the guidelines for drug design, prodrug concepts, principles of CADD and fundamentals of QSAR and its parameters

CO4	Students will be able to explain the basics of molecular pharmacology, its application to drug design and Protein structure prediction
CO5	Students will understand the gene expression, regulation & mapping, recombinant DNA technology and gene therapy.

Pharmacology & Toxicology

CO1	Apply the basic pharmacological knowledge in the prevention and treatment of various diseases. Be aware about the pathophysiology and pharmacotherapy of certain diseases.
CO2	Understand the basic concepts, pre-clinical trials, design of clinical trials phases of clinical trials and new drug discovery process.
CO3	Explain the mechanism of drug action at the organ system / subcellular/macromolecular and molecular levels. Comprehend the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases.
CO4	Demonstrate the isolation of different organs/tissues from the laboratory animals and demonstrate the various receptor actions using isolated tissue preparation
CO5	To correlate and differentiate the normal pharmacology effects and toxicological effects of various drugs. Manage the case with basic first aids, and able to select the appropriate antidotes based upon the poisoning case.

Advances in Drug Delivery Systems

CO1	Knowledge on polymers for development of various formulations to deliver the drugs.
CO2	Knowledge on controlled drug delivery of oral, parenterals, & transdermal drug delivery.
CO3	Knowledge on ocular & mucosal drug delivery system.
CO4	Concepts of targeted drug delivery
CO5	

BPPK[biopharmaceutics and pharmacokinetics]

CO1	Understand different mechanism and factors affecting ADME processes.
CO2	Determine the effect of Pharmacokinetic (ADME) parameters on the biological effects of the drug
CO3	Understand various pharmacokinetic models and their significance in interpreting various pharmacokinetic parameters
CO4	Ability to design a basic protocol for the conduct of BA/BE study and the interpretation of the BA/BE data

CO5	Ability to use the concepts of pharmacokinetic principles in the clinical contexts
Industrial Pharmacy	
CO1	Know the design and layout of various procedures in pharmaceutical industry
CO2	Know the various pharmaceutical dosage forms and their manufacturing techniques.
CO3	Know various considerations in development of pharmaceutical dosage forms
CO4	Understand the quality control of solid, liquid and semisolid dosage forms
CO5	Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

M Pharm Pharmaceutical Analysis

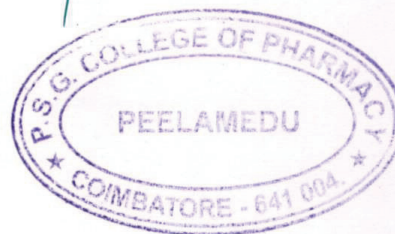|	
Pharmaceutical and cosmetic Analysis	
CO1	It facilitates the students to perform the qualitative and quantitative analysis of drugs using titrimetric methods and instrumental methods
CO2	Develops ability to gain the knowledge about ICH guidelines for impurity and related substances determination in drugs.
CO3	Understand the analysis of drugs from biological samples by various extraction techniques and stability studies as per ICH guidelines
CO4	Able to do the sampling and testing of various cosmetics in finished form by the Bureau of Indian Standards
CO5	Understand the principles of toxicity testing in cosmetics and safety legislation of cosmetic products
Advanced Pharmaceutical Analysis	
CO1	Introduction to product characterization for drug and product development. Analytical Methods development. Validation and calibration of various instruments.
CO2	Principles and procedures involved in quantitative determination, physicochemical methods of analysis including instrumental methods of analysis in some classes of drugs.
CO3	Principles and procedures involved reagents in Pharmaceutical analysis and elemental analysis
CO4	Analysis of Drugs and Excipients in solid state
CO5	Principles and Procedures involved in Biological tests and assay
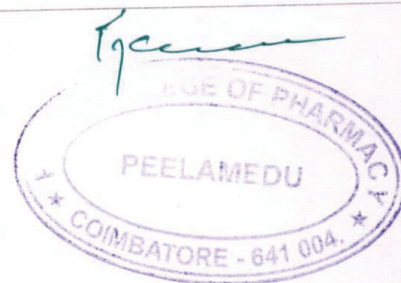
Quality control and Quality Assurance

|	
CO1	Understand the importance of TQM,GMP,ISO,organization, personnel, premises, equipment purchase specifications of raw materials in Pharmaceutical industries.
CO2	Gain knowledge about different record, documentation, SOPs, audit, quality control test for packaging materials and Good Laboratory practices
CO3	The students are explored into importance of finished product release, Good warehousing practice and distribution of records. Students learn about evaluation of complaints, Recall procedures and waste disposal procedure.
CO4	Student shall have the knowledge on regulatory aspects of pharmaceuticals, Loan License Auditing and recent amendments of drugs and cosmetics act, certification procedures.
CO5	Understand about globalization of drug industry, patent regimen and regulatory affairs

M Pharm Pharmacy Practice

Clinical Pharmacy

CO1	Comprehension on Clinical Pharmacy services with good communication skills
CO2	Develop a skill to identify and resolve medication error and ADRs
CO3	Buildup a talent to interpret the Laboratory value
CO4	Expand the knowledge to answering query & clinical research
CO5	Understanding of appropriate therapy based on PK parameters

Clinical research

CO1	Understand the new drug discovery and developmental process which also involved the world wide regulatory, ethical and practicing guidelines and requirements for good conduct of clinical trials
CO2	Knowledge on various phases of clinical trials and its process from approval to market availability which involves personals in clinical trial and able to design the study appropriately.
CO3	Knowledge on personal and documents involved in clinical trial and able to prepare required trial documents and able to initiate the clinical trial.

CO4	Knowledge on procurement and storage of investigational drugs, personal and documents involved in the clinical trial and able to conduct, monitor, close out and work appropriately in the clinical trial field.
CO5	Knowledge on quality control, data management and safety monitoring in clinical trials.
Hospital and Clinical Pharmacy	
CO1	Knowledge on community pharmacy, its services & Infrastructure and management
CO2	Knowledge on communication skills & Patient counseling
CO3	To know the Role of hospital pharmacists,committees,infrastructure&drug distribution methods in hospital
CO4	Knowledge on IV admixtures, Total parenteral nutition and Radiopharmaceuticals
CO5	Knowledge on Pharmacoepidemiology Pharmacoeconomics, its methods and their applications in health care
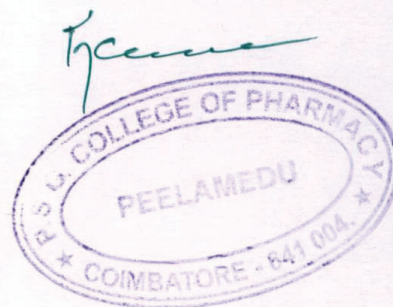
PSG COLLEGE OF PHARMACY

2.6.1. COURSE OUTCOME

Course outcome for M Pharm III Semester - Research Methodology & Biostatistics

(Common for all M Pharm programmes)

Course code	Name of the course & Course outcome
MRM 301T	**Research Methodology & Biostatistics**
CO1	Students were able to design research projects and proposals to test the candidate in preclinical and clinical testing.
CO2	To understand the basic principles and guidelines to conduct clinical trials/ clinical research
CO3	To establish, understand, functioning, utilization of laboratory animals and facilities as per CPCSEA guidelines.
CO4	To understand the basic principles of medical research, necessity and medicinal care as per international guidelines.
CO5	To apply proper statistical method for data interpretation and data management to have quality research outcome.