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C B C P
CHILKUR BALAJI COLLEGE OF PHARMAC
(Affiliated to JNTUH, Approved by PCI, Accredited by NAAC)
R.V.S. Nagar, Aziz Nagar (Post), Moinabad Road, Near: T. S. Police Academy
HYDERABAD – 500 075.

COURSE OUTCOMES OF M.PHARM (PHARMACEUTICS)
R19 REGULATIONS

M.PHARMACY (PHARMACEUTICS) I YEAR I SEMESTER	
COURSE CODE: PC I	**MODERN PHARMACEUTICS I**
CO1	To know about formulation and designing of dosage form
CO2	To know the active pharmaceutical ingredients and generic drug product development
CO3	To attain the knowledge of using excipients in different dosage forms
CO4	To know the different physical properties in preformulation.
COURSE CODE: PC II	**APPLIED BIOPHARMACEUTICS AND PHARMACOKINETICS**
CO1	To understand various ADME parameters
CO2	To understand factors effecting bioavailability and stability of dosage forms.
CO3	To know Drug interactions and problems associated in pharmacokinetic parameters.
CO4	To know bioequivalence studies and protocols to bioequivalence studies.
COURSE CODE: PE I	**DRUG REGULATORY AFFAIRS**
CO1	Know about different competent regulatory authorities globally
CO2	To be aware of technical aspects pertaining to the marketing authorisation application
CO3	To know about regulatory guidelines framed by regulatory authorities.

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CO4	Be familiar with GMP and ICH guidelines for stability testing
PE I	**ADVANCED PHYSICAL PHARMACEUTICS**
CO1	Deduce the factors affecting dissolution, and solubility in related *invitro* and *invivo* correlations.
CO2	Have knowledge about stability calculations, shelf life calculations and accelerated stability studies.
CO3	Anticipating the analysis of particle size, solid dispersion, physics of tablets, polymer classification and its applications.
CO4	Understand rheology, absorption, related to liquids and semi-solid dosage forms.
PE I	**TOTAL QUALITY MANAGEMENT**
CO1	Establish regular guidelines in GMP, GCP, GLP, USFDA, WHO, ISO etc.
CO2	Acquire vast knowledge regarding the quality control aspects of different regulatory bodies.
CO3	Regulatory requirements of single dose and repeat dose toxicity studies
CO4	To escalate the knowledge of students in various quality control and regulatory aspects.
COURSE CODE: PE II	**COSMETICS AND COSMECEUTICALS**
CO1	Expand scientific knowledge on developing cosmetics and cosmeceuticals and herbal products.
CO2	To know regulatory biological aspects of cosmetics, excipients used in various formulations.

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CO3	Perceive the knowledge of designing of cosmeceuticals and herbal products.
CO4	Sunscreen Products classifications and regulatory aspects.
PE II	**PHARMACEUTICAL VALIDATION**
CO1	Be acquainted with the knowledge of validation of instruments and equipment's.
CO2	Carry out validation of manufacturing processes
CO3	Interpretation of various methods of validation.
CO4	Application of various methodologies in pharmaceutical validation.
PE II	**STABILITY OF DRUGS AND DOSAGE FORMS**
CO1	To characterize the evaluation of stability of solutions, solids and formulations against adverse conditions.
CO2	Competency of students to retain stability and storage conditions.
CO3	Proficiency of students in retaining the efficacy of the pharmaceutical products.

CO4	Knowledge on methods of sampling and tests for various cosmetics according to bureau of Indian standards.
COURSE CODE: MC	**RESEARCH METHODOLOGY AND IPR**
CO1	To analyse the research related information.
CO2	To emphasise the need of information about intellectual property rights among students.
CO3	Figure out research problems and formulations.
CO4	Investigations of solutions research problems, data collection, analysis and interpretation of data.

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COURSE CODE: LAB I	MODERN PHARMACEUTICS I LAB
CO1	To execute the preformulation studies of solid dosage forms.
CO2	Calculate the effect of compressional force on tablet disintegration time.
CO3	Preparation and evaluation of beta cyclodextrin complexes of new drugs
CO4	Perform accelerated stability testing of different tablets.
COURSE CODE: LAB II	**APPLIED BIO PHARMACEUTICS AND PHARMACOKINETICS LAB**
CO1	Computation of pharmacokinetic parameters of one compartment oral data and two compartment IV data.
CO2	Calculation of bioavailability and bioequivalence studies.
CO3	Evaluation of drug protein binding analysis.
CO4	Construction of calibration curves of different API's by UV/HPLC/HPTLC.
COURSE CODE: AUDIT COURSE I	**ENGLISH FOR RESEARCH PAPER WRITING**
CO1	To know how to improve writing skills and level of readability.
CO2	Fathom the skills needed when writing Title Ensure the good quality of paper at very first submission.
CO3	Ascertain about what to write in each section.
CO4	Flourish with skills needed when writing methods, results, conclusions etc.
AUDIT COURSE I	**DISASTER MANAGEMENT**

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CO1	Learn to demonstrate and critical understanding of key concepts in disaster risk reduction and humanitarian response.
CO2	Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
CO3	Planning and programming in different countries, particularly their home country or the countries they work in.
CO4	Critically understand the strengths and weakness of disaster management approaches.
AUDIT COURSE I	**SANSKRIT FOR TECHNICAL KNOWLEDGE**
CO1	To obtain working knowledge in illustrious Sanskrit,the scientific language in the world.
CO2	Learning of Sanskrit to improve brain functioning.
CO3	The engineering scholars equipped with Sanskrit will be able to explore the huge knowledge from ancient literature.
CO4	Learning of Sanskrit to develop the logic in mathematics, science, and other subjects enhancing the memory power.
AUDIT COURSE I	**VALUE EDUCATION**
CO1	Sympathise value of education and self-development.
CO2	Imbibe good values in students.
CO3	Developing the overall personality.
CO4	learn the importance of character and competence.

M.PHARMACY (PHARMACEUTICS) I YEAR II SEMESTER	
COURSE CODE: PC III	**MODERN PHARMACEUTICS II**

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CO1	Perceive the planning of pilot plant techniques used for all pharmaceutical dosage forms such as tablets, capsules, parenteral, aerosols, cosmetics and nutraceuticals.
CO2	Distinguish Formulation approaches, preparation & method of manufacturing labelling & Q.C. of anti-ageing products, sun screen lotion and fairness creams.
CO3	Overview of role of nutraceuticals in cancer prevention & cardio vascular disorders.
CO4	Advances in propellants, metered dose inhaler designs, manufacture and quality control.
COURSE CODE: PC IV	**ADVANCED DRUG DELIVERY SYSTEMS**

CO1	Selection of the drugs for CDDS design of the formulation
CO2	fabrication of systems of above drug delivery systems with relevant applications.
CO3	Biochemical and molecular biology approaches to controlled drug delivery of Bioadhesive drug delivery systems
CO4	Drug targeting to particular organs lungs , brain etc
COURSE CODE: PE III	**INDUSTRIAL PHARMACY**
CO1	Explain the machinery involved in milling, mixing, filtration and drying used in production of pharmaceutical materials.
CO2	Learn salient features of GMP, TQM applicable in industry.
CO3	Understand the effluent treatments and prevention of pollution.
CO4	Evaluate the validation of analytical methods and processes.

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PE III	HERBAL COSMETICS
CO1	Gain knowledge on classification, economic aspects and regulatory provisions related to manufacture of cosmetics.
CO2	Get exposed to processes involved in manufacturing of herbal cosmetics related to skin.
CO3	Brief account on herbal extracts and herbal products of cosmetic importance.
CO4	Elaborative study of formulations related to hair care with regard to their composition and claims for various herbs used in them.
PE III	**PHARMACEUTICAL MANGEMENT**
CO1	Useful for the students to know how to manage a pharma industry.
CO2	Aids the students to develop leadership qualities, communication and interpersonal skills.
CO3	Helps to understand the concepts of managerial control and its importance in pharma industry.
CO4	Helps the students to understand various managerial functions and professional skills required for a dynamic profession.
COURSE CODE: PE IV	**NANO BASED DRUG DELIVERY SYSTEMS**
CO1	Able to apply the properties related to the fabrication of nano pharmaceuticals.
CO2	Be aware of molecular formulations based on nano technology and science behind them.

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CO3	Be able to select the right kind of materials and evaluate the product.
CO4	Improvements to medical or molecular imaging using nano technology.
PE IV	**NUTRACEUTICALS**
CO1	Recognise the occurrence and characteristic features of phytochemicals as nutraceuticals.
CO2	Know the importance of nutraceuticals in various common problems with the concept of free radicals.
CO3	Acknowledge the role of antioxidants in free radical induced disease conditions.
CO4	Expose to various food laws and regulations, health claims and dietery supplement claims.
PE IV	**CLINICAL RESEARCH AND PHARMACOVIGILANCE**
CO1	Demonstrate the types of clinical trial designs
CO2	Execute safety monitoring, reporting, and close out activities
CO3	Detect new adverse drug reactions and their assessment
CO4	Perform the adverse drug reaction reporting system and communication in pharmacovigilance.
COURSE CODE: LAB III	**MODERN PHARMACEUTICS-II**
CO1	To evaluate the effect of surfactant in invitro drug release.
CO2	Preparation and evaluation of film coated, floating, fast dissolving and chewable tablets.

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CO3	To formulate and evaluate cold cream, vanishing cream, foundation and cleansing creams.
CO4	Preparation of oral care products like mouth washes.
COURSE CODE: LAB IV	**ADVANCED DRUG DELIVERY SYSTEMS LAB**
CO1	Study on diffusion of drugs through various polymeric membranes.
CO2	Preparation and evaluation of enteric coated pellets.
CO3	To formulate and evaluate sustained release oral matrix and reservoir systems.
CO4	Compare invitro dissolution profiles of various sustained release products available in the market.
	MINI PROJECT WITH SEMINAR

CO1	Allows the students to study, do research and act by themselves using their abilities.
CO2	Improves communication skills and networking with others.
CO3	Helps in gaining expert knowledge and renewing motivational confidence.
CO4	Provides latest information in the field of science and technology.
COURSE CODE: AUDIT COURSE II	**CONSTITUTION OF INDIA**
CO1	Understanding the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
CO2	Confer the intellectual origins of the frame work of argument that informed the conceptualization of social reforms leading to revolution in India.

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CO3	Dissertate the circumstances surrounding the foundation of the congress socialist party under the leadership of Jawaharlal Nehru and eventual failure of the proposal of direct elections through adult suffrage in the Indian constitution.
CO4	Discuss the passage of the Hindu Code Bill of 1956.
AUDIT COURSE II	**PEDAGOGY STUDIES**
CO1	Figure out what pedagogical practices are being used by teachers in formal and informal class rooms in developing countries.
CO2	The evidence on the effectiveness of these pedagogical practices, in what conditions and with what population of learners.
CO3	How can teacher education, school curriculum and guidance materials best support effective pedagogy?
CO4	Identify critical evidence gaps to guide the development.
AUDIT COURSE II	**STRESS MANAGEMENT BY YOGA**
CO1	Develop healthy mind in a healthy body thus improving social health.
CO2	Improve efficiency
CO3	overcome stress.
CO4	To get well acquinted with types of pranayama.
AUDIT COURSE II	**PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS**
CO1	Study of Shrimad-Bhagwad-Geeta help the student in developing his personality and achieve the highest goal in life.
CO2	Study of neethishatakam will help in developing versatile personality of students.

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CO3	To awaken wisdom in students.
CO4	To became a person with stable mind, pleasing personality and determination.
M.PHARMACY (PHARMACEUTICS) II YEAR I SEMESTER	
COURSE CODE: PE V	**BIOSTATISTICS**
CO1	Discuss the basic concept and importance of statistical analysis.
CO2	Explain various methods of testing hypothesis.
CO3	Dissert the methods of collection of data, analysis and interpretation.
CO4	To understand the basic aspects of statistics such as central tendency, dispersion and correlation.
PE V	**SCALE UP AND TECHNOLOGY TRANSFER**
CO1	Manage the scale up process in pharmaceutical industry.
CO2	Assist in technology transfer.
CO3	To establish safety guidelines which prevent industrial hazards.
CO4	Be aware of process validation.
PE V	**PRODUCTION AREA DESIGN AND PACKAGING DEVELOPMENT**
CO1	To elaborate the current good manufacturing practices.
CO2	To maximise knowledge on pharmaceutical packaging and design.
CO3	To familiarise the packaging of solids, semisolids, parenterals, ophthalmic and aerosols.
CO4	To be acquainted with components of packaging and packaging materials.

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COURSE CODE: OE I	SCREENING METHODS IN PHARMACOLOGY
CO1	Know various techniques for screening of drugs for different pharmacological activities.
CO2	Aware of guidelines and regulations for screening new drug molecules on animals.
CO3	Notice the guidelines for handling animals and animal ethics for screening of drugs.
CO4	Care handling and breeding techniques of laboratory animals.
OE I	**ENTREPRENEURSHIP MANAGEMENT**
CO1	Be able to involve in the role of enterprise in national and global economy.
CO2	Able to handle entrepreneurship concepts
CO3	Should meet the demands and challenges of growth strategies and networking.
CO4	Be able to launch and organise an enterprise.
OE I	**COSMETIC SCIENCE**
CO1	Know various cosmetics their preparation, properties, MOA and uses.
CO2	Understanding the properties and evaluation of cosmetics by analytical methods.
CO3	Should be able to suggest proper usage of cosmetics.
CO4	Application of skin care products in the formulation of cosmeceuticals.

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OE I	HAZARDS AND SAFETY MANAGEMENT
CO1	should disclose environmental problems among learners.
CO2	Develop an attitude of concern for the industrial environment.
CO3	Ensure safety standards in pharmaceutical industry.
CO4	Empower ideas to clear mechanism and management in different kinds of hazard management system.
OE I	**AUDITS AND REGULATORY COMPLIANCE**
CO1	Capable of understanding the importance of auditing.
CO2	Have sound knowledge on methodology of auditing.
CO3	Understand the process of auditing in pharmaceutical industries.
CO4	Be competent with the planning process, responsibilities andadministration.
COURSE CODE: DISSERTATION	**DISSERTATION WORK REVIEW II**
CO1	Search and evaluate the available literature in your given subject or chosen topic area
CO2	Read the selected articles thoroughly and evaluate them
CO3	Organise the selected papers by looking for patterns and by developing sub topics
CO4	Analyse critically a segment of published body of knowledge through summary
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COURSE CODE: DISSERTATION	**DISSERTATION WORK REVIEW III**

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CO1	Apply knowledge and understanding in relation to the agreed area of study
CO2	Communicate in written form by integrating, analysing and applying key texts and practices
CO3	Demonstrate advanced critical research skills in relation to career development
CO4	Integrate the theory and practice in evaluation
COURSE CODE: DISSERTATION	**DISSERTATION VIVA VOCE**
CO1	Demonstrate knowledge in the program domain
CO2	Presenting views cogently and precisely
CO3	Exhibit professional etiquette suitable for career progression
CO4	Exhibit sustained curiosity and have an attitude of attention in detailing of the project

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