


M. Pharm (Pharmaceutical Chemistry) 2013 Pattern (Sem I)

Advanced Analytical Techniques

Student should be able to


No	Course Outcome
1	Learn the principle, instrumentation and applications of various spectroscopic and chromatographic analytical techniques like UV-VIS spectroscopy, IR spectroscopy, Nuclear Magnetic Spectroscopy, Mass spectrometry, HPLC, GC, UPLC, SCFC, LC-MS and GC-MS
2	Learn the principle, instrumentation and applications of various thermal methods of analysis and electron microscopy
3	Elucidate the structure using UV, IR, NMR and MS spectral data.
4	Study and understand the effect of various solvents on absorption maxima of drugs and to learn the Beer's law limit of drugs in suitable solvent.
5	Learn and understand various multicomponent analysis technique by UV spectrophotometry for estimation of drugs in combined dosage form.
6	Perform assay of drugs official in various pharmacopoeias by UV spectrophotometry, titrimetry and HPLC. To perform validation of assay method as per USP and ICH guidelines.


Dr. S.S. Sonawane
(Subject I/c)

Research Methodology

Student should be able to

No.	Course Outcomes
1.	Understand Meaning and objective of research, types of research and to study preparation of research proposals and different methods of Literature survey.
2.	Study Technical writing like Research report, Research papers, Review papers, thesis writing and to acquire Presentation skills.
3.	Learn Cost analysis of the project, research organizations and procurement of research grants.
4.	Understand basic definitions/concepts of statistics like Variables and variation, sample and population, precision, accuracy and bias along with concept of Experimental design and types.
5.	Understand various parameters of Descriptive Data Analysis like and Inferential data analysis statistical measures, normal distribution, measures of relative position, measures of relationship.
6.	Learn inferential data analysis with reference to Statistical inference, the central limit theorem, parametric tests, testing statistical significance, decision making sample Z test, student's distribution (t), crossover design, variance (ANOVA) , multiple regression and correlation and nonparametric tests.


Dr. S.N. Sune
Sub I/c

M. Pharm (Pharmaceutical Chemistry) 2013 Pattern (Sem I)

Advanced Pharmaceutical Chemistry

Student should be able to

No.	Course Outcomes
1	Learn Stereochemistry & Chiral Techniques including Principles of stereochemistry, Racemic modification and their resolution, Asymmetric Synthesis
2	Understand Mechanisms, stereochemistry and applications of Molecular Rearrangements of electron deficient systems, migration to oxygen, nitrogen, and carbon;
3	Understand Reactions of importance including Hydrogenation, Reduction, Oppeneur oxidation, Free radical reaction, Allylic Bromination, Use of diazomethane and peracids in synthesis, Grignard Reaction, Ozonolysis etc. and Multi-component synthesis
4	Learn Synthon approach; Green Chemistry including Water as solvent, ionic liquids, supercritical fluids, Supported reagents and catalysts, Solvent free reactions, Microwave and Ultrasound assisted reactions; and Environment protection and effluent treatment aspects
5	Learn Experimental techniques like Fractional distillation, Vacuum distillation, Preparative chromatography
6	Perform Synthesis of different compounds and Isolation and characterization of phytochemical principles from natural origin.

DD
D.D. Rizkipathale
(Subject IIC)

Sterile Products Formulation & Technology

Student should be able to

No.	Course Outcomes
1.	Learn preformulation, general requirements, formulation principles, packaging materials used, types, choice of containers, official quality control tests and methods of evaluation for sterile products such as SVPs, LVPs.
2.	Describe classification, general requirements, formulation, and evaluation of ophthalmic product along with ocular inserts, particulate and liposome drug delivery, protein and peptide delivery
3.	Explain merits, demerits, and application of fundamental concept of Sustained Release Parenterals
4.	Acquire the knowledge and understand the layouts of parenteral and BFS /FFS is an advanced aseptic processing technology
5.	Know the different Parenteral devices with its applications and understand the number of Hazards associated with Parental Therapy
6.	Adapt the knowledge of Good manufacturing Practices and regulatory guidelines and different process involved in Large-scale sterilization, development and validation

NA
N.A. Thambore
Subject IIC

M. Pharm (Pharmaceutical Chemistry) 2013 Pattern (Sem II)

Drug Regulatory Affairs

Student should be able to

No.	Course Outcomes
1	Be familiar with Indian regulatory agencies and their modus operandi for the benefit of the society.
2	Provide knowledge of regulations governing the pharmacy profession, activities under the profession and working of different statutory bodies under the regulations.
3	Understand various certification system with special emphasis on quality, safety and efficacy.
4	Know the drug regulatory aspects for drug registration in National and International market
5	Study the different types of intellectual property rights and their benefits for the welfare of individual as well as society at large.
6	Learn American and European patent systems and treaties for intellectual property rights.

[Signature]
Dr. W. P. Patil

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Dr. D. D. Kulkarni

Advanced Medicinal Chemistry

Student should be able to

No.	Course Outcomes
1	Learn Microbial conversions of drugs like steroids, microbial production of antibiotics, enzymes, enzymes as catalyst and drug targets, enzyme immobilization techniques
2	Study advances in receptors of following classes, SAR studies of drugs and ligands belonging to following classes including mechanism of actions: Opioids, Adrenergics, Cholinergics, Histamine, 5-HT _{1A} , GABA, Drugs used in Neurodegenerative disorders, CNS depressants, neuroleptics, analeptics, CNS stimulants.
3	Study advances in receptors of following classes, SAR studies of drugs and ligands belonging to following classes including mechanism of actions; Antihyperlipidemic, Cardiotonic drugs, Antianginal agents, Antiarrhythmic agents, Antihypertensive agents, Oral hypoglycemic agents.; Chemotherapeutic Agents: Antimalarials, Anti-mycobacterials, Anti-HIV, Anti-cancer, Antibacterials, Antiamoebics, Anthelmintic and Antifungal agents; Anti-inflammatory Steroids
4	Learn Synthesis of drugs describing reaction conditions mechanism and strategies involved in the synthesis of Gefitinib, Cetrizine, Fexofenadine, Linezolid, Risperidone, Ziprasidone, Alprazolam, Ethinyl estradiol, Quetiapine; Solid phase synthesis; Gene therapy: Biomolecules (human insulin, tissue plasminogen activator (TPA) etc).
5	Study Demonstration of computer aided drug design techniques using suitable software; ADMET prediction using suitable software
6	Perform Microwave assisted synthesis, Multistep synthesis, Synthesis based on ultrasonic technique.

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D. D. Ashipalkale
(Subject ILC)

M. Pharm (Pharmaceutical Chemistry) 2013 Pattern (Sem II)

Drug Design

Student should be able to

No.	Course Outcomes
1	Understand the significance of drug design & discovery.
2	Explain approaches in rational drug design.
3	Understand various drug targets, their biochemical features, physiological & pathophysiological roles and significance in drug design
4	Explain biotransformation of pro-drug design aspect in drug design.
5	Study biological targets at molecular level, their 3D structure, binding energy and kinetics
6	Understand how current drugs were developed by using pharmacophore modeling and docking technique

Subject incharge



Dr. R. S. Koo Kate

Pharmaceutical Plant Design and Operations

Student should be able to

No.	Course Outcomes
1.	Study design, layout and operational facilities considered in the manufacturing of Pharmaceutical dosage forms like Tablets, Capsules, Liquid orals, Ointments and Dry syrups.
2.	Understand cGMP Regulatory requirements of Pharma facilities, basic requirements of Factory Act and Rules and also regulations included in revised schedule M.
3.	Know the importance of different utility services required in pharmaceutical unit operations like different types of Water, steam, Compressed air and other inert gases and also various support services required in Pharmaceutical Industries.
4.	Learn the designing and operation of Quality Control lab and related parameters like effective QMS (Quality Management System), validation protocol etc.
5.	Study the basic design of effluent treatment plant (ETP) and various treatment methods required for recycling/recovery of industrial effluent/ waste products.

Subject - incharge



Dr. R. S. Koo Kate