

**SNDT Women's University**  
**C. U. Shah College of Pharmacy**  
**Name of Programme: M. Pharm.**  
**SPECIALIZATION: PHARMACEUTICS**

<b>Program Outcomes</b>		
<ol style="list-style-type: none"> <li>1. To emphasize upon advanced formulation design and development techniques including controlled release, Novel Drug delivery Systems and various strategies for drug targeting and understand current trends in formulation and packaging of pharmaceuticals and newer drug delivery systems.</li> <li>2. To study the applications of modern analytical techniques and understand good manufacturing practices, quality audits, documentation and validation, Regulatory affairs, patenting procedures in pharma sector with a view to create total quality consciousness.</li> <li>3. To develop professionally competent and motivated individuals who can contribute effectively and ethically in academia, pharmaceutical industry and can also pursue higher education</li> </ol>		
<b>Program Specific Outcomes</b>		
<p>After successful completion of the program, the learners will be able to</p> <ol style="list-style-type: none"> <li>1. Apply the principles of formulation development for developing therapeutically effective and safe drug delivery systems</li> <li>2. Analyze, criticize, organize, improvise and manage documentation related to formulation development and evaluation</li> <li>3. Sustain in the field of academia, pharmaceutical industry and also opt for higher education in pharmacy</li> </ol>		
<b>Course Outcomes</b>		
<b>Semester-I</b>		
<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcomes</b>
1101	Advanced Pharmaceutics-I Theory	<p>The learners will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the advances in formulation development of pharmaceutical dosage forms and new drug delivery carriers and advancements in coating technologies.</li> <li>2. Select various excipients and polymers, design and development of novel pharmaceutical carrier systems as well as advanced pharmaceutical dosage forms such as tablets, capsules and injectables and evaluate them.</li> </ol>
1201	Advanced Pharmaceutics-I Practical	<p>The learners will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the practical aspects in formulation development and evaluation of pharmaceutical dosage forms and new pharmaceutical drug delivery carriers.</li> <li>2. Identify most appropriate excipients to be used in designing dosage forms by understanding their characteristics and evaluation.</li> </ol>

1102	Physical Pharmaceutics Theory	The learners will be able to: 1. Understand the need of preformulation studies in pharmacy, study of fundamental physicochemical properties of materials such as crystal characteristics, particles size etc., need and methods of solubility enhancement in pharmaceutical product development. 2. Understand drug dissolution and diffusion principles in biological systems, physical and chemical stability protocols as per ICH Guidelines
1103	Modern Analytical Techniques-I Theory	The learners will be able to: 1. Understand the principles and use various analytical techniques such as UV spectrophotometer, spectrofluorometer, IR spectroscopy, etc. in determining purity of compounds, quantitative as well as qualitative evaluation of drugs. 2. Use the thorough knowledge of these instrumental techniques confidently while working with R & D and Quality Control departments of industry.
1203	Modern Analytical Techniques-I Practical	The learner will be able to: 1. Use different analytical instruments used for qualitative and quantitative analysis of drugs and formulations as per Pharmacopoeial requirements 2. Identify structure of any given compounds by determination of functional groups, nature of given compound (amorphous, crystalline) as well as polymorphic forms by use of analytical instruments such FTIR, DSC, etc.
1104	Total Quality Management- Theory	The learners will be able to: 1. Understand basic principles of TQM and building quality in products using current guidelines of GLP and GMP, factors controlling four M's for quality variation in various pharmaceutical products and documentation according to revised Schedule M. 2. Deal with regulatory aspects of pharmaceuticals and bulk drug manufacturing and include applications for INDA, ANDA and Clinical Trials approval, risks associated with different occupational hazards in pharmaceutical industries and safety procedures and waste disposal techniques to be followed in pharmaceutical industries.
<b>Semester-II</b>		
2101	Advanced Pharmaceutics-II Theory	The learners will be able to: 1. Understand the developments in design and development of novel and advanced drug delivery systems using specialized excipients and approaches 2. Identify and understand the evaluation of novel and advanced drug delivery systems

2201	Advanced Pharmaceutics-II Practical	The learners will be able to: 1. Understand the practical aspects in formulation development of pharmaceutical dosage forms and novel drug delivery carriers. 2. Encompass the development of formulations, selection of various excipients and evaluation of novel carrier systems
2102	Industrial pharmacy Theory	The learners will be able to: 1. Understand various unit operations and processes carried out during development of various pharmaceutical dosage forms. 2. Gain knowledge of the newer techniques and pharmaceutical process parameters and operations
2103	Modern Analytical Techniques-II Theory	The learners will be able to: 1. Understand the basic principles and advances of various techniques of chromatographic separation of mixtures of organic compounds 2. Elucidate the structure of separated constituents after chromatography
2203	Modern Analytical Techniques-II Practical	The learners will be able to: 1. Develop various analytical methods for quantitative estimation of drugs from formulations 2. Identify impurities in synthetic samples and/or plant extracts and implement pharmacopoeial requirements
2104	Packaging Development- Theory	The learners will be able to: 1. Understand the importance of packaging in pharmaceutical product development 2. Gain knowledge of protective function of commonly used packaging materials, their limitations and possible interactions with various drugs and help in choosing appropriate pharmaceutical packaging
<b>Semester-III</b>		
3101	Computing & Statistics	The learners will be able to: 1. Use of computer systems to access and retrieve information and develop an understanding of various application softwares with respect to pharmaceutical sciences for drug discovery, drug design, formulation development, production and Quality Assurance, QSAR for drug modelling and simulation of data 2. Understand concept of statistics as applied to pharmaceutical data, to analyze and interpret the data and factorial designs
3102	Pharmacokinetics & Biopharmaceutics	The learners will be able to: 1. Quantify drug absorption, distribution, biotransformation and excretion and determine the pharmacokinetic parameters 2. Calculate dosage regimens, identify drug, physiological and formulation factors that affect pharmacokinetics and dosage regimens

3103	Research Methodology	The learners will be able to: 1. Understand problem identification, its implementation and evaluation and also introduce various research funding agencies for pharmacy. 2. Introduce different methods of assessment and concepts of basic research and give a brief overview of formation of research problems. 3. Apply concepts of mathematical and experimental modeling and types involved in processes of formulation of model based on simulation.
3104	Research Seminar	The learners will be able to: 1. Collect and collate scientific data on recent topics in Pharmaceutics and prepare presentations 2. Develop aptitude, attitude, communication, presentation and soft skills
3105	Research Project	The learners will be able to: 1. Apply knowledge for development and evaluation of conventional, novel and modified drug delivery systems 2. Present the research and develop aptitude, attitude, communication, presentation and soft skills
3106	Industrial Training	The learners will be able to: 1. Gain knowledge during hands on training in the pharmaceutical industry for better understanding of career prospects and avenues available 2. Understand the working of various departments of the Pharmaceutical industry
<b>Semester-IV</b>		
4101 and 4102	Research Project	The learner will be able to: 1. Apply knowledge for development and evaluation of conventional, novel and modified drug delivery systems 2. Present the research and develop aptitude, attitude, communication, presentation and soft skills