

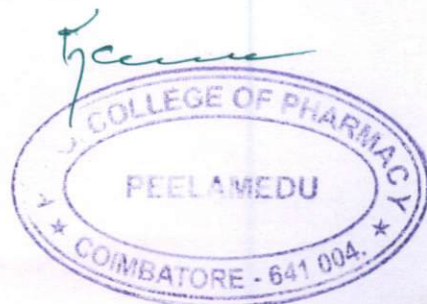


PSG COLLEGE OF PHARMACY

2.6.1. COURSE OUTCOME

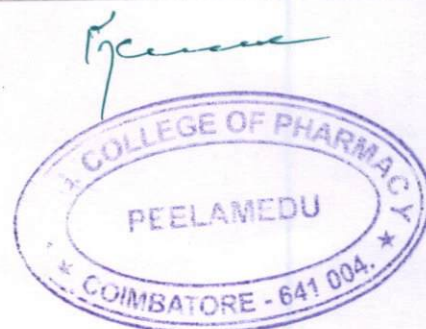
Course outcome for M Pharm (Semester) Pharmacology

| Course code | Name of the course & Course outcome  |
|-------------|--|
|             |  |
| MPL101T     | <b>Modern Pharmaceutical Analytical Techniques</b>   |
| 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     | <b>Advanced Pharmacology-I</b>   |
| 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     | <b>Pharmacological and toxicological screening methods I</b>   |
| 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     | <b>CELLULAR AND MOLECULAR PHARMACOLOGY</b>   |
| 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  |



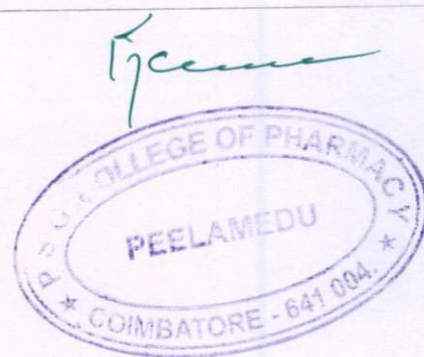


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|---------|--|
| CO3     | CO3: Principles and applications of genomic, proteomic tools, gene therapy and rDNA technology   |
| CO4     | CO4: Immunotherapeutics and application of omics in clinical practice  |
| CO5     | CO5: Principles and applications of various assays, biosimilars, cell culture techniques, application of flowcytometry                                     |
| MPL105P | <b>Pharmacology Practical I</b>  |
| 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 | <b>Advanced Pharmacology-II</b>  |
| 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 | <b>Pharmacological and toxicological screening methods II</b>  |
| 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 | <b>Principles of Drug discovery</b>  |
| 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.     |





|         |   |
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| C03     | Students were able to develop leads and protocol to identify leads, its optimization procedures and its sources and able to differentiate lead and hits.                            |
| C04     | Drug designing protocols, application of QSAR in drug discovery and lead developments, its statistical methodology to validate QSAR equations.                                      |
| C05     | Rational drug discovery, pharmacophore identification, in silico drug synthesis using softwares programmes and significance of prodrug concepts.                                    |
| MPL204T | <b>CLINICAL RESEARCH AND PHARMACOVIGILANCE</b>  |
| C01     | The students will be capable of explaining the regulatory requirement for conducting clinical trial   |
| C02     | The students will be able to demonstrate the type of clinical trial design  |
| C03     | The students will understand the responsibilities of key players in clinical trials   |
| C04     | The students will understand principles of pharmacovigilance and safety monitoring system   |
| C05     | The students will understand Pharmcoepidemiology & economics  |
| MPL205P | <b>Pharmacology Practical II</b>  |
| C01     | Students were able to design and perform in vitro pharmacological experiments using various isolated tissue preparations  |
| C02     | Students were able to quantitatively estimate the biological samples using isolated tissue preparations and interpret to calculate the $PD_2$ & $PA_2$ values                       |
| C03     | 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. |
| C04     | Students will able to understand Cardiovascular responses using proper experimental techniques, drug efficacy and able to design & conduct clinical trials and ADR monitoring.      |
| C05     | Understanding the drug discovery process and able to develop a new drug through <i>in silico</i> techniques.  |
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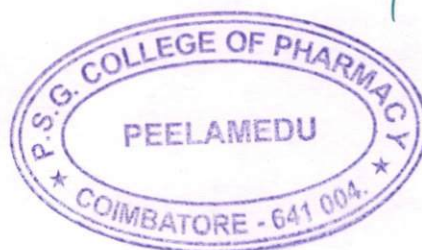


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### 2.6.1. COURSE OUTCOME

#### Course outcome for M Pharm Pharmacology (Semester)

| Course code      | Name of the course   |
|------------------|--|
| <b>MSA106.R</b>  | <b>Seminar/Assignment I</b>  |
| CO 1             | Developing presentation skills and power point slide preparation                                 |
| CO 2             | To understand the recent advancement in the field of Pharmacology                                |
| CO 3             | Acquire knowledge on the subjects other than the curriculum                                      |
| <b>MSA206.R</b>  | <b>Seminar/Assignment II</b>   |
| CO 1             | Creativity enhancement, writing skills in assignments  |
| CO 2             | Enhance knowledge on advanced technologies in the field of pharmacology                          |
| CO 3             | Ability to increase verbal/non-verbal communication skills                                       |
| <b>MJC 302.R</b> | <b>Journal Club</b>  |
| CO 1             | The students are able to understand the science behind the research article published            |
| CO 2             | The students are able to criticize the research findings   |
| CO 3             | The students are able to acquire skills on interpretation of data from scientific articles       |
| <b>MDP 303.R</b> | <b>Research proposal presentation</b>  |
| CO 1             | Understanding hypothesis setting and able to frame research hypothesis for his research          |
| CO 2             | The students are able to do literature review and understanding the gaps                         |
| CO 3             | The students are able to get trained in research plan and designing experiments                  |
| <b>MRW 304.R</b> | <b>Research work</b>   |
| CO 1             | The students are able to identify proper methodology and protocol for conducting experiments     |
| CO 2             | Knowledge on ethical aspects of research   |
| CO 3             | Ability to perform the experimental procedures and standardization                               |
| <b>MJC 401.R</b> | <b>Journal club II</b>   |
| CO 1             | The students are able to comment scientific findings and statistical analysis employed           |
| CO 2             | Sound knowledge on scientific output and pointing out flaws and mistakes in the selected article |
| CO 3             | Student can express his novelty and present the article in his perspective                       |
| <b>MRW 402.R</b> | <b>Research proposal presentation</b>  |
| CO 1             | To familiarize the research protocol and methodology   |
| CO 2             | To develop scientific writing skill  |
| CO 3             | Ability to present the research findings in forum  |
| CO 4             | To perform data analysis and interpretation  |
| CO 5             | Deriving novel concepts from research findings   |
| <b>MDP 403.R</b> | <b>Research work &amp; Colloquium</b>  |
| CO 1             | Acquire skills in troubleshooting and problem solving in research                                |
| CO 2             | Developing confidence and effective presentation of the research findings                        |
| CO 3             | Acquire skills to prepare alternate protocols/outcome in unexpected circumstances                |





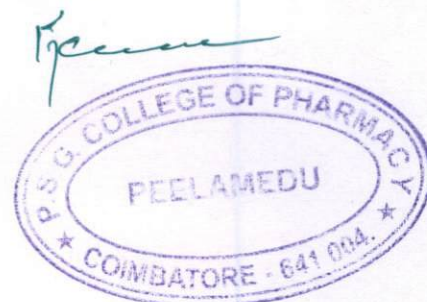


PSG COLLEGE OF PHARMACY

2.6.1. COURSE OUTCOME

Course outcome for M Pharm (Semester) Pharmaceutics

| Course code | Name of the course & Course outcome   |
|-------------|---|
| I Semester  |   |
| MPH101T     | <b>Modern Pharmaceutical Analytical Techniques</b>  |
| 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     | <b>Drug Delivery Systems</b>  |
| 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     | <b>Modern Pharmaceutics</b>   |
| 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     | <b>Regulatory Affairs</b>   |
| 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     | <b>Molecular Pharmaceutics</b>  |
| CO1         | Concept and biological events in drug targeting.  |
| CO2         | Knowledge on preparation and evaluation of nanoparticles and liposomes.   |





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|---------|--|
| C03     | Knowledge on preparation and evaluation of microspheres, Monoclonal antibodies, niosomes, aquasomes, phytosomes and electrosomes.  |
| C04     | Knowledge on propellants, preparation and evaluation of pulmonary and nasal aerosols.  |
| C05     | Knowledge on gene therapy, antisense molecules and aspartamers as drugs of future.   |
| MPH202T | <b>ABPPK</b>   |
| C01     | Broader understanding about the concepts of biopharmaceutics and pharmacokinetics.   |
| C02     | Ability to design drug product by considering various biopharmaceutical factor   |
| C03     | 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) |
| C04     | Ability to design a basic protocol for the conduct of BA/BE study and the interpretation of the BA/BE data   |
| C05     | Ability to design dosage regimens for patients based on calculated pharmacokinetic parameters  |
| MPH203T | <b>Computer Aided Drug delivery system</b>   |
| C01     | To study the role of computers and quality by design concepts in pharmaceutical research and formulation development.  |
| C02     | To learn computational modeling techniques of drug disposition   |
| C03     | To inculcate the knowledge of innovative uses of computer in formulation development and market analysis   |
| C04     | To interpret computer aided biopharmaceutical characterization using computer simulations during clinical development.   |
| C05     | To apprehend the importance of artificial intelligence, robotics and computational fluid dynamics in pharmaceutical automation.  |
| MPH204T | <b>Cosmetics and Cosmeceutics</b>  |
| C01     | Knowledge on regulation of cosmetics   |
| C02     | Knowledge on biological aspects of cosmetics   |
| C03     | Knowledge on formulation Building blocks   |
| C04     | Knowledge on design of cosmeceutical products  |
| C05     | Knowledge on herbal Cosmetics  |





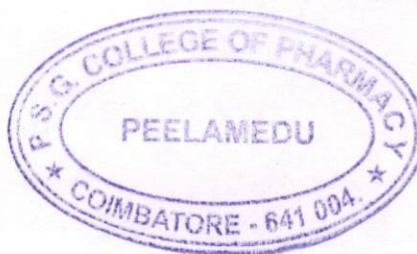


## PSG COLLEGE OF PHARMACY

### 2.6.1. COURSE OUTCOME

#### Course outcome for M Pharm Pharmaceutics (Semester)

| Course code                     | Name of the course   |
|---------------------------------|--|
| <b>MSA106.R /<br/>MSA206.R</b>  | <b>Seminar/Assignment I &amp; II</b>   |
| CO 1                            | Ability to have better communication skills, confidence in the subjects and to overcome the stage fear.      |
| CO 2                            | Developing presentation skills and power point slide preparation   |
| CO 3                            | Creativity enhancement, writing skills in assignments  |
| CO4                             | Enhance knowledge on advanced technologies in the field of Formulation.                                      |
| <b>MJC 302.R/<br/>MJC 401.R</b> | <b>Journal Club I &amp; II</b>   |
| CO 1                            | Student can express his novelty and present the article in his perspective                                   |
| CO 2                            | The students are able to understand the science behind the research article published                        |
| CO 3                            | The students are able to acquire skills on interpretation of data from scientific articles                   |
| <b>MDP 303.R/<br/>MRW 402.R</b> | <b>Research proposal presentation</b>  |
| CO 1                            | Ability to keep abreast of new knowledge and updated with current research findings through journal club     |
| CO 2                            | To motivate research in the selected topics through journal club   |
| CO 3                            | Project topic proposal presentation are monitored to check the suitability of the topic in the proposed area |
| CO4                             | To check the progress of research work in the selected area through internal evaluation                      |
| <b>MRW 304.R</b>                | <b>Research work</b>   |
| CO 1                            | The students are able to identify proper methodology and protocol for conducting experiments                 |
| CO 2                            | Knowledge on ethical aspects of research   |
| CO 3                            | Ability to perform the experimental procedures characterization  |
| CO4                             | To perform data analysis and interpretation  |
| <b>MDP 403.R</b>                | <b>Research work &amp; Colloquium</b>  |
| CO 1                            | To support the research area chosen sequentially through journal club presentation                           |
| CO 2                            | To assess the final project work completion in the selected domain   |
| CO 3                            | Developing confidence and effective presentation of the research findings                                    |







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     | <b>Modern Pharmaceutical Analytical Techniques</b>   |
| 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     | <b>Advanced Pharmaceutical Analysis</b>  |
| 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     | <b>Pharmaceutical Validation</b>   |
| 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     | <b>Food Analysis</b>   |
| 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     | <b>Pharmaceutical Analysis Practicals</b>  |
| CO1         | Analysis of pharmacopoeial compounds and their formulation by UV Vis spectrophotometer, HPLC.  |



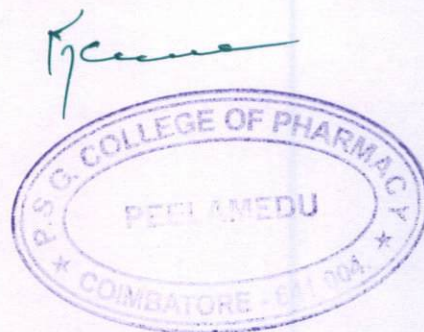


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| CO2     | Able to perform assay of compounds by titration and instrumental techniques   |
| CO3     | Learn about validation and perform calibration of analytical instruments and glass wares.   |
| CO4     |   |
| CO5     |   |
| II Sem  | Determination of different constituents, additives, preservatives in food products  |
| MPA201T | <b>Advanced Instrumental Analysis</b>   |
| 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 | <b>Modern Bio Analytical Techniques</b>   |
| 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 | <b>Quality control and Quality Assurance</b>  |
| 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  | <b>Herbal and cosmetic analysis</b>   |
| 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 evaluation of cosmetics, dental and hair products.  |





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| 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 Pharmaceutical Analysis (Semester)

| Course code                     | Name of the course  |
|---------------------------------|---|
| <b>MSA106.R /<br/>MSA206.R</b>  | <b>Seminar/Assignment I &amp; II</b>  |
| CO 1                            | A seminar develops ability to have better communication skills and become more competent in the course content drug analysis.   |
| CO 2                            | Give students the opportunity to read in depth on a topic and have better writing skills and understanding of the external issues   |
| CO 3                            | To developing teaching knowledge and class taking skill, subjective content preparation skill and give opportunity to engage in some level of peer discussion   |
| CO4                             | To gain the knowledge on protocol preparation, research hypothesis, presentation and explaining of reviewed and published research work   |
| CO5                             | To know and practice and gain the knowledge on scientific reading, writing, analysis of risk and benefits and to identify pharmaceutical care related problems.   |
| <b>MJC 302.R/<br/>MJC 401.R</b> | <b>Journal Club I &amp; II</b>  |
| CO 1                            | Literature review and practical project work develop ability to keep abreast of new knowledge & updated with current research findings through journal club.  |
| CO 2                            | To improve the skills of understanding and developing article reviewing skill, slide preparation skill and scientific writing skill in the area of analysis of drugs                                      |
| CO 3                            | To understand and gain the knowledge on legal, ethical, cultural, personal, professional and administrative subject.  |
| CO4                             | To know and gain the knowledge on scientific reading, and critically evaluate the recent articles published in the area of analysis of drugs.   |
| CO5                             | To gain the knowledge on protocol, research hypothesis, appropriateness of research design, statistics and advanced literature in the field of pharmacy.  |
| <b>MDP 303.R/<br/>MRW 402.R</b> | <b>Research proposal presentation</b>   |
| CO 1                            | To gain the knowledge on research hypothesis, aim & objective and methodology preparation for method development for analysis drugs.  |
| CO 2                            | To understand and gain the knowledge one legal, ethical, cultural, personal, professional and administrative subject.   |
| CO 3                            | To gain the knowledge on protocol preparation, research hypothesis and data analysis and presentation for quality control studies.  |
| CO4                             | To gain the knowledge on scientific review, article selection and record the evidence based publishing work.  |
| CO5                             | To gain the knowledge on research feasibility, sample selection, inclusion /exclusion and application of statistics.  |
| <b>MRW 304.R</b>                | <b>Research work</b>  |
| CO 1                            | To impart knowledge about recent advances in the fields of quality control of drugs.  |
| CO 2                            | Develop theoretical and practical skills of hyphenated instruments and developing data collection, data organization and interpretation.  |
| CO 3                            | Develop analytical skills and ability to engage in independent research in the identified domain. This hones their problem solving capabilities and enables them to think clearly in their future career. |
| CO4                             | To gain the knowledge on protocol preparation, research hypothesis and data analysis and presentation.  |
| CO5                             | To know and gain the knowledge on scientific reading, writing and publishing of   |

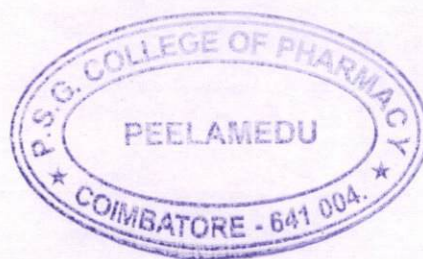


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|                  |   |
|------------------|---|
|                  | research work.  |
| <b>MDP 403.R</b> | <b>Research work &amp; Colloquium</b>   |
| CO 1             | To developing data collection, data organization and interpretation skills, data analysis in the area of community, hospital and clinical pharmacy. |
| CO 2             | To show the evidence of having made accurate description and recorded the findings of the published works of others.                                |
| CO 3             | To understand and gain the knowledge one legal, ethical, cultural, personal, professional and administrative subject.                               |
| CO4              | To develop the preparation and presentation skill, depending skill. In addition to analyze and discuss the research knowledge.                      |
| CO5              | To know and gain the knowledge on scientific reading, writing and publishing of research work.  |

*K. S. S. S.*





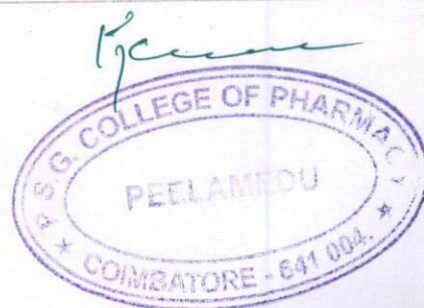


PSG COLLEGE OF PHARMACY

2.6.1. COURSE OUTCOME

Course outcome for M Pharm (Semester) Pharmacy Practice

| Course Code | Name of the subject and course outcome  |
|-------------|---|
| MPP101T     | <b>Clinical Pharmacy Practice</b>   |
| 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     | <b>Pharmacotherapeutics I</b>   |
| CO1         | Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for <b>Cardiovascular system diseases</b> .                       |
| CO2         | Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for <b>Respiratory system diseases</b> .                          |
| CO3         | Understand the disease conditions and drug therapy and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for <b>Gastrointestinal system diseases</b> .                      |
| CO4         | Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for <b>Hematological disease and bone &amp; joint disorders</b> . |
| CO5         | Understand the disease conditions and drug therapy, and ability to apply the drug knowledge on preparation of patient specific pharmacotherapeutic plan for <b>Ophthalmology and Dermatological disease</b> .             |
| MPP103T     | <b>Hospital and Community Pharmacy</b>  |
| 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      | <b>Clinical research</b>  |
| 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.                                |





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| <b>CO3</b>     | Knowledge on personal and documents involved in clinical trial and able to prepare required trial documents and able to initiate the clinical trial.  |
| <b>CO4</b>     | 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.  |
| <b>CO5</b>     | Knowledge on quality control, data management and safety monitoring in clinical trials.   |
| <b>MP105P</b>  | <b>Pharmacy Practice Practical I</b>  |
| <b>CO1</b>     | Understand the elements of pharmaceutical care, lab data interpretation, provide medicine & poison information.   |
| <b>CO2</b>     | Ability to prepare individualized therapeutic plan based on diagnosis and present clinical cases for various disease conditions   |
| <b>CO3</b>     | Knowledge on inventory control techniques, IV admixtures, Hospital formulary and preparation of patient information leaflet   |
| <b>CO4</b>     | Understand the regulatory & ethical requirements and appreciate the conduct of clinical trials  |
| <b>CO5</b>     | Ability to answer drug & poison information query   |
| <b>MPP201T</b> | <b>Principles of Quality use of Medicines</b>   |
| <b>CO1</b>     | Comprehension on Quality use of Medicines   |
| <b>CO2</b>     | Develop a skill to identify and resolve medication error and ADRs   |
| <b>CO3</b>     | Appraise the Benefits and risks associated with use of medicines  |
| <b>CO4</b>     | Expand the knowledge to apply EBM   |
| <b>CO5</b>     | Impact of Regulatory aspects in the quality use of medicines  |
| <b>MPP202T</b> | <b>Pharmacotherapeutics II</b>  |
| <b>CO1</b>     | 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.  |
| <b>CO2</b>     | 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.  |
| <b>CO3</b>     | 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. |
| <b>CO4</b>     | 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.  |
| <b>CO5</b>     | 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.  |
| <b>MPP203T</b> | <b>Clinical Pharmacokinetics and TDM</b>  |
| <b>CO1</b>     | Understand drug dosage regimen, relate plasma drug concentrations with treatment outcomes   |





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| <b>CO2</b> | Knowledge on Pharmacokinetics Interactions, Know impact of genetic polymorphism of individuals on pharmacokinetics & pharmacodynamic of drugs |
| <b>CO3</b> | To understand pharmacokinetic modeling using principles of pharmacometrics  |
| <b>CO4</b> | Knowledge on drug dosing & dosage adjustment  |
| <b>CO5</b> | To understand TDM of drugs  |
| MPP204T    | <b>PEPE</b>   |
| <b>CO1</b> | Knowledge on Pharmacoepidemiology, its methods and their applications in health care  |
| <b>CO2</b> | Knowledge in measuring the outcomes of drug use and the risk in pharmacoepidemiology  |
| <b>CO3</b> | Understand the fundamental principles of Pharmacoeconomics and its methods  |
| <b>CO4</b> | To know the cost and consequences associated with pharmacy products and pharmaceutical services   |
| <b>CO5</b> | Understand the applications of Pharmacoeconomics in various pharmacy settings   |
| MPP205P    | <b>Pharmacy Practice Practical II</b>   |
| <b>CO1</b> | CO1. Understand rational use of medicines, causality assessment of adverse drug reactions, identify and resolve medication related problems   |
| <b>CO2</b> | CO2. Ability to prepare individualized therapeutic plan based on diagnosis and present clinical cases for various disease conditions          |
| <b>CO3</b> | CO3. understand applications of pharmacokinetics in designing individualized dosage regimen and interpretation of TDM reports                 |
| <b>CO4</b> | CO4: Ability to calculate Bioavailability & Bioequivalence  |
| <b>CO5</b> | CO5. Understand various Pharmacoeconomic outcome analysis   |

*K. S. Srinivas*







## PSG COLLEGE OF PHARMACY

### 2.6.1. COURSE OUTCOME

#### Course outcome for M Pharm Pharmacy Practice (Semester)

| Course code                     | Name of the course  |
|---------------------------------|---|
| <b>MSA106.R /<br/>MSA206.R</b>  | <b>Seminar/Assignment I &amp; II</b>  |
| CO 1                            | To developing article reviewing skill, slide preparation skill and scientific writing skill in the area of community, hospital and clinical pharmacy.                       |
| CO 2                            | To developing teaching knowledge and class taking skill, subjective content preparation skill and depending skill in the area of community, hospital and clinical pharmacy. |
| CO 3                            | To developing interpretation skill, to understand the international guidelines in the field of community, hospital and clinical pharmacy.                                   |
| CO4                             | To gain the knowledge on protocol preparation, peer discussion, research hypothesis, presentation and explaining of reviewed and published research work and to identify    |
| CO5                             | To know and practice and gain the knowledge on scientific reading, writing, analysis of risk and benefits and to identify pharmaceutical care related problems.             |
| <b>MJC 302.R/<br/>MJC 401.R</b> | <b>Journal Club I &amp; II</b>  |
| CO 1                            | To know and gain the knowledge on scientific reading, and critically evaluate the recent articles published in the area of community, hospital and clinical pharmacy.       |
| CO 2                            | To improve the skills of understanding and debating current topics of active interest in their field of interest.   |
| CO 3                            | To understand and gain the knowledge on legal, ethical, cultural, personal, professional and administrative subject.  |
| CO4                             | To gain the knowledge on protocol, research hypothesis, appropriateness of research design, statistics and samples that were used.  |
| CO5                             | To more familiar with the advanced literature in the field of community, hospital and clinical pharmacy.  |
| <b>MDP 303.R/<br/>MRW 402.R</b> | <b>Research proposal presentation</b>   |
| CO 1                            | To gain the knowledge on research hypothesis, aim & objective and methodology preparation.  |
| CO 2                            | To understand and gain the knowledge one legal, ethical, cultural, personal, professional and administrative subject.   |
| CO 3                            | To gain the knowledge on protocol preparation, research hypothesis and data analysis and presentation.  |
| CO4                             | To gain the knowledge on scientific review, article selection and record the evidence based publishing work.  |
| CO5                             | To gain the knowledge on research feasibility, sample selection, inclusion /exclusion and application of statistics.  |
| <b>MRW 304.R</b>                | <b>Research work</b>  |
| CO 1                            | To developing data collection, data organization and interpretation skills in the area of community, hospital and clinical pharmacy.  |
| CO 2                            | To show the evidence of having made accurate description and recorded the findings of the published works of others.  |
| CO 3                            | To understand and gain the knowledge one legal, ethical, cultural, personal, professional and administrative subject.   |
| CO4                             | To gain the knowledge on protocol preparation, research hypothesis and data analysis and presentation.  |
| CO5                             | To know and gain the knowledge on scientific reading, writing and publishing of   |





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|                  | research work.  |
| <b>MDP 403.R</b> | <b>Research work &amp; Colloquium</b>   |
| CO 1             | To developing data collection, data organization, interpretation skills and acquire skills in troubleshooting and problem solving in analysis of drugs.   |
| CO 2             | Develop knowledge on various analytical instrumental techniques for identification, characterization and qualification of drugs.  |
| CO 3             | Develop analytical skills and ability to engage in independent research in the identified domain. This hones their problem solving capabilities and enables them to think clearly in their future career. |
| CO4              | Deriving novel concepts from research findings, To gain the knowledge on protocol preparation, research hypothesis and data analysis and presentation.  |
| CO5              | To know and gain the knowledge on scientific reading, writing and publishing of research work.  |

*K. G. S.*







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.        |

