

SULTAN-UL-ULOOM COLLEGE OF PHARMACY

(Estd. by Sultan-ul-Uloom Education Society)

Approved by AICTE & Pharmacy Council of India

Affiliated to Jawaharlal Nehru Technological University, Hyderabad

B.Pharm Program Accredited by NBA

Recognized under Section 2(f) & 12(B) of the UGC Act, 1956



Program: M. Pharm (Pharmaceutics)

Duration: 2 years

COURSE OUTCOMES

I YEAR I Semester

COURSE CODE	COURSE NAME	COURSE OUTCOMES Upon completion of this course it is expected that students shall be able to:
6603AA	Modern Pharmaceutics-I (Professional Core – I)	<p>CO 1: understand the science of Preformulation studies before developing a novel drug delivery system</p> <p>CO 2: apply ICH guidelines and evaluate drug excipient compatibility</p> <p>CO 3: gain knowledge about the use of excipients in dosage forms like tablets, powders, capsules, micro encapsules.</p> <p>CO 4: understand formulation and development of various solid dosage forms and capsules.</p> <p>CO 5: learn optimization techniques and able to apply the statistical design in different formulations.</p>
6603AB	Applied Biopharmaceutics and Pharmacokinetics (Professional Core – II)	<p>CO 1: understand the factors affecting the bioavailability and stability of dosage form. Student is able to know bioequivalence studies.</p> <p>CO 2: know the parameters for the drug disposition</p> <p>CO 3: know the parameters for the absorption of drugs</p> <p>CO 4: know the Michaelis-Menton constants for nonlinear kinetics and Clinical Pharmacokinetics</p> <p>CO 5: learn about the time dependent pharmacokinetics and drug interactions</p>
6603AC	Advanced Physical Pharmaceutics (Professional Elective – I)	<p>CO 1: acquire knowledge on polymer classification, polymer properties and its applications, mechanism of biodegradation, the stability calculations, shelf- life calculations and accelerated stability studies</p> <p>CO 2: learn about the basic principles of interactions, science behind tablet compression and consolidation</p>

		CO 3: summarize the kinetics behind the drug degradation and various factors affecting degradation of API
		CO 4: elucidate theoretical considerations of viscoelasticity, principle, instrumentation and applications of DSC and X-Ray diffraction studies.
		CO 5: enumerate the concepts of solubility and dissolution
6603AF	Cosmetics and Cosmeceuticals (Professional Elective – II)	CO 1: know the regulatory biological aspects of cosmetics
		CO 2: understand the excipients used and key building blocks in various formulations.
		CO 3: design cosmeceuticals and herbal products with desired safety and stability.
6603AJ	Research Methodology and IPR	CO 1: understand research problem formulation.
		CO 2: analyze research related information
		CO 3: follow research ethics
		CO 4: understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
		CO 5: understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
		CO 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.
660301	Modern Pharmaceutics-I Lab	CO 1: carry out Pre-formulation studies on solid dosage forms
		Co 2: study the effect of particle size and various binders on in vitro release of drug.
		CO 3: Determine the rate constants of acid and alkaline hydrolysis
		CO 4: formulate and evaluate beta cyclodextrin complexes of new drugs
		CO 5: prepare paracetamol tablets and compare the in vitro release with marketed formulation

660302	Applied Biopharmaceutics and Pharmacokinetics Lab	CO 1: compare dissolution studies of two different marketed products of same drug.
		CO 2: perform Protein binding studies of a drug and Calculation of bioavailability
		CO 3: calculate the Pharmacokinetic parameters like Ka, Ke, t _{1/2} , C _{max} , AUC, AUMC, MRT etc. from blood profile data.
		CO 4: calculate Bioavailability and Bioequivalence Studies
		CO 5: perform Permeation studies and Drug Release from semisolids
6803AM	Disaster Management Audit Course - I	CO 1: learn to demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response.
		CO 2: critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
		CO 3: develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations
		CO 4: critically understand the strengths and weaknesses of disaster management approaches
		CO 5: planning and programming in different countries, particularly their home country or the countries they work in

I YEAR II Semester

COURSE CODE	COURSE NAME	COURSE OUTCOMES Upon completion of this course it is expected that students shall be able to:
6603AV	Modern Pharmaceutics - II (Professional Core – III)	CO 1: understand the planning of pilot plant techniques used for pharmaceutical dosage forms – tablets and capsules
		CO 2: understand the planning of pilot plant techniques used for pharmaceutical dosage forms - parenteral
		CO 3: understand the planning of pilot plant techniques used for pharmaceutical dosage forms - aerosols
		CO 4: understand the planning of pilot plant techniques used for pharmaceutical dosage forms - cosmetics and nutraceuticals.
		CO 5: gain knowledge about aseptic processing operation
6603AW	Advanced Drug Delivery Systems	CO 1: understand drug delivery system through detailed information of transporting a pharmaceutical compound in the body as needed to safely achieve its desired therapeutic effect. To study about basic knowledge of the pharmacokinetic and

	(Professional Core – IV)	pharmacodynamic principles in the design of CDDS. Understand recent developments in protein and peptide for parenteral delivery approaches.
		CO 2: understand approaches, formulations, technologies, and systems for suitable drug delivery. To identify a suitable drug delivery system based on the physicochemical characteristics of drug and select a suitable polymer for formulation of the drug delivery system.
		CO 3: understand approaches, formulations, technologies and evaluation for bioadhesive, Nasal, colon drug delivery systems.
		CO 4: understand recent developments in design, formulation and evaluation of various particulate systems including nanoparticles, liposomes, microspheres, niosomes and resealed erythrocytes
		CO 5: understand the concept, events and biological process involved in drug targeting.
		Student acquire the knowledge regarding various targeted drug delivery systems including, tumour targeting, brain targeting, pulmonary drug targeting and gene therapy and identify the criteria for selection of suitable drug and polymer.
6603AX	Industrial Pharmacy (Professional Elective – III)	CO 1: explain the machinery involved in milling, mixing, filtration and drying.
		CO 2: gain knowledge of materials used in the construction of machinery and packaging materials.
		CO 3: learn salient features of GMP, TQM applicable in industry.
		CO 4: understand the effluent treatments and prevent the pollution.
		CO 5: evaluate the validation of analytical methods and processes.
6603BB	Nutraceuticals (Professional Elective – IV)	CO 1: understand the characteristic features of various phytochemicals as nutraceuticals
		CO 2: know the role of antioxidant in free radical induced disease conditions.
		CO 3: gain knowledge in food laws, regulations and claims.
660303	Modern Pharmaceutics-II Lab	CO 1: perform scale up calculations from R&D to pilot plant for the unit operations
		CO 2: prepare Injectables, Ampoules, Vials, Ophthalmic products, Eye drops, Eye ointments and Dry powder Inhalations
		CO 3: do Formulation Development and Demonstration of

		function of DPI of marketed products and Aerosol products
660304	Advanced Drug Delivery System Lab	CO 1: design formulate and evaluate microparticulate formulations.
		CO 2: formulate and evaluate sustained release systems.
		CO 3: know the effect of drug diffusion through various types of polymeric membranes.
		CO 4: compare various marketed formulations by in vitro drug release studies
		CO 5: formulate and evaluate enteric coated tablets
		CO 6: formulate and evaluate mucoadhesive drug delivery systems.
6603AK	English for Research Paper Writing Audit Course – II	CO 1: understand that how to improve your writing skills and level of readability
		CO 2: learn about what to write in each section
		CO 3: understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission

II YEAR I Semester

COURSE CODE	COURSE NAME	COURSE OUTCOMES Upon completion of this course it is expected that students shall be able to:
6603BD	Biostatistics (Professional Elective – V)	CO 1: understand the Biostatistics arrangement
		CO 2: know the presentation and formation of tables and charts
		CO 3: learn the correlation and regression
		CO 4: gain the knowledge of analysis of data
		CO 5: learn the Hypothesis testing
6603BM	Audits And Regulatory Compliance (Open Elective)	CO 1: explain the importance of auditing in the pharmaceutical industry.
		CO 2: discuss the different types of audits that are conducted in the pharmaceutical industry.
		CO 3: identify the key steps involved in the audit process.
		CO 4: gather evidence to support audit findings.
		CO 5: prepare an objective and comprehensive audit report.
		CO 6: develop a checklist to use during the audit process.