

## **PROGRAM AND COURSE OUT COMES**

<b>S. No</b>	<b>Course Name</b>	<b>Course outcome</b>
01	Remedial Mathematics	1. Graduate will understand applications of trigonometry on co-ordinate geometry in pharmaceutical sciences. 2. Graduate will understand applications of algebra in pharmaceutical sciences. 3. Graduate shall be able to know the applications of integration and differential equations in pharmaceutical calculations. 4. Graduate shall be able to know Newton's law of cooling and Newton's law of natural growth or decay.
02	Remedial Biology	1. The graduate can able to understand the biological principles of Botany and Zoology. 2. The graduate can able to perform the experiment, which explore the basic characteristics of plants and animals
03	English knowledge and communication skills	1. Graduates can acquire satisfied language skills and were able to communicate through English language.
04	Dispensing and hospital pharmacy	1. Graduate will demonstrate knowledge of pharmaceutical science in patient health care. 2. Graduates will develop the knowledge on formulation of various dosage forms, identification of incompatibilities.
05	Pharmaceutical inorganic chemistry	1. The graduates will develop the knowledge to find out the purity of pharmaceutical substances. 2. They came to know the importance of pharmaceutical inorganic agents in certain diseases.
06	Pharmaceutical Organic chemistry I	1. Graduates will demonstrate the knowledge of the inter-link of pharmaceutical sciences with pharmaceutical organic chemistry by learning. 2. Graduates will understand IUPAC Common system of nomenclature, types of organic reactions, mechanisms, named reaction with mechanism. 3. Graduates will expertise their skills for pharmaceutical organic chemistry concepts, tools and atomic models.
07	Anatomy, physiology and health education	1. Graduate should be able to understand the anatomy and physiology of various tissues and organs of the human body. 2. Graduate can able to know about first aid and can have awareness about family planning methods. 3. Graduates can perform the hematological test and recording of physiological parameters.
08	Statistical method and computer application	1. Graduate shall be able to understand measures of central tendency dispersion, coefficient of variation, correlation & regression, normal distribution on pharmaceutical applications. 2. To know the method of testing hypothesis, ANOVA, SQC and computer applications in pharmacy.

09	Pharmaceutical engineering I	1.Possess the knowledge regarding working principles of unit operations & basic requirements to design & develop the pharmaceutical machinery.
10	Pharmaceutical organic chemistry II	1.Graduate will Understand and apply the nomenclature, basic chemistry, stereochemistry, rearrangement reaction, mechanisms of heterocyclic & other organic compounds. 2.Graduates will able to synthesize basic heterocyclic molecules, analyze, estimate organic compounds and understand the recent methods of organic synthesis
11	Physical pharmacy I	1.Graduates will understand the chemical & physical Fundamental aspects of intermolecular forces, thermodynamics, solubilisation of electrolytes & non-electrolytes, pH & tonicity that govern the <i>Invivo</i> & <i>Invitro</i> actions of pharmaceutical products.
12	Anatomy, physiology & pathophysiology	1.Graduate shall able to understand the anatomy & physiology of various organs & human body. 2.Graduate should understand the etiology & pathogenesis of specified diseases. 3.Graduate will perform the analysis of normal & abnormal constituents of urine.
13	Environmental studies	1.Graduate understands the knowledge about natural resources, ecosystem, biodiversity & its conservation. 2.Graduate will understand the management of various disasters and should have knowledge on different environment protection acts.
14	Pharmaceutical engineering II	1.Graduate understands the basic fundamentals of various unit operations required for drug formulation. 2.Apply the operating skills of pharmaceutical machinery required to work in the pharmaceutical field viz. drug
15	Pharmaceutical analysis I	1.Graduates will understand fundamentals on conventional methods of drug analysis used in laboratories and also the basic principles of other analytical techniques used in analytical chemistry. 2.Graduate understands the applications of various analytical methods to drugs & pharmaceuticals as per the standards.
16	Pharmacognosy I	1.Graduates will understand various medicinal uses of naturally occurring drugs and acquire skills to perform herbarium preparation, identification of drugs through microscopy, macroscopy, powder microscopy.
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18	Physical pharmacy II	1.Graduate will understand the physico-chemical fundamental aspects of solubility, distribution, flow of liquids & solids, complexation & interfacial phenomenon. 2.Graduate gain knowledge on formulation & stability

		aspects of dispersion systems, drug decomposition & their kinetics.
19	Pharmaceutical biochemistry	1. Graduate will acquire the knowledge and understand the importance of various metabolic pathways. 2. Demonstrate and implement the knowledge on identification of normal and abnormal constituents of urine and blood.
20	Pharmaceutical microbiology	1. Demonstrate the importance of pharmaceutical microbiology by acquiring knowledge of micro organisms and diseases caused by them and their application in pharmaceutical industry and human health. 2. Demonstrate the techniques of sterilization, identification, growth of micro organisms along with analytical aspects.
21	Pharmacognosy II	1. Graduate will understand and utilize the knowledge of various novel phytopharmaceuticals. 2. Demonstrate and utilize the knowledge and skill on identification of crude drugs by transverse section, powder microscopy and quantitative pharmacognosy. 3. Understand the production of various groups of phytopharmaceuticals by biogenesis.
22	Pharmaceutical technology I	1. Graduate acquires knowledge on various dosage forms, and their formulations, evaluation and packing. 2. Understand importance of various additives in formulation of different dosage forms and cosmetics.
23	Pharmacology I	1. Understand pharmacokinetics, pharmacodynamics, discovery and development of new drugs. 2. Understand and utilize knowledge on pharmacology of drugs acting on peripheral nervous system and central nervous system.
24	Medicinal chemistry I	1. Graduate will understand fundamentals of drug design, method of synthesis, prediction of structure, activity relationship, mechanism of action of drugs in ANS and CNS. 2. Design and implement synthesis of selected drug molecules involving multistep synthesis, perform monograph study as per pharmacopoeia
25	Pharmaceutical technology II	1. Acquire skill in preparation of different types of tablets. 2. Demonstrate the handling of equipment for evaluation and interpret the result. 3. Acquire the knowledge of processing of dosage form on large scale that suits pharma industry
26	Pharmacology II	1. Understand pharmacological aspects of drugs related to CVS, urinary system, endocrine system, respiratory system and autacoids. 2. Acquire knowledge on skill to handle and carry out animal experiments related to pharmacology.
27	Chemistry of natural drugs	1. Understand and demonstrate the knowledge of phytochemistry.

		2.Demonstrate the skill of isolation and identification of some novel phytopharmaceuticals on laboratory scale
28	Pharmaceutical jurisprudence	1.Understand laws and procedures regarding manufacturing and sale of drugs and dosage forms. 2.Acquire knowledge of various schedules and ethical responsibilities of registered pharmacist.
29	Pharmaceutical analysis II	1.Understand various modern analytical techniques for pharmaceuticals in quality control. 2.Acquire sufficient skill in handling equipments/ procedures used in qualitative and quantitative analysis of pharmaceuticals.
30	Biopharmaceutics & pharmacokinetics	1.Graduate will acquire knowledge on the factors influencing absorption, distribution, protein binding and also on pharmacokinetic models. 2.Able to calculate the pharmacokinetic parameters based on plasma level-time data & urine data. 3.Understand the importance of clinical pharmacokinetics and the bioavailability and bio equivalence studies.
31	Pharmacology III	1.The graduate understands the principles of chemotherapy and pharmacology of chemotherapeutic agent. 2.The student understands the principles of toxicology & various bioassays. 3.Demonstrate the <i>In vivo</i> and ex vivo animal experiment regarding bioassay, PA2 Values and screening of various activities like Analgesic activity by Hot plate method, Anti-inflammatory activity by plethysmometer, Anticonvulsant activity by picrotoxin induced convulsions, Anxiolytic activity by plus maze.
32	Medicinal chemistry II	1. Graduate will demonstrate the knowledge of pharmaceutical chemistry by learning structures, nomenclature, classification, mechanism of action, SAR, toxicity and uses of various Antibiotics. 2.Graduate understands the importance of vitamins and their chemical reactions and their biological roles 3. Graduates will expertise the skills for medicinal chemistry concepts, tools, software and analytical techniques.
33	Pharmacy administration	1.Graduate will gain the knowledge on various aspects of administration, marketing in pharmaceutical industry. 2.Graduate will develop management skills and leadership qualities in pharmacy.
34	Pharmaceutical biotechnology	1.Graduate will demonstrate the knowledge of interlink of pharmaceutical sciences, with bio technology by using living organisms their products applying rDNA technology and <b>software's for human health</b> . 2.Graduate expertise their skills for biotechnology concepts, tools and analytical techniques.

35	Medicinal chemistry III	<p>1. Graduate will demonstrate nomenclature, synthesis, SAR, mechanism of action, metabolism of drugs for cardiovascular disorders, diabetics, thyroid related ailments including chemotherapy for various neoplasm and cancers.</p> <p>2. Graduate expertise their skills for medicinal chemistry concepts, tools and to conclude percentage purity of official drugs specified in I.P, B.P and U.S.P.</p>
36	Pharmacognosy III	<p>1. Graduate will demonstrate the different analytical tools in the evaluation of crude drugs.</p> <p>2. Graduate will understand the current modern uses of the crude drugs.</p> <p>3. Graduate will demonstrate the skills in the study of the crude drugs.</p>
37	Clinical pharmacy and therapeutics	<p>1. Graduate understands the dosage calculations appropriate for the patient and be able to select the proper drug for health care.</p> <p>2. To understand the importance of rational prescribing of drugs and concept of essential drugs in pharmaceutical industry.</p>