

Final Year B. Pharm (2008 Pattern)

Pharmaceutics-III

Student should be able to

No.	Course Outcomes
1	Learn preformulation, general requirements, packaging, GMP-Design, Q.C. of SVPs, LVPs, ophthalmic products.
2	Learn and perform (aseptic area) validation of sterilization techniques including basic concepts, types of validation, VMP, equipment; process validation.
3	Explain, merits, demerits, and application of fundamental concept of modified drug release and Novel Drug Delivery Systems.
4	Understand concept of microencapsulation, merits, demerits, types, preparation method and application
5	Understand Formulation and processing of therapeutic aerosols including recent advances, fundamentals, formulation design and stability, manufacturing techniques, product evaluation will be understood by the students.
6	Understand basic concepts and apply optimization techniques in pharmaceuticals and perform optimization of formulations.

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Dr. NA. Thakur
Subject I/C

Biopharmaceutics and Pharmacokinetics

Student should be able to

No.	Course Outcomes
1	Understand the concept of biopharmaceutics and its applications in formulation development.
2	Study pharmacokinetic processes and their relevance in efficacy of dosage form.
3	Learn the concepts of bioavailability and bioequivalence studies.
4	Learn various compartmental models and non-compartmental analysis methods.
5	Understand concept and mechanisms of dissolution and in vitro in vivo correlation.
6	Learn Mathematical and theoretical predictions of drug behavior in body based on calculations applied.


Dr. Deokar, Asst.
Subject I/C

Final Year B. Pharm (2008 Pattern)

Medicinal Chemistry – II

Student should be able to


No.	Course Outcomes
1	Understand the principles of drug design and discovery, the phases of the drug discovery and its significance in Medicinal Chemistry.
2	Understand the Structure activity relationships, mechanism of action, indications and drug interactions of antibiotics, synthetic antibacterials, antimycobacterials, antineoplastic agents, antifungal, antimalarial, antiviral, agents etc.
3	Understand the Structure activity relationships, biological activities, mechanism of action, indications and agonists, antagonists of Steroid hormones, NSAIDs, Opioid analgesics, Antihistaminics, antithyroidal agents.
4	Understand & able to explain basic synthetic schemes of drugs from various therapeutics categories.
5	Make correct use of various equipments and practice safety measures in Medicinal Chemistry laboratory.
6	Do efficiently the synthetic procedures of few drug intermediates or medicinally important compounds including their isolation and purification techniques.


D. D. Rizwafale
(Subject I/c)

Pharmaceutical Analysis-III

Student should be able to

No.	Course Outcomes
1	Understand instrumentation and applications of IR, NMR, Mass, XRD, AES, ESR, HPLC, GC, SCFC and hyphenated techniques like GC-MS, LC-MS and MS-MS etc.
2	Read, explain and analyze spectral data and implement the same to solve structure elucidation problems.
3	Handle QC data and implement the principle and theory of method validation in routine validation procedures.
4	Perform UV calibration which would make them aware about calibration protocol and test parameters.
5	Perform assay of tablets and determine the label claimed in combined dosage forms using simultaneous and Q absorbance methods.
6	Achieve expertise in data handling of spectral problems and perform structure elucidation of unknown organic compound.



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

Final Year B. Pharm (2008 Pattern)

Pharmacology-III

Student should be able to


No.	Course Outcomes
1	Study Introduction to Pharmacology of drugs used in; Cancer treatment, Cardiovascular system diseases, Kidney diseases. Study Immunopharmacology and principles of Toxicology.
2	Know various aspects of hospital pharmacy like: Hospital drug Policy, Hospital Documentation, Drug distribution in Hospitals, Patient compliance and counseling.
3	Know various types, risk factors and mechanisms of Adverse Drug reactions
4	Learn various types, risk factors and mechanisms of Drug interactions
5	Know of detail of various aspects of clinical research
6	Learn various aspects of Bioavailability, bioequivalence and Therapeutic Drug Monitoring.


P.B. Ulavant
Subject-IC

Pharmacognosy III

Student should be able to

No.	Course Outcomes
1	Define, classify and explain Pharmacognostic characteristics, name, draw and identify chemical structures, organize the biosynthetic sequence in formation of major groups, describe extraction methods of alkaloids and flavonoids.
2	Develop the knowledge about regulatory requirement for infrastructure and quality of herbal drugs.
3	Know traditional plants, their uses, ayurvedic formulations and evaluation, marine drugs and herbal cosmetics which are applicable in herbal drug technology.
4	Explain mechanism, preparation and applications of plant allergens and plant allergenic extracts, explain mechanism and examples of herbal toxicity and interaction.
5	Explain scheme for extraction, evaluation and structural elucidation of few important phytoconstituents with instrumentation techniques and design procedure for standardisation of herbal drugs with phytochemical investigation.


Dr. S.N. Sure
sub I/c

Final Year B. Pharm (2008 Pattern)

Pharmaceutical Jurisprudence

Student should be able to

No.	Course Outcomes
1	Know regulations governing the Pharmacy profession, activities under the profession and working of different statutory bodies under the regulations
2	Become familiar with various regulatory agencies and their modus operandi for the benefit of the society.
3	Know the processes and requirements for registration of drugs throughout the world.
4	Know different types of intellectual property rights and their benefits for the welfare of individual as well as society at large.
5	Protect the interest of society while conducting professional activities.
6	Learn principles of ethics in professional and social activities.

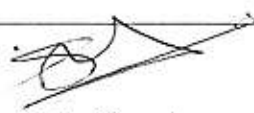

Dr. M. P. Patil

Third Year B. Pharm (2008 Pattern)

Pharmaceutics-II

Student should be able to


No.	Course Outcomes
1	Explain physico-chemical principles, formulation, additives, manufacture & evaluation, equipments, coating and defects in solid dosage forms.
2	Explain the official standards used in evaluation of tablets and capsules, formulation, evaluation, packaging and labelling of tablets and capsules.
3	Describe capsules, its types, additives, size reduction, manufacturing and evaluation, equipments used in capsule filling and empty gelatine shell formulation and defects
4	Explain disperse systems, its classification, theories of disperse system, thermodynamic vs kinetic stability consideration. Explain suspension, types, formulation development, manufacturing, excipients used, evaluation of suspension
5	Explain emulsion, their physico-chemical properties, theories of emulsification, formulation and evaluation, instabilities in emulsion
6	Explain semisolid, anatomy and physiology of skin, selection of bases, penetration enhancers, formulation development and percutaneous absorption.


Dr. D. S. Bhambere
(Subject IIC)

Pharmaceutical Biotechnology

Student should be able to

No.	Course Outcomes
1	Explore scientific and biotechnological methods to create and develop innovative drugs.
2	Comprehend the knowledge of molecular biology techniques.
3	Learn the basic functions of the elements of molecular biotechnology and pharmaceutical applications.
4	Know of enzymes and their uses by immobilization.
5	Know how In vitro cultivation of cells will solve the problems of source availability of drugs.
6	Understand the gene therapy concept.


subject incharge

(Dr. R. S. Kokate)

Third Year B. Pharm (2008 Pattern)

Medicinal Chemistry-I

Student should be able to


No.	Course Outcomes
1	Understand significance and establish relevance of Medicinal Chemistry in Pharmaceutical Sciences.
2	Establish correlation of physicochemical properties affecting drug action and pharmacokinetics.
3	Explain general aspects of the design & development of drugs including classification, nomenclature, structure activity relationship, mechanism of action, adverse effects, therapeutic uses and recent developments in diuretics and drugs acting on cardiovascular and autonomic nervous system.
4	Learn salt formation of NCEs/drugs
5	Learn reactions like condensation, benzylation
6	Learn purification techniques like recrystallization


D. D. Piskipathak
(Subject ILC)

Pharmaceutical Analysis-II

Student should be able to

No.	Course Outcomes
1	Learn various analytical methods including GM, TM with application to understand the advantages & disadvantages of instrumental analysis of various instruments including Atomic absorption & Atomic emission spectrometry, polarography, flurometry & turbidometry
2	Determine RI by Abbe's refractometer of few oils, fluorimetric estimation of quinine sulphate & riboflavin by fluorimeter
3	Understand the about chromatography & to learn various chromatographic techniques like TLC, paper & HPTLC.
4	Learn various techniques involved in analysis including DSC, TGA, DTA.


Dr. S. S. Sawane
(Subject ILC)

Third Year B. Pharm (2008 Pattern)

Pharmacology-II

Student should be able to

No.	Course Outcomes
1	explain pharmacology of drug for following system/diseases/ disorders: Autonomic Nervous system, Endocrine system, NSAIDs, Rheumatoid Arthritis, Osteoarthritis, Gout, Respiratory tract and GIT disorders.
2	explain commonly used instruments in experimental pharmacology. Care and handling of common laboratory animals, animal welfare and introduction of CPCSEA, OECD and its guidelines.
3	explain animal physiology, various routes of drug administration, anaesthetics and techniques of Euthanasia, PSS, various methods for collection of blood, body fluids and urine sample from experimental animals.
4	explain computer simulations of experiments through computerized simulated software programme using software such as X-Pharma, X-cology etc.
5	Perform Bioassay of Acetylcholine and histamine using suitable isolated tissue preparation.
6	Demonstrate analgesic activity, locomotor activity, muscle relaxant property, Haloperidol induced catalepsy, sleeping time, anticonvulsant activity, local anaesthetics effects, mitotic and mydriatic effects on rabbit eye.

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Pharmacognosy II

Student should be able to

No.	Course Outcomes
1	Identify the biological source, morphology, cultivation, collection, drying, packing, storage, and medicinal well as nonmedicinal uses of medicinal plants containing glycosides, lipids, terpenoids and tannins.
2	Explain general biosynthetic pathway for primary and secondary metabolites with structures and its elucidation techniques.
3	Explain drugs obtained from minerals, enzymes, proteins and, their sources and applications. Define plant pesticides, its classification and sources. Understand the techniques and applications of plant tissue culture.
4	perform plant material sectioning, staining, mounting & focusing; decide on staining reagents required for specific part of plant. Identify the parts of plants from its morphological & microscopical features by applying experimental & theoretical knowledge of morphology & anatomy obtained in theory classes. Draw morphological & microscopical diagrams & able to label component/parts.
5	Identify organised and unorganised drugs in powder forms with the help of microscopical and chemical evaluation techniques
6	Detect adulteration of fixed oils and to perform quality control tests for other herbal drugs.

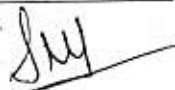
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sub I/c

Third Year B. Pharm (2008 Pattern)

Pharmaceutical Business Management

Student should be able to


No	Course Outcomes
1	Know fundamental concepts of management like planning, forecasting, organising, decision making, communicating, motivating and controlling.
2	Study importance of leadership, interview techniques, presentation skill, group discussion, recruitment, training and performance appraisal.
3	Know about pharmaceutical industry and operation management like clinical research organisation, new drug discovery, product life cycle, quality control, quality assurance and research and development in pharma industry and material management.
4	Understand pharmaceutical marketing including market research, advertising, branding, pricing, pharmaceutical export.
5	Know about industrial relations with Factories act, Labour laws, Industrial Disputes Act, lock outs, strikes, tribunals, trade unions.


Dr. S. N. Surse
(Subject I/c)

Project Work:

Student should be able to

No	Course Outcomes
1	Develop research aptitude.
2	Sharpen communication & presentation skills.
3	Provide exposure to literature survey as well as research methodology.
4	Develop and improve logical, creative, Interpretational and analytical abilities

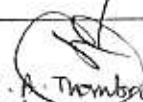

Dr. S. N. Surse
Sub I/c


Dr. S. P. Ahirrao

Second Year B. Pharm (2008 Pattern)


Physical Pharmacy:

No.	Course Outcomes
1	Know basics phenomena principles, measurements of Surface and interfacial tension, Solubility and Distribution Phenomenon, partition phenomena, etc.
2	Study states of matter and phase rule, rheology & its applications, diffusion, dissolution concept and its importance. Various laws and theories of gases and correlate them into formation of aerosols.
3	Understand about crystallization its analysis and polymorphism. Types and properties of Non-electrolyte and Electrolytic solutions, colloids and their importance in pharmaceutical formulations.
4	Understand reaction kinetics, and stabilization, accelerated stability testing, importance of particle size & its distribution in pharmaceutical formulations
5	Determine solubility, molecular weight, viscosity, Surface tension, particle size distribution of given sample, CST & effect of electrolyte on phenol-water system and construct ternary phase diagram.
6	Determine kinetic of inversion of cane sugar, CMC and HLB value of given surfactant, partition coefficient, relative strength of two acids, order of reaction, energy of activation, application of conductometry


Dr. N. A. Thombare
(Subject II)

Pharmaceutical Microbiology & Immunology:

No.	Course Outcomes
1	Classify microbes into various categories, the recent advances in microbiology, compare the microbes, know the modes of reproduction in bacteria, identify the causes and basis of microbial spoilage.
2	Know the sterilization processes, sterility testing as per I.P. and its importance, Mechanism of action & its evaluation, disinfectants. Student should know basics behind various reactions of antigen and antibody
3	Student should able to learn how to prepare and sterilize nutrient broth, nutrient agar, slants, stabs and plates, adopt the skills required for maintaining strictly aseptic condition and handling inoculating loop, its sterilization and inoculation procedure.
4	Isolation of microbes by Streak plate, Pour plate techniques, morphology studies, staining techniques.


Dr. S. N. Surse
(Subject I)

Bhujbal Knowledge City MET's Institute of Pharmacy, Nashik
Second Year B. Pharm (2008 Pattern)

Pharmaceutical Biochemistry:

No.	Course Outcomes
1	Understanding of the scope of Biochemistry in pharmacy and basic concept of Clinical Biochemistry, concept of nutrition, acid base balance and mineral metabolism
2	Understanding of the basics of biochemical morphology, biomembrane.
3	Understanding of the basics like chemistry, function, classification, biological importance applications & steps involved in metabolism of various biomolecules. e.g. proteins, carbohydrates, lipids and nucleic acid etc.
4	Clarification of the enzyme structures, their functions, mechanism for enzymatic activity with their applications and clarification of the types, their structures, biochemical functions and importance of fat-soluble and water-soluble vitamins.
5	Students should be able to understand principle behind UV spectrophotometer, colorimeter, centrifuge used in clinical biochemistry laboratory.
6	Students should be able to understand the principle involved in the detection of analytes in serum/urine /blood samples and give clinical significance of various test performed like kidney function tests, liver function test etc.

Subject Incharge

P
R
B.S.D.

Pharmaceutical Organic Chemistry-II:

No.	Course Outcomes
1	From stereochemistry and conformational study, students will gain the knowledge in stereo specificity and stereoselectivity and stability of compound.
2	The knowledge on heterocyclic compounds, their resonance structure and sites of attack of the nucleophile or electrophile.
3	Students will gain the knowledge of about the substitute for various reagents in various reactions and helpful in drug designing
4	Students will gain the knowledge related to functional group identification of organic compound.
5	Students will gain the knowledge of chromatography useful for separation of compounds.
6	The knowledge of qualitative analysis is useful for separation and purification of binary mixtures of organic compounds.

subject incharge



(Dr. R. S. Kulkarni)

Second Year B. Pharm (2008 Pattern)

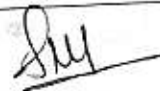
Pharmaceutical Analysis-I:

No.	Course Outcomes
1	Illuminate relevance & significance of Analytical Chemistry to Pharmaceutical Sciences.
2	Understand basic principles of data treatment and data handling.
3	Explain basic concepts and principles of aqueous acid base titrations and non-aqueous acid base titrations and perform standardization and estimation of compounds.
4	Understand different terms, types and basic principles of precipitation titrations and redox titrations and perform standardization and estimation of compounds.
5	Explain concept and reaction conditions for complexation and perform standardization and estimation of compounds.
6	Understand and explain the difference between precipitation and gravimetric analysis and perform standardization and estimation of compounds.

S. D. Pahl
(Subject etc)

Pharmacognosy-I:


No.	Course Outcomes
1	Clarify on basic tissues & tissue systems & apply that knowledge in understanding of anatomy of different parts of plant.
2	Explain need, approaches of classification along with their merits & demerits. Explain significance of internationally accepted standards of nomenclature.
3	To understand the principle of cultivation, environmental conditions and how hormones regulate the growth and inhibition of plant.
4	To understand various adulteration methods and means to detect as well as reduce it. To understand evaluation of crude drugs by its organoleptic, physical, chemical, microscopical and analytical techniques.
5	Extraction procedures with principles and applications in laboratories as well as industry.
6	Pharmaceutical significance of Carbohydrates, natural sweeteners, natural fibers and herbal dietary supplements with their pharmaceutical application


Dr. S. N. Surse
(Subject etc)

Second Year B. Pharm (2008 Pattern)


Pharmacology-I:

No.	Course Outcomes
1	Introduction to the basics of pharmacology like history, scope & general principles.
2	Understanding of different types of drugs including their use, knowledge of various routes of administration with advantages and disadvantages.
3	Understanding of new drug discovery and development process.
4	Knowledge of pharmacokinetic and pharmacodynamic parameters, knowledge of receptors and correlate them to various proteins present in the body.
5	Introduction to the principles, site, mechanisms and factors modifying drug action, drug therapy for Pediatrics, geriatrics and Pregnant as well as lactating Women.
6	Knowledge of basic principles of pathophysiology of different organ Systems


P. B. Udavant
Subject Z/C

Environmental Sciences:

No.	Course Outcomes
1	Knowledge of the basic of Environmental Sciences.
2	Able to know social Issues and the Environment.
3	Know about environmental issues related to the specific discipline for Pharmacy Course.
4	Understand the types, characteristic features, structure and function of the ecosystems.
5	Understand the basic, causes, effects and control measures of air, water, soil, marine, thermal and noise pollution
6	Understand the natural resources and their conservation.


(Dr. A. S. Kankate)