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M.Pharmacy 1st Year 1st Semester (Pharmaceutics): University Regulation R22

Subject code	Name of the subject	Course outcomes
	MODERN PHARMACEUTICS	CO1:-The students will. Be explain the preformulation parameters, apply ICH Guidelines and evaluate drug, drug excipients compatibility. CO2: -The students will. Be able to explain about formulation and development, use of excipients in tablets, powders, capsules, micro encapsulation and coating techniques.
	APPLIED BIOPHARMACEUTICS AND PHARMACOKINETICS	CO1-students will be able to express factors affecting the bioavailability and stability of dosage form. CO2- They also learn the bioequivalence studies and protocols for bioequivalent studies. CO3- They also evaluate the parameters for the disposition, absorption and Michaelis-Menton constants for nonlinear kinetics.
6403AA	**ADVANCED PHYSICAL PHARMACEUTICS (Core course - I)**	CO1-The students will learn particle size analysis method, solid dispersion, physics of tablets, polymer classification and its applications. CO2- student will also practice the stability calculations, shelf-life calculations and accelerated stability studies.

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		CO3-They also understand the rheology, absorption related to liquids and semisolid dosage forms with advances. CO4-They also know the factors affecting the dissolution and solubility in related to In-vitro/In-vivo correlations.
6403AG	**DRUG REGULATORY AFFAIRS (Open Elective – I)**	CO1- Students will come to know the different competent regulatory authorities globally. and be aware of technical aspects pertaining to the marketing authorization application. CO2 - The regulatory guidelines and directions framed by the regulatory authorities will be helpful to place the drug products in market for marketing approvals.
	TOTAL QUALITY MANAGEMENT	C01: - Students will be able to learn the established regulatory guidelines in GMP, GCP,GLP,USFDA,WHO,ISO.. CO2: - Students will be able to acquire knowledge regarding the quality control aspects of different regulatory bodies as per their requirements throughout the world.
	PHARMACEUTICAL VALIDATION (Core Elective – I)	Upon completion of the subject student shall be able to **CO1-**Explain the aspect of validation. **CO2-** Carryout validation of manufacturing processes.

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		CO3- Apply the knowledge of validation to instruments and equipment's. **CO4**-Validate the manufacturing facilities.
	STABILITY OF DRUGS AND DOSAGE FORMS (Open Elective - II)	**CO1-** The students should describe the evaluation of stability of solutions, solids, and formulations against adverse conditions**.** **CO2-**The students should be able to suggest the measures to retain stability and storage conditions for retaining the efficacy of the products.
	RESEARCH METHODLOGY AND IPR	CO1: - Upon completion of the subject student shall be able to Understand the research problem. CO2: - Upon completion of the subject student shall be able to know the literature studies, Plagiarism and ethics. CO3: - Upon completion of the subject student shall be able to get the knowledge about technical writing. CO4: - Upon completion of the subject student shall be able to know the Patient rights.
	MODERN PHARMACEUTICS – I (Core course - II)	CO1-Students shall explain the preformulation parameters, apply ICH guidelines and evaluate drug, drug excipients compatibility. CO2- Students also explain about formulation and development, use of excipients in tablets, powders, capsules, micro encapsules and coating techniques.

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		CO3- They also learn and apply the statistical design in different formulations
	ADVANCED DRUG DELIVERY SYSTEMS	CO1: - Students will be able to design CDDS design of the formulation, fabrication of systems of drug delivery systems.
	INDUSTRIAL PHARMACY	CO1: -Students should be able to explain the machinery involved in milling, mixing, filtration, drying and packing material constructions used in the production of pharmaceutical materials. C02 :- Students should be able salient features of GMP, TQM applicable in industry . CO3:- Students should be able to understand effluent treatments and prevent pollution. CO4 :-Student should be able to evaluate the validation of analytical methods and processs.
	HERBAL COSMETICS	**CO1** -Students will learn about the raw materials used in herbal cosmetics and get exposed to various preparations herbal cosmetics.
	NANO BASED DRUG DELIVERY SYSTEMS (Open Elective - II)	**CO1-**The students should be DELIVERY SYSTEMS (Open Elective - II) able to select the right kind of materials, able to develop nano- formulations with appropriate technologies, evaluate the product related test and for identified diseases**.**
	NUTRACEUTICALS	**CO1-**The students should be able to understand the importance of

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		Nutraceuticals in various common problems with the concept of free radicals.
	CLINICAL RESEARCH AND PHARMACOVIGILANCE	**CO1:** - Students will be able to explain the regulatory requirements for conducting clinical trial. CO2: - Students will be able to demonstrate the types of clinical trial designs. CO3: - Students will be able to explain the responsibilities of key players involved in clinical trials. CO4:- Students will be able to explain the principles the Pharmacovigilance.
	BIOSTATISTICS	**CO1:** - Students will be able to known the Biostatistics arrangement, presentation and formation of tables and charts **CO2:** - Students will be able to known the correlation and regression and application of different methods, analysis of data.
	MODERN PHARMACEUTICS – II LAB	CO1-Students shall explain the preformulation parameters, apply ICH guidelines and evaluate drug, drug excipients compatibility. CO2- Students also explain about formulation and development, use of excipients in tablets, powders, capsules.

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	ADVANCED DRUG DELIVERY SYSTEMS LAB	CO1: - Students will be able to design CDDS design of the formulation, fabrication of systems of drug delivery systems.
	SCALE UP AND TECHNOLGY TRANSFER	**CO1: -** - Students will be able to Manage the scale up process in pharmaceutical industry. CO2: - Students will be able to Assist in technology transfer. CO3: - To establish safety guidelines, which prevent industrial hazards**.**