

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 (Pharmaceutical Quality Assurance)

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:
6614AA	Modern Pharmaceutical Analytical Techniques (Professional Core – I)	<p>CO 1: gain the knowledge in the Modern Analytical Techniques like chromatography w.r.t analysis of various bulk drugs and their formulations.</p> <p>CO 2: gain the knowledge in the GC, HPLC and HPTLC Analytical Techniques like chromatography w.r.t analysis of various bulk drugs and their formulations.</p> <p>CO 3: gain the knowledge in the UV-Visible and IR spectroscopic Analytical Techniques like chromatography w.r.t analysis of various bulk drugs and their formulations.</p> <p>CO 4: gain the knowledge in the NMR Analytical Techniques like chromatography w.r.t analysis of various bulk drugs and their formulations.</p> <p>CO 5: gain the knowledge in the Mass Spectroscopic Analytical Techniques like chromatography w.r.t analysis of various bulk drugs and their formulations.</p>
6614AB	Pharmaceutical Quality Control & Quality Assurance (Professional Core – II)	<p>CO 1: understand the importance of TQM, GMP, ISO, organization, personnel, premises, equipment purchase specifications of raw materials in Pharmaceutical industries.</p> <p>CO 2: gain knowledge about different record, documentation, SOPs, audit, quality control test for packaging materials and Good Laboratory practices</p> <p>CO 3: explored into importance of finished product release, Good warehousing practice and distribution of records. Students learn about evaluation of complaints, Recall procedures and waste disposal procedure.</p> <p>CO 4: have the knowledge on regulatory aspects of pharmaceuticals, Loan License Auditing and recent amendments of drugs and cosmetics act, certification procedures.</p>

		CO 5: understand about globalization of drug industry, patent regimen and regulatory affairs
6614AC	Quality Management Systems (Professional Elective – I)	CO 1: understand the importance of quality
		CO 2: understand ISO management systems and tools for quality improvement
		CO 3: understand analysis of issues in quality
		CO 4: understand quality evaluation of pharmaceuticals and Stability testing of drug and drug substances
		CO 5: understand Statistical approaches for quality
6614AH	Pharmaceutical Management (Professional Elective – II)	CO 1: to know how to manage a pharma industry and its various departments viz QA, QC, RA, Production etc.
		CO 2: develop leadership qualities, communication & interpersonal skills, decisions making, motivation, organization & various managerial functions & professional skills required for a dynamic professional.
		CO 3: understand the concept of managerial control, its levels & role, importance in pharma industry
6614AJ	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.
661401	Modern Pharmaceutical Analytical Techniques Lab	CO 1: perform assay of single components and multi components by UV Spectrophotometry
		CO 2: do experiments by HPLC
		CO 3: perform Incompatibility studies, identification and functional groups – Determination by FTIR
		CO 4: perform separation of compounds by by using paper chromatography, TLC, HPTLC Technique

		CO 5: calibrate apparatus and instruments
661402	Pharmaceutical Quality Control & Quality Assurance Lab	CO 1: perform QC tests for tablets and oral liquids and parenterals. Physicochemical tests for water 9. Solubility studies of weakly acidic and weakly basic drugs.
		CO 2: conduct Forced degradation studies of some drugs
		CO 3: Interpret spectra by IR, NMR and MASS
		CO 4: Assay of drug formulations using UV/Visible-Spectrophotometry
		CO 5: to perform physicochemical tests for water and Solubility studies of weakly acidic and weakly basic drugs.
6614AK	English for Research Paper Writing Audit Course – I	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

I YEAR II Semester

COURSE CODE	COURSE NAME	COURSE OUTCOMES
		Upon completion of this course it is expected that students shall be able to:
6614AV	Pharmaceutical Validation (Professional Core – III)	CO 1: explain the aspects of validation and qualification of equipment.
		CO 2: perform qualification of analytical instruments and glass wares.
		CO 3: learn about validation of utility systems and understand the importance of cleaning validation
		CO 4: develop proper understanding of analytical method validation ICH guidelines, USP and computerized system validation
		CO 5: learn the information about the patent laws, intellectual property rights and drug regulation in India and abroad is gained by the students
6614AW	Pharmaceutical Manufacturing Technology (Professional Core – IV)	CO 1: understand the common practice in the pharmaceutical industry developments, plant layout and production planning
		CO 2: familiar with the principles and practices of aseptic process technology, non-sterile manufacturing technology and packaging technology.

		CO 3: know about the Containers and closures for pharmaceuticals
		CO 4: understand the principles and implementation of Quality by design (QbD) and process analytical technology (PAT) in pharmaceutical manufacturing
6614AX	Hazards and Safety Management (Professional Elective – III)	CO 1: understand about environmental problems among learners.
		CO 2: impart basic knowledge about the environment and its allied problems
		CO 3: develop an attitude of concern for the industry environment and ensure safety standards in pharmaceutical industry
		CO 4: provide comprehensive knowledge on the safety management
		CO 5: empower an ideas to clear mechanism and management in different kinds of hazard management system and teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere
6614BC	Stability of Drugs and Dosage Forms (Professional Elective – IV)	CO 1: understand the drug decomposition mechanisms
		CO 2: know the Solid state chemical decomposition and Physical stability testing of dosage forms
		CO 3: know the Identification and quantitative determination of adjuvants and analysis of drugs from biological samples
		CO 4: learn the general method of analysis to determine the quality of raw materials used in cosmetic industry
		CO 5: suggest the measures to retain stability and storage conditions for retaining the efficacy of the products.
661403	Pharmaceutical Validation Lab	CO 1: validate analytical methods and equipment
		CO 2: perform Qualification of pharmaceutical testing equipment
		CO 3: conduct Cleaning validation
		CO 4: prepare master Formula Record and batch Manufacturing Record
661404	Pharmaceutical Manufacturing Technology Lab	CO 1: prepare semisolid dosage forms
		CO 2: perform comparative evaluation of different marketed products (tablets, capsules) of the same API
		CO 3: conduct stability study testing
		CO 4: study the application of QbD
		CO 5: study check list for sterile production area and water for

		injection : design of plant layout-sterile and non-sterile
6614AM	Disaster Management Audit Course – II	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

II YEAR I Semester

COURSE CODE	COURSE NAME	COURSE OUTCOMES
		Upon completion of this course it is expected that students shall be able to:
6614BD	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
6614BG	Entrepreneurship Management (Open Elective)	CO 1: define basic terms, analyse the business environment in order to identify business opportunities
		CO 2: identify the elements of success of entrepreneurial ventures
		CO 3: consider the legal and financial conditions for starting a business venture
		CO 4: evaluate the effectiveness of different entrepreneurial strategies
		CO 5: specify the basic performance indicators of entrepreneurial activity
		CO 6: explain the importance of marketing and management in small businesses venture and interpret their own business plan.