ANNAMACHARYA COLLEGE OF PHARMACY
(AUTONOMOUS)
New Boyanapalli, Rajampet, Annamayya Dist, A.P., India
Course Outcomes (CO's)
R 23 M. Pharmacy

DEPARTMENT OF PHARMACEUTICAL QUALITY ASSURANCE

SUBJECT NAME & CODE	CODE	COURSE OUTCOMES
Modern Pharmaceutical Analytical Techniques 1101 T	C1101.1	Understand the basic knowledge on assay of single and multiple component pharmaceuticals by using various analytical instruments
	C1101.2	Develop the theoretical knowledge on various instrumental techniques available for analysis of organic substances by using analytical instruments
	C1101.3	Improve skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals
	C1101.4	Interpret spectra of UV-visible, IR, NMR and Mass to identity the given compounds
	C1101.5	Describe the general methods for separation and purification of components from a mixture and their application to pharmaceutical industry.
	C1101.6	Apply the knowledge learnt in developing new procedures of their own design
Quality Management System 4101 T	C4101.1	Understand the importance of quality.
	C4101.2	Learning about ISO management systems and Tools for quality improvement.
	C4101.3	Analysis of issues in quality.
	C4101.4	Provide comprehensive knowledge Quality evaluation of pharmaceuticals.
	C4101.5	Stability testing of drug and drug substances.
	C4101.6	Statistical approaches for quality.
Quality Control & Quality Assurance 4102 T	C4102.1	Understand the responsibilities of QA & QC departments.
	C4102.2	Explain the cGMP aspects in a pharmaceutical industry.
	C4102.3	Apply the knowledge learnt in quality control tests for pharmaceuticals and containers.
	C4102.4	Appreciate the importance of documentation.
	C4102.5	Develop skills in Manufacturing operations and controls.
Produce Development & Technology Transfer	C4103.1	Explain the new product (drug) development process.

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4103 T	C4103.2	Summarize the concept of Pre-Formulation Studies.
	C4103.3	Understand the necessary information to transfer technology from R&D to actual manufacturing by sorting out various information obtained during R&D.
	C4103.4	Apply the knowledge learnt in quality control tests for pharmaceutical packaging materials.
	C4103.5	Elucidate necessary information to transfer technology of existing products between various manufacturing places.
Modern Pharmaceutical Analytical Techniques 1105 P	C1105.1	Perform quantitative & qualitative analysis of drugs using various analytical instruments like UV-visible and IR spectrophotometer and HPLC
	C1105.2	Plan and select lab experiments using appropriate analytical skills. Evaluate the quantity of a drug in a given formulation.
	C1105.3	Practice them on solving spectral problems and generate a comprehensive analytical report on the findings.
	C1105.4	Interpret spectra of UV-visible, IR, NMR and Mass to identity the given compound
	C1105.5	Explain the TQM, Six-Sigma concepts in a pharmaceutical industry
	C1105.6	Develop of Stability study protocol
Quality control & Quality Assurance Lab 4104 P	C4104.1	Explain the TQM, Six-Sigma concepts in a pharmaceutical industry
	C4104.2	Develop of Stability study protocol
	C4104.3	Perform in-process and finished product quality control tests for tablets, capsules, parenterals and semisolid dosage forms
	C4104.4	Carry out pre-formulation study for tablets, parenterals
	C4104.5	Perform quality control tests for Primary and secondary packaging materials
	C4104.6	Perform the solubility enhancement techniques for improvement of drug release of poorly water soluble drugs

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English for Research paper writing C101a	C101a.1	Develop the ability to plan and prepare a research paper by effectively using word order, structuring paragraphs, and sentences while eliminating redundancy and ambiguity.
	C101a.2	Understand and apply the essential components of a research paper, including crafting abstracts, building hypotheses, and highlighting research findings while adhering to ethical writing standards such as avoiding plagiarism.
	C101a.3	Analyze and present the literature review, research methodology, data findings, and conclusions in a structured and coherent manner.
	C101a.4	Master the skills necessary for writing an impactful title, abstract, and introduction that concisely conveys the research scope and objectives.
	C101a.5	Utilize appropriate academic language to articulate research methodology, discuss results, and construct well-reasoned arguments leading to clear and logical conclusions.
Hazard and safety Management 4201 T	C4201.1	Understand about environmental problems among learners and impart basic knowledge about the environment and its allied problems.
	C4201.2	Develop an attitude of concern for the industry environment.
	C4201.3	Ensure safety standards in pharmaceutical industry
	C4201.4	Provide comprehensive knowledge on the safety management
	C4201.5	Empower an ideas to clear mechanism and management in different kinds of hazard management system
	C4201.6	Teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere.
Pharmaceutical Manufacturing Technology 4202 T	C4202.1	The common practice in the pharmaceutical industry developments, plant layout and production planning.
	C4202.2	Will be familiar with the principles and practices of aseptic process technology.

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	C4202.3	Ensure an idea about non-sterile manufacturing technology.
	C4202.4	Provides clear information regarding packaging technology.
	C4202.5	Have a better understanding of principles and implementation of Quality by design (QbD)
	C4202.6	Understand the principles and implementation of process analytical technology (PAT) in pharmaceutical manufacturing.
Pharmaceutical validation 21SO301a	C301a.1	Explain the aspect of Qualification, Validation and Calibration.
	C301a.2	Carryout validation of manufacturing processes and analytical instruments.
	C301a.3	Validate the manufacturing facilities.
	C301a.4	Apply the knowledge of validation to analytical methods.
	C301a.5	Distinguish and Explain various forms of IPRs & apply statutory provisions to protect particular form of IPRs.
Audits and Regulatory Complinace 4203 T	C4203.1	Understand the importance of auditing in pharmaceutical industries.
	C4203.2	Understand the methodology of auditing process of different in pharmaceutical industries.
	C4203.3	Evaluate the bulk pharmaceutical chemicals and manufacturing process of tablets, capsules, sterile products and packaging in pharmaceutical industries.
	C4203.4	Summarize auditing reports for vendor, warehouse, weighing process and manufacturing process in pharmaceutical industries.
	C4203.5	Organize the check list for auditing of HVAC, water, water for Injection systems and ETP.
Pharmaceutical Manufacturing Technology Lab 4204 P	C4204.1	Prepare and evaluate the different types of semisolid dosage forms.
	C4204.2	Compare the results of evaluation tests for different marketed pharmaceutical products.
	C4204.3	Performs the Stability study testing of tablet dosage forms.
	C4204.4	Implement of Quality by design (QbD) to Product &

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		Procedure Development.
	C4204.5	Design the plant lay-out & Prepare the check list for sterile production area & water for injection.
Pharmaceutical validation 205 P	C4205.1	Perform the validation of analytical methods.
	C4205.2	Validate the manufacturing area & facilities
	C4205.3	Carryout validation of manufacturing and testing equipment's.
	C4205.4	Carryout validation of analytical instruments.
	C4205.5	Prepare the MFR and BMR.
Stress Management for Yoga C202b	C202b.1	Understand the eight parts of Ashtanga Yoga and their role in overall well-being
	C202b.2	Learn the ethical guidelines of Yam and Niyam for self-discipline and moral living
	C202b.3	Apply the dos and don'ts (Ahinsa, Satya, etc.) in daily life for personal growth and harmony
	C202b.4	Practice Asanas and Pranayama to improve physical health and breathing
	C202b.5	Recognize the benefits of yoga poses and breathing techniques for mind and body wellness.

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DEPARTMENT OF PHARMACOLOGY

SUBJECT NAME & CODE	CODE	COURSE OUTCOMES
Modern Pharmaceutical Analytical Techniques 1101 T	C1101.1	Understand the basic knowledge on assay of single and multiple component pharmaceuticals by using various analytical instruments.
	C1101.2	Develop the theoretical knowledge on various instrumental techniques available for analysis of organic substances by using analytical instruments.
	C1101.3	Improve skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals.
	C1101.4	Interpret spectra of UV-visible, IR, NMR and Mass to identity the given compound.
	C1101.5	Describe the general methods for separation and purification of components from a mixture and their application to pharmaceutical industry.
	C1101.6	Apply the knowledge learnt in developing new procedures of their own design.
Advanced Pharmacology - I 1102 T	C1102.1	Discuss the pathophysiology and pharmacotherapy of certain diseases.
	C1102.2	Explain the mechanism of drug actions at cellular and molecular level.
	C1102.3	Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases.
	C1102.4	Study the General aspects and steps involved in neurotransmission.
	C1102.5	Demonstrate the physiological and pathological role of hormones in the human body.
Clinical Pharmacology and Pharmacotherapeutics 1103 T	C1103.1	Understand the pathophysiology of selected disease states and the rationale for drug therapy.
	C1103.2	Outline the importance of preparation of individualized therapeutic plans based on diagnosis.
	C1103.3	Identify the needs to the patient-specific

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		parameters relevant in initiating drug therapy.
	C1103.4	Study the drug therapy of pediatric, geriatrics and pregnant women's.
	C1103.5	Summarize the therapeutic approach to management of various diseases.
Cellular and Molecular Pharmacology 1104 T	C1104.1	Understand the interaction of cellular components with drugs.
	C1104.2	Describe the receptor signal transduction processes.
	C1104.3	Study of the molecular pathways affected by drugs.
	C1104.4	Explain the applicability of molecular pharmacology and biomarkers in drug discovery process.
	C1104.5	Illustrate molecular biology techniques as applicable for pharmacology.
Modern Pharmaceutical Analytical Techniques 1105 P	C1105.1	Recall and relate the principle of spectroscopy, chromatography and other commonly used instrumental methods of analysis.
	C1105.2	Train the students and to give hands on training on these sophisticated instruments.
	C1105.3	Perform quantitative & qualitative analysis of drugs using various analytical instruments like UV-visible and IR spectrophotometer and HPLC.
	C1105.4	Plan and select lab experiments using appropriate analytical skills. Evaluate the quantity of a drug in a given formulation.
	C1105.5	Practice them on solving spectral problems and generate a comprehensive analytical report on the findings.
	C1105.6	Interpret spectra of UV-visible, IR, NMR and Mass to identity the given compound.
Advanced Pharmacology - I Lab 1106 P	C1106.1	Demonstrate the various routes of drug administration in experimental animals.
	C1106.2	Compute various techniques of blood sampling in experimental animals.
	C1106.3	Employ different bio assay techniques in isolated preparations of experimental animals.
	C1106.4	Practice anaesthetic techniques in

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		experimental animals.
	C1106.5	Operate dose response curve of Ach using isolated ileum/rectus abdominis muscle preparation.
English for Research paper writing C101a	C101a.1	Develop the ability to plan and prepare a research paper by effectively using word order, structuring paragraphs, and sentences while eliminating redundancy and ambiguity.
	C101a.2	Understand and apply the essential components of a research paper, including crafting abstracts, building hypotheses, and highlighting research findings while adhering to ethical writing standards such as avoiding plagiarism.
	C101a.3	Analyze and present the literature review, research methodology, data findings, and conclusions in a structured and coherent manner.
	C101a.4	Master the skills necessary for writing an impactful title, abstract, and introduction that concisely conveys the research scope and objectives.
	C101a.5	Utilize appropriate academic language to articulate research methodology, discuss results, and construct well-reasoned arguments leading to clear and logical conclusions.
Advanced Pharmacology - II 1201 T	C1201.1	Explain the mechanism of drug actions at cellular and molecular level.
	C1201.2	Discuss the Pathophysiology and pharmacotherapy of certain diseases.
	C1201.3	Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases.
	C1201.4	Understand the chemotherapystrategies of various diseases in the human body.
	C1201.5	Demonstrate the free radical pharmacology in the treatment of diseases.
Pharmacological Screening Methods & Toxicology	C1202.1	Describe the regulations and ethical requirement for the usage of experimental

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1202 T		animals.
	C1202.2	Describe the various animals used in the drug discovery process and good laboratory.
	C1202.3	Reproduce the practices in maintenance and handling of experimental animals.
	C1202.4	Describe the various newer screening methods involved in the drug discovery process.
	C1202.5	Compare and correlate the preclinical data to humans.
Principles of Drug Discovery 1203 T	C1203.1	Explain the various stages of drug discovery.
	C1203.2	Summarize the importance of the role of genomics, proteomics and bioinformatics in drug discovery.
	C1203.3	Describe various targets for drug discovery.
	C1203.4	Explain various lead seeking method and lead optimization.
	C1203.5	Memorize the importance of the role of computer aided drug design in drug discovery.
Clinical research and Pharmacovigilance 1204 T	C1204.1	Understand the regulatory requirements for conducting clinical trial.
	C1204.2	Describe the types of clinical trial designs.
	C1204.3	Discuss the responsibilities of key players involved in clinical trials.
	C1204.4	Explain the principles of Pharmacovigilance.
	C1204.5	Detect new adverse drug reactions and their assessment.
Advanced Pharmacology - II Lab 1205 P	C1205.1	Isolation and identification of DNA from various sources like Bacteria, Cauliflower, onion and Goat liver.
	C1205.2	Analysis of enzyme based *in-vitro* assays.
	C1205.3	Examine DNA fragmentation assay by agarose gel electrophoresis.
	C1205.4	Identify Enzyme inhibition and induction activity using virtual software's.
Pharmacological Screening Methods and Toxicology Lab 1206 P	C1206.1	Recall the various newer screening methods involved in the drug discovery process.
	C1206.2	Identify and correlate the preclinical data to humans.

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	C1206.3	Identify the regulations and ethical requirement for the usage of experimental animals.
	C1206.4	List the various animals used in the drug discovery process and good laboratory.
	C1206.5	Demonstrate the practices in maintenance and handling of experimental animals.
Stress Management for Yoga C202b	C202b.1	Understand the eight parts of Ashtanga Yoga and their role in overall well-being
	C202b.2	Learn the ethical guidelines of Yam and Niyam for self-discipline and moral living
	C202b.3	Apply the dos and don'ts (Ahinsa, Satya, etc.) in daily life for personal growth and harmony
	C202b.4	Practice Asanas and Pranayama to improve physical health and breathing
	C202b.5	Recognize the benefits of yoga poses and breathing techniques for mind and body wellness.

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DEPARTMENT OF PHARMACEUTICS

SUBJECT NAME & CODE	CODE	COURSE OUTCOMES
Modern Pharmaceutical Analytical Techniques 1101 T	C1101.1	Understand the basic knowledge on assay of single and multiple component pharmaceuticals by using various analytical instruments.
	C1101.2	Develop the theoretical knowledge on various instrumental techniques available for analysis of organic substances by using analytical instruments.
	C1101.3	Improve skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals.
	C1101.4	Interpret spectra of UV-visible, IR, NMR and Mass to identity the given compound.
	C1101.5	Describe the general methods for separation and purification of components from a mixture and their application to pharmaceutical industry.
	C1101.6	Apply the knowledge learnt in developing new procedures of their own design.
Advanced Physical Pharmaceutics 3101 T	C3101.1	Describe the particle size analysis method, solid dispersion, physics of tablets, polymer classification and its applications.
	C3101.2	Explain the stability calculations, shelf life calculations and accelerated stability studies.
	C3101.3	Explain the rheology, absorption related to liquids and semi-solid dosage forms.
	C3101.4	State the factors affecting the dissolution and solubility in related to *in-vitro/in-vivo* correlations.
Modern Pharmaceutics - I 3102 T	C3102.1	Explain the Preformulation parameters, apply ICH guidelines and evaluate drug, drug excipients compatibility.
	C3102.2	Explain about formulation and development, use of excipients in various solid dosage form.
	C3102.3	Describe the tablets, powders, micro-encapsules and coating techniques.
	C3102.4	Describe the capsules, advances in capsule manufacture, machines, processing and control including pharmaceutical aspects.
	C3102.5	Apply the statistical design in different

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		formulations.
Advanced Biopharmaceutics & Pharmacokinetics 3103 T	C3103.1	Understand the various factors affecting drug absorption and apply the various regulations related to developing the BA-BE study protocol for the new drug molecule.
	C3103.2	Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data of the drug following one and multi compartment models.
	C3103.3	Determine the various pharmacokinetic parameters of a drug after oral administration.
	C3103.4	Summarize the concept of non-linear and clinical pharmacokinetics and their significance.
	C3103.5	Understand the various causes of the pharmacokinetics and drug interactions.
Modern Pharmaceutics - I 3104 P	C3104.1	Perform preformulation studies for development of various dosage forms
	C3104.2	Perform the effect of compressional force on tablet disintegration time
	C3104.3	Perform the effect of particle size and binders on dissolution of tablets
	C3104.4	Compare the dissolution efficiency of various marketed pharmaceutical products
	C3104.5	Perform the Accelerated stability testing of different tablets
	C3104.6	Determine the beta cyclodextrin complexes of new drugs and rate order constants.
Modern Pharmaceutical Analytical Techniques 1105 P	C1105.1	Recall and relate the principle of spectroscopy, chromatography and other commonly used instrumental methods of analysis.
	C1105.2	Train the students and to give hands on training on these sophisticated instruments.
	C1105.3	Perform quantitative & qualitative analysis of drugs using various analytical instruments like UV-visible and IR spectrophotometer and HPLC.
	C1105.4	Plan and select lab experiments using appropriate analytical skills. Evaluate the quantity of a drug in a given formulation.
	C1105.5	Practice them on solving spectral problems and

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		generate a comprehensive analytical report on the findings.
	C1105.6	Interpret spectra of UV-visible, IR, NMR and Mass to identity the given compound.
English for Research paper writing C101a	C101a.1	Develop the ability to plan and prepare a research paper by effectively using word order, structuring paragraphs, and sentences while eliminating redundancy and ambiguity.
	C101a.2	Understand and apply the essential components of a research paper, including crafting abstracts, building hypotheses, and highlighting research findings while adhering to ethical writing standards such as avoiding plagiarism.
	C101a.3	Analyze and present the literature review, research methodology, data findings, and conclusions in a structured and coherent manner.
	C101a.4	Master the skills necessary for writing an impactful title, abstract, and introduction that concisely conveys the research scope and objectives.
	C101a.5	Utilize appropriate academic language to articulate research methodology, discuss results, and construct well-reasoned arguments leading to clear and logical conclusions.
Modern Pharmaceutics - II 3201 T	C3201.1	Understand the planning of pilot plant techniques used for all pharmaceutical dosage forms such as tablets, capsules, parenterals, aerosols, cosmetics and neutraceuticals.
	C3201.2	Describe the formulation development of parenteral dosage forms.
	C3201.3	Outline the principles and formulation aspects of various aerosol dosage forms.
	C3201.4	Explain the principles and formulation aspects of cosmetics and neutraceuticals.
	C3201.5	Understand the concept of aseptic processing and HVAC system.
Advanced Drug Delivery System 3202 T	C3202.1	Explain fundamentals of controlled drug delivery system.
	C3202.2	Describe design, fabrication, evaluation and applications of controlled drug delivery system.

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	C3202.3	Summarize on transdermal drug delivery system, ocular drug delivery system.
	C3202.4	Explainbioadhesive drug delivery system and nasal drug delivery system.
	C3202.5	Explain on vaccine delivery for immunization.
	C3202.6	Generalize on liposomes, niosomes, microsphers and nanoparticles.
Industrial Pharmacy 3203 T	C3203.1	Explain the machinery involved in mixing, milling, filtration and drying.
	C3203.2	Describe packaging material constructions used in the production of pharmaceutical materials.
	C3203.3	Represent the salient features of GMP, TQM applicable in industry.
	C3203.4	Explain the effluent treatment and prevention of pollution.
	C3203.5	Evaluate the validation of analytical methods and processes.
Nano Drug Delivery System 3204 T	C3204.1	Identify the right material for the nanoformulations.
	C3204.2	Apply the knowledge to develop nano formulations with appropriate technologies.
	C3204.3	Evaluate the product related test and for identified diseases.
	C3204.4	Understand the toxicological aspects of nanosized surfaces, particle size and stability for release of drugs.
Modern Pharmaceutics - II 3205 P	C3205.1	Develop and evaluate mouth washes, cold cream, vanishing cream, calamine lotion, foundation creams and cleansing creams.
	C3205.2	Design and evaluate antiseptic cream, Film coated tablets, floating, fast dissolving and chewable tablets.
	C3205.3	Illustrate the effect of surfactants on drug release.
	C3205.4	Develop and evaluate oral rehydration solution, calcium carbonate tablets
Advanced Drug Delivery System 3206 P	C3206.1	Develop formulation and evaluate sustained release oral matrix tablets.
	C3206.2	Develop formulation and evaluate microspheres.
	C3206.3	Develop formulation and evaluate transdermal

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		films.
	C3206.4	Develop formulation and evaluate mucoadhesive system.
	C3206.5	Develop formulation and evaluate enteric coated tablets.
Stress Management for Yoga C202b	C202b.1	Understand the eight parts of Ashtanga Yoga and their role in overall well-being
	C202b.2	Learn the ethical guidelines of Yam and Niyam for self-discipline and moral living
	C202b.3	Apply the dos and don'ts (Ahinsa, Satya, etc.) in daily life for personal growth and harmony
	C202b.4	Practice Asanas and Pranayama to improve physical health and breathing
	C202b.5	Recognize the benefits of yoga poses and breathing techniques for mind and body wellness.

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DEPARTMENT OF PHARMACEUTICAL CHEMISTRY

SUBJECT NAME & CODE	CODE	COURSE OUTCOMES
Modern Pharmaceutical Analytical Techniques 1101 T	C1101.1	Understand the basic knowledge on assay of single and multiple component pharmaceuticals by using various analytical instruments
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	C1101.3	Improve skills in selecting the suitable techniques for analysis of drugs and pharmaceuticals
	C1101.4	Interpret spectra of UV-visible, IR, NMR and Mass to identity the given compounds
	C1101.5	Describe the general methods for separation and purification of components from a mixture and their application to pharmaceutical industry.
	C1101.6	Apply the knowledge learnt in developing new procedures of their own design
Advanced Organic Chemistry - I 2101 T	C2101.1	Apply the knowledge learnt in assymetric synthesis
	C2101.2	understand the concepts of aromaticity and reaction intermediates
	C2101.3	Gain detailed knowledge regarding the reactions,mechanisms and their relative reactivity
	C2101.4	Learn mechanism of electrocyclic and pericyclic reactions
	C2101.5	Enhances the knowledge on various reactions and synthetic applications
	C2101.6	Applcation of basic knowlege of pharmaceutical chemical aspects of drugs that are in clinical use in defining, analyzing and proposing actions related to the research and implementation of new laboratory methods for detecting and monitoring diseases and effects or efficacy of the therapy.
Advanced Medicinal Chemistry - I 2102 T	C2102.1	Learn the discovery of lead molecules and rational drug discovery models
	C2102.2	Development of enzyme inhibitors

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	C2102.3	Provide insight knowledge on prodrug design and analog design
	C2102.4	Gain advanced knowledge on enzyme inhibitors
	C2102.5	Learn to explore the natural lead compounds for the treatment of diseases like cancer
	C2102.6	Understand various principles of extraction methods and factors influencing the choice of extraction
Chemistry of Natural Products 2103 T	C2103.1	Describe the extraction of plant drugs by microwave assisted synthesis ,their merits and demerits
	C2103.2	Gain advanced knowledge on importance and structural elucidation of steroids,terpenoids and antibiotics
	C2103.3	Determination of structure of aminoacids,peptides,proteins ,alkaloids and purines
	C2103.4	Summary of natural pigment s and plant hormones
	C2103.5	Recall and relate the principle of spectroscopy, chromatography and other commonly used instrumental methods of analysis
	C2103.6	Train the students and to give hands on training on these sophisticated instruments
Modern Pharmaceutical Analytical Techniques 1105 P	C1105.1	Perform quantitative & qualitative analysis of drugs using various analytical instruments like UV-visible and IR spectrophotometer and HPLC
	C1105.2	Plan and select lab experiments using appropriate analytical skills. Evaluate the quantity of a drug in a given formulation
	C1105.3	Practice them on solving spectral problems and generate a comprehensive analytical report on the findings
	C1105.4	Interpret spectra of UV-visible, IR, NMR and Mass to identity the given compound
	C1105.5	Learn advanced techniques for synthesis of various classes of drugs
	C1105.6	Learn Synthesis of CVS drugs
Advanced Medicinal	C2104.1	perform the isolation of various plant products

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Chemistry - I 2104 P	C2104.2	Characterisation of various plant products by IR,NMR and Mass
	C2104.3	Identification of degraded intermediates by microTLC
English for Research paper writing C101a	C101a.1	Develop the ability to plan and prepare a research paper by effectively using word order, structuring paragraphs, and sentences while eliminating redundancy and ambiguity.
	C101a.2	Understand and apply the essential components of a research paper, including crafting abstracts, building hypotheses, and highlighting research findings while adhering to ethical writing standards such as avoiding plagiarism.
	C101a.3	Analyze and present the literature review, research methodology, data findings, and conclusions in a structured and coherent manner.
	C101a.4	Master the skills necessary for writing an impactful title, abstract, and introduction that concisely conveys the research scope and objectives.
	C101a.5	Utilize appropriate academic language to articulate research methodology, discuss results, and construct well-reasoned arguments leading to clear and logical conclusions.
Advanced Organic Chemistry-II 2201 T	C2201.1	Memorise the applications of synthetic reagents
	C2201.2	Understand various types of catalysis like homogenous catalysis and heterogenous catalysis
	C2201.3	Understand molecular arrangements and their applications
	C2201.4	Gain the sound knowledge on chemistry of peptides
	C2201.5	Learn the principles of green chemistry
	C2201.6	Memorise the applications of synthetic reagents
Advanced Medicinal Chemistry-II 2202 T	C2202.1	Understand Role of medicinal chemistry in drug research
	C2202.2	Review the metabolism, adverse effect and therapeutic activity of drugs
	C2202.3	Familiarise to a variety of drug classes and some pharmacological properties.

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	C2202.4	Reciate the structural activity relationship of the important class of drugs
	C2202.5	Remember role of Enzyme inhibition and peptidomimetics approach and its applications
	C2202.6	Understand the mechanism of action of drugs belonging to the classes of Antihypertensive, Psychoactive. Anticonvulsant
Computer Aided Drug Design 2203 T	C2203.1	Summarize the physicochemical Properties and the techniques involved in QSAR, Understand and the Role of CADD in drug discovery
	C2203.2	Memorize the concept of molecular and quantum mechanics
	C2203.3	Compute with molecular modeling softwares to design new drug molecules
	C2203.4	Understand in silico virtual screening protocols
	C2203.5	Compare pharmacophore concept and structure based drug design methods
	C2203.6	Review homology modelling and its experimental procedures
Pharmaceutical Process Chemistry 2204 T	C2204.1	Understand various strategies of scale up process of apis and intermediates
	C2204.2	Summarise unit operations like extraction,filtration and crystallisation
	C2204.3	Learn kinetics and mechanism of nitartion,halogenation and oxidation
	C2204.4	Analysis of case studies on industrial reduction process
	C2204.5	Differentiate Aerobic and Anaerobic fermentation
	C2204.6	Understand the industrial safety process chemistry
Advanced Organic Chemistry-II Lab 2205 P	C2205.1	Understand basic principles involved in Synthesis of active pharmaceutical ingredients and reaction intermediates
	C2205.2	Evaluation of log P, MR, hydrogen bond donors and acceptors of selected drugs using softwares
	C2205.3	Compute with molecular modeling softwares to design new drug molecules

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	C2205.4	Summarize 2D and 3D QSAR studie
	C2205.5	Understand concept of virtual and docking based experiments.
	C2205.6	Calculation of ADMET properties of drug molecules
Advanced Medicinal Chemistry-II Lab 2206 P	C2206.1	Design synthetic routes that are safe, cost-effective, environmentally sustainable, and efficient.
	C2206.2	Provide insights into the development and optimization of synthetic pathways.
	C2206.3	Predict the outcomes of organic reactions based on the reactivity of functional groups and reaction mechanisms.
	C2206.4	Explore the principles and applications of modern chemical instrumentation, experimental design, and data analysis.
	C2206.5	Gain experience in modifying chemical structures to enhance pharmacological activity, stability, or selectivity using docking to
	C2206.6	Apply analytical techniques like TLC, UV-Vis, IR, and NMR to assess the purity and confirm the structures of synthesized compounds.
Stress Management for Yoga C202b	C202b.1	Understand the eight parts of Ashtanga Yoga and their role in overall well-being
	C202b.2	Learn the ethical guidelines of Yam and Niyam for self-discipline and moral living
	C202b.3	Apply the dos and don'ts (Ahinsa, Satya, etc.) in daily life for personal growth and harmony
	C202b.4	Practice Asanas and Pranayama to improve physical health and breathing
	C202b.5	Recognize the benefits of yoga poses and breathing techniques for mind and body wellness.

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M PHARMACY III SEMESTER

SUBJECT NAME & CODE	CODE	COURSE OUTCOMES
Research Methodology and Intellectual Property Rights 21DRM101	CM101.1	Understand Research Problem formulation.
	CM101.2	Analyze research Related information.
	CM101.3	Follow research ethics.
	CM101.4	Understand that today's world is controlled by computer, Information technology, but tomorrow world will be ruled by ideas, concept, and creativity.
	CM101.5	Understand that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
	CM101.6	Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.
Biological Screening Methods 0E301d	OE301d.1	Provide basic knowledge on Drug discovery process
	OE301d.2	Evaluate various Official bioassays for pharmacological activities
	OE301d.3	Describe guidelines and regulations for screening new drug molecules on experimental animals
	OE301d.4	Improve technical skills for screening of drugs for different pharmacological activities
	OE301d.5	Apply the knowledge on enzymatic screening methods

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