



RAJMATA JIJAU SHIKSHAN PRASARAK MANDAL'S
COLLEGE OF PHARMACY (B.Pharm.)

Approved by PCI, AICTE, Govt. of Maharashtra & DTE

Affiliated to Savitribai Phule Pune University, Pune

DTE Code:- 6382 University Code:- CPHPO13150



Certified by ISO 9001-2015,
ISO : 14001-2015

Recognised as Green Educational
Campus

Hon. Shri. Vilasrao V. Lande
President

Hon. Shri. Sudhir V. Mungase
Secretary

Hon. Shri. Ajit D. Gavhane
Treasurer

Dr. Kishor S. Jain
Principal

2.6.1

Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website and attainment of POs and COs are evaluated



RAJMATA JIJAU SHIKSHAN PRASARAK MANDAL's

COLLEGE OF PHARMACY

Approved by AICTE & PCI New Delhi, DTE, Govt. of Maharashtra &

Affiliated to University of Pune

Gat No.101/102, A. Post-Dudulgaon, Post-Alandi, Tal-Haveli, Dist-Pune - 412 105

E-mail: rjspmcp123@gmail.com Web: www.rjspmpharmacy.com

Univ Id: PU/PN Pharm/286/2007 College Code:1081 DTE Code:6382



Programme Outcomes (POs) and Course Outcomes (COs)

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1. Process for establishing the Cos and POs

राजमाता जिजाऊ शिक्षण प्रसारक मंडळाचे, कॉलेज ऑफ फार्मसी

Gat No.101/102, Moshi-Alandi Road, Dudulgaon, Pune.

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2.6.1. Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website and attainment of POs and COs are evaluated (45)

Process for establishing the Cos and POs:

1. Course outcomes are designed by respective faculty based on the curriculum given by Savitribai Phule Pune University.
2. In the process of defining the Cos and POs the reference documents used are:
 - a. The syllabus copy of the Savitribai Phule Pune University, Pune.
 - b. The syllabus copy & Education Regulations Provided by PCI.
 - c. The NAAC/NBA accreditation manual for Pharmacy Programmes.
3. The course outcomes are redefined if necessary to bridge the curricular gap and program outcomes.

Mechanism for Communication of the Cos & POs:

The media in which the Course outcomes and Programme outcome statements are published are as follows:

1. The college website
2. Academic ERP (VM Edulife.)
3. The student's laboratory journals.
4. Display at prominent places in college campus.

Attainment of programme outcomes and course outcomes are evaluated by the institution:

The Pharmacy graduates are required to learn and acquire in-depth knowledge, necessary skills to take up various professional positions in the pharmaceutical sector. For practicing the pharmacy professional position the student should be trained both in theory as well in practical. The curriculum designed by Pharmacy Council of India is mainly focusing on skill development along with knowledge, on an average 70-75% of the curriculum consists of practicals which help in effective attainment of Cos and POs. The College has established a process by which the programme outcomes are measured utilizing both the direct and indirect methods

Direct assessment and evaluation methods:

The assessment method is the general type of tool to assess the Student Course Outcomes.

The direct assessment and evaluation methods adopted are as follows:

1. Internal Examination
2. External Examination

Indirect assessment and evaluation methods:

The indirect assessment and evaluation methods adopted are as follows:

1. Faculty feedback by students.
2. Co-curricular/ Extracurricular activity feedback by students.



Attainment Criteria:

- While deciding on overall attainment level 80% weightage is given to direct assessment and 20% weightage to indirect assessment through various surveys mentioned above.
- Thus the final attainment of the program outcomes from the respective course is calculated.





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2. Program Outcomes

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**Rajmata Jijau Shikshan Prasarak Mandal's College of Pharmacy,
Dudulgaon, Pune**
B. Pharmacy

#	Type	ID	Program Outcome
1	PO	PO1	Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
2	PO	PO2	Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines
3	PO	PO3	Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions
4	PO	PO4	Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations
5	PO	PO5	Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
6	PO	PO6	Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees)
7	PO	PO7	Pharmaceutical Ethics: Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions



#	Type	ID	Program Outcome
8	PO	PO8	Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions
9	PO	PO9	The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice
10	PO	PO10	Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
11	PO	PO11	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis





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3. Course Outcomes

(1. A.Y. 2021-2022)


(2. A.Y. 2020-2021)

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RJSPM's COP, Pune
Subjectwise Course Outcome - [B. Pharmacy - 2021-22]

SEM 1

BP101T Human Anatomy and Physiology I (BP101T) [Theory | Regular]

CO ID.	Course Outcome
BP101T.1	Understand the gross morphology, structure and functions of various tissues, organs of the human body and know about cellular level of organisation in body.
BP101T.2	Know about structure and functions of skin and know about in detailed information of skeletal system and joints.
BP101T.3	Know about Blood and various body fluids with their significance and disorders. Understand about Lymphatic system and its functions.
BP101T.4	Understand classification and functions of Peripheral nervous system and different sense organs of body.
BP101T.5	Understand the anatomy and physiology of circulatory system and disorders of heart.

BP102T Pharmaceutical Analysis I (BP102T) [Theory | Regular]

CO ID.	Course Outcome
BP102T.1	Understands the concept of pharmaceutical analysis, its scope and methods of expressing concentration
BP102T.2	Develop analytical skills through lab exercises to minimize errors in qualitative and quantitative analysis. Apply concept accuracy, precision, significant figures with examples.
BP102T.3	Discuss significance of quality control in pharmaceutical analysis and Employ different theories(acid base theories, Neutralization curves, indicator theory, law of mass action, Henderson Hassalbach equation).
BP102T.4	Explain basic concepts and principles of aqueous acid base titrations and clarify need of non-aqueous acid base titrations as well as acknowledge the basic principle of redox titration, precipitation titration, Complexometric titration, Gravimetric analysis.
BP102T.5	Understands the electrochemical methods of analysis including conductometry, potentiometry and polarography.
BP102T.6	Acquire the knowledge of principle and theory of refractometry, refractive index, and instruments used in determination of refractometry.

BP103T Pharmaceutics I (BP103T) [Theory | Regular]

CO ID.	Course Outcome
BP103T.1	Know the history of profession of Pharmacy
BP103T.2	Understand the various dosage form, pharmaceutical calculation
BP103T.3	Gain knowledge about various pharmaceutical incompatibility
BP103T.4	Preparation of various dosage form

BP104T Pharmaceutical Inorganic Chemistry (BP104T) [Theory | Regular]

CO ID.	Course Outcome
BP104T.1	Recite the history of Pharmacopoeia.
BP104T.2	Understand different sources of impurities & method for determining the impurities in inorganic drugs & pharmaceuticals.
BP104T.3	Recognize types of water and methods for reducing hardness of water.
BP104T.4	Understand the basic concepts of acidity & basicity, buffers and tonicity applicable in pharmaceuticals & also explain the methods of adjusting isotonicity.
BP104T.5	Acquire knowledge of various major intra and extra cellular electrolytes and their physiological role along with pharmaceutical compounds.
BP104T.6	Recall the medicinal and pharmaceutical importance of inorganic compounds.
BP104T.7	Explain various aspects of radiopharmaceuticals



BP105T Communication Skills (BP105T) [Theory | Regular]

CO ID.	Course Outcome
BP105T.1	Knowledge of basic aspects & soft skills for effective communication.
BP105T.2	Distinguish the elements of communication & communication style & its application for effectively manage the team as a team player.
BP105T.3	Understand the basic listening skills & its importance in pharmacy practice.
BP105T.4	Acquire the knowledge of technical writing skill
BP105T.5	Develop the interview skills & group discussion skills.

BP107P Human Anatomy and Physiology (BP107P) [Practical | Regular]

CO ID.	Course Outcome
BP107P.1	Explain the gross morphology, structure and functions of various organs of the human body.
BP107P.2	Identify the various tissues and organs of different systems of human body
BP107P.3	Understand the parts of compound microscope and its function
BP107P.4	Determine the heart rate, pulse rate and parameters of blood such as bleeding time, clotting time, erythrocyte sedimentation rate and Haemoglobin content
BP107P.5	Know the basic knowledge of haemocytometry
BP107P.6	Record the blood pressure.

BP108P Pharmaceutical Analysis I (BP108P) [Practical | Regular]

CO ID.	Course Outcome
BP108P.1	Understand the apparatus and glasswares used in analytical chemistry
BP108P.2	Know the importance of calibration process during analysis of any compound.
BP108P.3	Understand the principles, reaction condition, factor calculations for various methods of volumetric and electrochemical methods of analysis.
BP108P.4	Study different errors during analysis
BP108P.5	Demonstrate and explain different titrimetric methods as well as preparation and standardization of solutions with different strength
BP108P.6	Study concept of refractometry.

BP109P Pharmaceutics I (BP109P) [Practical | Regular]

CO ID.	Course Outcome
BP109P.1	Explain formulation ,evaluation,and labeling of syrup,elixir powder,ointments
BP109P.2	Describe use of ingredients in formulation and category of formulation
BP109P.3	Compare various monophasic and biphasic liquid dosage form
BP109P.4	Compare various semisolid dosage forms

BP110P Pharmaceutical Inorganic Chemistry (BP110P) [Practical | Regular]

CO ID.	Course Outcome
BP110P.1	Understand & perform the limit test of chloride, sulfate , Iron, arsenic ,lead and heavy metals
BP110P.2	Know about identification test for the sodium bicarbonate, magnesium hydroxide, copper sulfate , calcium gluconate & ferrous sulphate.
BP110P.3	Understand and perform the test of purification of Bentonite by measuring swelling power/index
BP110P.4	Understand and perform the test for purification of neutralizing capacity of Aluminium hydroxide gel
BP110P.5	Determination of potassium iodate and iodine in potassium iodide
BP110P.6	Preparation of inorganic pharmaceuticals such as boric acid, potash alum and ferrous sulphate



BP111P Communication skills (BP111P) [Practical | Regular]

CO ID.	Course Outcome
BP111P.1	Understand basic communication skills to interact effectively.
BP111P.2	Knowledge of soft skills set to work cohesively with team as a team player.


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RJSPM's COP, Pune
Subjectwise Course Outcome - [B. Pharmacy - 2021-22]

SEM 2

Human Anatomy and Physiology-II (BP207P) [Practical | Regular]

CO ID.	Course Outcome
BP207P.1	Understand various systems using specimen, models, etc.,
BP207P.2	Demonstrate the neurological examination, function of olfactory nerve, visual acuity, reflex activity and positive and negative feedback mechanism
BP207P.3	Record the body temperature and and basal mass index
BP207P.4	Determine different types of taste as well as tidal volume and vital capacity
BP207P.5	Study the family planning devices and pregnancy diagnosis test
BP207P.6	Study of different systems present in our body.
BP207P.7	Practice and understand the procedure for calculating Platelet count and differential leukocyte count.
BP207P.8	Study of some changes in our metabolism and reflex activity.

BP201T Human Anatomy and Physiology II (BP201T) [Theory | Regular]

CO ID.	Course Outcome
BP201T.1	Understand the organization of nervous system.
BP201T.2	Know the structure and functions of parts of Digestive system
BP201T.3	Understand the functions, structure and anatomy of respiratory system.
BP201T.4	Know the classification of hormones and details of Endocrine system.
BP201T.5	Understand the functions and structure of male and female reproductive system and basics of genetics.

BP202T Pharmaceutical Organic Chemistry I (BP202T) [Theory | Regular]

CO ID.	Course Outcome
BP202T.1	Study the basic principles of organic chemistry like hybridization, bond fission, intermolecular forces, structural effects, concept of isomerism and tautomerism etc.
BP202T.2	Describe the classification of organic compounds and Practice the IUPAC nomenclature system
BP202T.3	Understand stabilities of alkenes, conjugated dienes, mechanism, orientation of elimination, Electrophilic, free radical and Nucleophilic addition reaction and mechanism, kinetics, stereochemistry and factors affecting SN1 & SN2 reaction.
BP202T.4	Discuss the acidity of carboxylic acids and basicity of amines and Know different qualitative test for the different functional group.
BP202T.5	Discuss the mechanism of some named reaction.
BP202T.6	Study structures, qualitative tests and uses of different functional groups and related organic compounds.

BP203T BIOCHEMISTRY THEORY (*BP203T) [Theory | Regular]

CO ID.	Course Outcome
BP203T.1	Understand the catalytic role of enzyme and importance of enzymes in biochemical process.
BP203T.2	Understand the metabolism of nutrient molecules in physiological and pathological conditions.
BP203T.3	Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

BP204T PATHOPHYSIOLOGY (BP204T) [Theory | Regular]

CO ID.	Course Outcome
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BP204T.3	Know the etiology of the selected disease states
BP204T.4	Explain the pathogenesis of the selected disease states
BP204T.5	Name the signs and symptoms of the selected disease states
BP204T.6	Know the clinical features and diagnostic tests for detection of the selected disease states
BP204T.1	Learn the basic principles of cell injury and cellular adaptation
BP204T.2	Study the basic mechanism involved in the process of inflammation and repair

BP205T COMPUTER APPLICATION IN PHARMACY (BP205T) [Theory | Regular]

CO ID.	Course Outcome
BP205T.1	Know various types of application of computers in pharmacy
BP205T.2	Know the various types of databases.
BP205T.3	.Know the various applications of databases in pharmacy.
BP205T.4	Know the number system used in computer
BP205T.5	know the concepts of information system and software
BP205T.6	know the various bioinformatics and its impact on vaccines

BP206T ENVIRONMENTAL SCIENCES (BP206T) [Theory | Regular]

CO ID.	Course Outcome
BP206T.1	Create the awareness about environmental problems among learners.
BP206T.2	Impart basic knowledge about the environment and its allied problems.
BP206T.3	Develop an attitude of concern for the environment.
BP206T.4	Motivate learner to participate in environment protection and environment improvement.
BP206T.5	Acquire skills to help the concerned individuals in identifying and solving environmental problems.
BP206T.6	Strive to attain harmony with Nature.

BP208P PHARMACEUTICAL ORGANIC CHEMISTRY I (BP208P) [Practical | Regular]

CO ID.	Course Outcome
BP208P.1	Explain and understand the principle and application of each experiment performed in laboratory.
BP202P.5	Discuss principle behind various qualitative tests and analyse the given unknown organic compounds having different functional groups.
BP202P.3	Understand the basic organic chemistry laboratory techniques, including calibration of thermometer, distillation, recrystallization, melting point and boiling determination.
BP202P.2	Understand and apply safe laboratory practices through the use of appropriate personal protective equipment and appropriate handling of all chemicals, including proper disposal of waste.
BP202P.6	Construct molecular models of compounds using atomic models sets.
BP202P.4	Know the Preparation methods of suitable solid derivatives from organic compounds with their reaction mechanism.

BP209P BIOCHEMISTRY (BP209P) [Practical | Regular]

CO ID.	Course Outcome
BP209P.1	Know about the qualitative analysis of carbohydrates (glucose,fructose,lactose,maltose,sucrose,and starch)
BP209P.2	Know about the identification test for proteins
BP209P.3	Know about the qualitative analysis of reducing sugars(DNSA method) and proteins (Biuret method)
BP209P.4	Understand the qualitative analysis of urine for abnormal constituents
BP209P.5	Study about the determination of blood creatinine, blood sugars
BP209P.6	Understand the determination of serum total cholesterol and preparation of buffer solution and measurement of PH



BP209P.7 Study of the enzymatic hydrolysis of starch.

BP209P.8 Determination of salivary amylase activity.

BP210P COMPUTER APPLICATION IN PHARMACY (BP210P) [Practical | Regular]

CO ID. Course Outcome

BP210P.1 make a list of questionaries and label wizard using MS Word

BP210P.2 Understand and create HTML web page

BP210P.3 Retrieve information about drugs

BP210P.4 Creating (a database, working with queries, mailing labels with labeling wizard, invoice table) IN MS Access

BP210P.5 know how to export data and reports to and HTML and XML

DEG DEG (TH) [Theory | Regular]

CO ID. Course Outcome

DEG1 Introduce the students meaning of democracy and its different models

DEG2 Know the role of the governance

DEG3 Understand the various approaches to the study of democracy and governance

DEG4 Understand and classify different parts of the constitution of india

DEG5 Understand and describe different amendments and provisions in the constitution of India



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Subjectwise Course Outcome - [B. Pharmacy - 2021-22]

SEM 3

BP301T Pharmaceutical Organic Chemistry II (BP301T) [Theory | Regular]

CO ID.	Course Outcome
BP301T.1	Write the structure, name and the type of isomerism of the organic compound
BP301T.2	Write the reaction, name the reaction, and orientation of the reactions
BP301T.3	Account for reactivity/stability of compounds
BP301T.4	Understand the preparation of various organic compounds.
BP301T.5	Differentiate the polynuclear organic compounds with respect to their chemistry

BP302T Physical Pharmaceutics I (BP302T) [Theory | Regular]

CO ID.	Course Outcome
BP302T.1	Investigate and apply various theories, laws and equations related to different states of matter
BP302T.2	Distinguish the principles of complexation/ protein binding & to use them for calculations of drug release and stability constant
BP302T.3	Demonstrate use of physicochemical properties of drugs in the formulation development and evaluation of dosage forms
BP302T.4	Compare and contrast between one, two & three component system
BP302T.5	Know about crystallization as well as various parameters of crystal like crystal forms, habits, lattice angle, methods of crystal analysis, polymorphism
BP302T.6	Adapt knowledge of Non-electrolytic and Electrolytic solutions regarding their types and properties mostly colligative properties
BP302T.7	Explain and apply the key physical pharmacy concepts of solubility and dissolution, partitioning phenomena, surface phenomena, etc.
BP302T.8	Acquire sufficient knowledge of surface and interfacial tension between the surfaces

BP303T Pharmaceutical Microbiology (BP303T) [Theory | Regular]

CO ID.	Course Outcome
BP303T.1	Study historical development of microbiology, its scope, branches and classification of microbes
BP303T.2	Compare and contrast the various structural features, biology & characteristics of microbes
BP303T.3	Describe the classification, methods of identification, isolation, microbial growth/reproduction, cultivation, quantification, preservation and staining of microorganisms
BP303T.4	Understand microbial control techniques such as sterilization, sterility tests, disinfection and preservation of pharmaceutical products
BP303T.5	Enumerate microbial spoilage, microbial contamination and its assessment
BP303T.6	Describe the cell culture technology and its applications in pharmaceutical industries
BP303T.7	Understand the concept of sterility and laminar air flow pattern
BP303T.8	understand the different techniques of sterilization

BP304T Pharmaceutical Engineering (BP304T) [Theory | Regular]

CO ID.	Course Outcome
BP304T.1	Gain knowledge about various unit operations used in Pharmaceutical industries
BP304T.2	Procure knowledge about the basics of various material handling techniques in pharmaceutical industry



BP304T.3	Understand the significance of plant lay out design for optimum use of resources and gain the knowledge of various materials used for pharmaceutical plant construction.
BP304T.4	Understand the various types of corrosion and the preventive methods that can be adopted for corrosion control in Pharmaceutical industries.
BP304T.5	Appreciate various preventive methods used for corrosion control in pharmaceutical industry.
BP304T.6	Analyze fundamentals of centrifuge for particle separation as well as mixer for particle mixing in pharmacy practice

BP305P PHARMACEUTICAL ORGANIC CHEMISTRY II (BP305P) [Practical | Regular]

CO ID.	Course Outcome
BP305P.1	Learn different techniques like recrystallization and steam distillation
BP305P.2	Separate the given organic binary mixture
BP305P.3	Understand saponification value and its determination of different oil samples.
BP305P.4	Understand how to prepare small organic compound.

BP306P PHYSICAL PHARMACEUTICS - I (BP306P) [Practical | Regular]

CO ID.	Course Outcome
BP306P.1	Analyze the physicochemical properties such as solubility, pH, refractive index, partition coefficient, PKa values etc. experimentally.
BP306P.2	Study the effect of electrolyte on upper consolute temperature in phase diagram.
BP306P.3	Demonstrate the various adsorption isotherms by experimentally.
BP306P.4	Determine the surface tension, critical micellar concentration, HLB value of various surfactants.
BP306P.5	Complexation, Stability Constant, Donor-Acceptor ratio

BP307P PHARMACEUTICAL MICROBIOLOGY (BP307P) [Practical | Regular]

CO ID.	Course Outcome
BP307P.1	Know the principle, construction and working of equipments and skill to handle microscope for observation of microbes
BP307P.2	Prepare and sterilize nutrient broth, nutrient agar, slants, stabs and plates and adopt the skills required for maintaining strictly aseptic condition & handling inoculating loop, its sterilization and inoculation procedure
BP307P.3	Practice aseptic procedures for inoculation and examine sterility testing of pharmaceuticals
BP307P.4	Practice different methods of sterilization and isolate pure culture of microorganism
BP307P.5	Adapt the technique involved to see motility of bacteria i.e. hanging drop technique
BP307P.6	Develop skill to execute morphology of bacteria by staining and determine quality of water by Most probable number test (bacteriological analysis)
BP307P.7	Differentiate Gram negative intestinal bacteria by performing IMVIC test
BP307P.8	Learn standardization of pharmaceutical products microbiologically

BP308P PHARMACEUTICAL ENGINEERING (BP308P) [Practical | Regular]

CO ID.	Course Outcome
BP308P.1	Study various pharmaceutical machines and the equipment's used in pharmaceutical industry.
BP308P.2	Perform various processes used in pharmaceutical manufacturing process
BP308P.3	Study the different methods used for determination of humidity
BP308P.4	Develop rigorous experimental and analytical skills for extraction and drying of sample in laboratory
BP308P.5	Study various unit operations used in pharmaceutical industry and the effect of factors influencing them.

Non University Sub AECC Environment Studies [Theory | Regular]

CO ID.	Course Outcome
AECCES.1	Understand basics of environment like ecology, ecosystem, food chain, food web and Ecological pyramids.



AECES.2 Know the different natural sources and their conservation to save the environment.

AECES.3 Know the current problems of environment and how to solve them, Role of individual in conservation of environment and natural resources.

AECES.4 Understand the different factors of environmental pollution and measures to minimize it.


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Subjectwise Course Outcome - [B. Pharmacy - 2021-22]

Direct Second Year 2021-22

BP105T Communication Skills (BP105T) [Theory | Regular]

CO ID. Course Outcome

BP105T.1 Knowledge of basic aspects & soft skills for effective communication.

BP105T.2 Distinguish the elements of communication & communication style & its application for effectively manage the team as a team player.

BP105T.3 Understand the basic listening skills & its importance in pharmacy practice.

BP105T.4 Acquire the knowledge of technical writing skill

BP105T.5 Develop the interview skills & group discussion skills.

BP111P Communication skills (BP111P) [Practical | Regular]

ID. Course Outcome

BP111P.1 Understand basic communication skills to interact effectively.

BP111P.2 Knowledge of soft skills set to work cohesively with team as a team player.

BP205T COMPUTER APPLICATION IN PHARMACY (BP205T) [Theory | Regular]

CO ID. Course Outcome

BP205T.1 Know various types of application of computers in pharmacy

BP205T.2 Know the various types of databases.

BP205T.3 .Know the various applications of databases in pharmacy.

BP205T.4 Know the number system used in computer

BP205T.5 know the concepts of information system and software

BP205T.6 know the various bioinformatics and its impact on vaccines

BP210P COMPUTER APPLICATION IN PHARMACY (BP210P) [Practical | Regular]

CO ID. Course Outcome

BP210P.1 Create questionnaires, mailing labels and other documentation related to pharmacy by using MS WORD.

BP210P.2 Retrieve the information using online tools.

BP210P.3 Create databases and webpages using HTML.

BP210P.4 Create, View, Add, Delete and modify the data bases using MS Access.

BP210P.5 Generate report; work with queries, invoice tables using MS Access.

BP210P.6 Export table, forms and queries using web and XML pages to

BP301T Pharmaceutical Organic Chemistry II (BP301T) [Theory | Regular]

CO ID. Course Outcome

BP301T.1 Write the structure, name and the type of isomerism of the organic compound

BP301T.2 Write the reaction, name the reaction and orientation of reactions

BP301T.3 Account for reactivity/stability of compounds

BP301T.4 Describe the chemistry of fats and oils.



BP301T.5 Differentiate the polynuclear organic compounds with respect to their chemistry

BP302T Physical Pharmaceutics I (BP302T) [Theory | Regular]

CO ID. Course Outcome

BP302T.1	Investigate and apply various theories, laws and equations related to different states of matter
BP302T.2	Distinguish the principles of complexation/ protein binding & to use them for calculations of drug release and stability constant
BP302T.3	Demonstrate use of physicochemical properties of drugs in the formulation development and evaluation of dosage forms
BP302T.4	Compare and contrast between one, two & three component system
BP302T.5	Know about crystallization as well as various parameters of crystal like crystal forms, habits, lattice angle, methods of crystal analysis, polymorphism
BP302T.6	Adapt knowledge of Non-electrolytic and Electrolytic solutions regarding their types and properties mostly colligative properties
BP302T.7	Explain and apply the key physical pharmacy concepts of solubility and dissolution, partitioning phenomena, surface phenomena, etc.
BP302T.8	Acquire sufficient knowledge of surface and interfacial tension between the surfaces

BP303T Pharmaceutical Microbiology (BP303T) [Theory | Regular]

CO ID. Course Outcome

BP303T.1	Study historical development of microbiology, its scope, branches and classification of microbes
BP303T.2	Compare and contrast the various structural features, biology & characteristics of microbes
BP303T.3	Describe the classification, methods of identification, isolation, microbial growth/reproduction, cultivation, quantification, preservation and staining of microorganisms
BP303T.4	Understand microbial control techniques such as sterilization, sterility tests, disinfection and preservation of pharmaceutical products
BP303T.5	Enumerate microbial spoilage, microbial contamination and its assessment
BP303T.6	Describe the cell culture technology and its applications in pharmaceutical industries
BP303T.7	Understand the concept of sterility and laminar air flow pattern
BP303T.8	understand the different techniques of sterilization

BP304T Pharmaceutical Engineering (BP304T) [Theory | Regular]

CO ID. Course Outcome

BP304T.1	Gain knowledge about various unit operations used in Pharmaceutical industries
BP304T.2	Procure knowledge about the basics of various material handling techniques in pharmaceutical industry
BP304T.3	Understand the significance of plant lay out design for optimum use of resources and gain the knowledge of various materials used for pharmaceutical plant construction.
BP304T.4	Understand the various types of corrosion and the preventive methods that can be adopted for corrosion control in Pharmaceutical industries.
BP304T.5	Appreciate various preventive methods used for corrosion control in pharmaceutical industry.
BP304T.6	Analyze fundamentals of centrifuge for particle separation as well as mixer for particle mixing in pharmacy practice

BP305P PHARMACEUTICAL ORGANIC CHEMISTRY II (BP305P) [Practical | Regular]

CO ID. Course Outcome

BP305P.1	Learn different techniques like recrystallization and steam distillation
BP305P.2	Separate the given organic binary mixture
BP305P.3	Understand saponification value and its determination of different oil samples.
BP305P.4	Understand how to prepare small organic compound.

BP306P PHYSICAL PHARMACEUTICS - I (BP306P) [Practical | Regular]



CO ID.	Course Outcome
BP306P.1	Analyze the physicochemical properties such as solubility, pH, refractive index, partition coefficient, PKa values etc. experimentally.
BP306P.2	Study the effect of electrolyte on upper consolute temperature in phase diagram.
BP306P.3	Demonstrate the various adsorption isotherms by experimentally.
BP306P.4	Determine the surface tension, critical micellar concentration, HLB value of various surfactants.
BP306P.5	Complexation, Stability Constant, Donor-Acceptor ratio

BP307P PHARMACEUTICAL MICROBIOLOGY (BP307P) [Practical | Regular]

CO ID.	Course Outcome
BP307P.1	Know the principle, construction and working of equipments and skill to handle microscope for observation of microbes
BP307P.2	Prepare and sterilize nutrient broth, nutrient agar, slants, stabs and plates and adopt the skills required for maintaining strictly aseptic condition & handling inoculating loop, its sterilization and inoculation procedure
BP307P.3	Practice aseptic procedures for inoculation and examine sterility testing of pharmaceuticals
BP307P.4	Practice different methods of sterilization and isolate pure culture of microorganism
BP307P.5	Adapt the technique involved to see motility of bacteria i.e. hanging drop technique
BP307P.6	Develop skill to execute morphology of bacteria by staining and determine quality of water by Most probable number test (bacteriological analysis)
BP307P.7	Differentiate Gram negative intestinal bacteria by performing IMVIC test
BP307P.8	Learn standardization of pharmaceutical products microbiologically

BP308P PHARMACEUTICAL ENGINEERING (BP308P) [Practical | Regular]

CO ID.	Course Outcome
BP308P.1	Study various pharmaceutical machines and the equipment's used in pharmaceutical industry.
BP308P.2	Perform various processes used in pharmaceutical manufacturing process
BP308P.3	Develop rigorous experimental and analytical skills for extraction and drying of sample in laboratory
BP308P.4	Study various unit operations and process used in pharmaceutical industry and the effect of factors influencing them.

Non University Sub AECC Environment Studies [Theory | Regular]

CO ID.	Course Outcome
AECCES.1	Understand basics of environment like ecology, ecosystem, food chain, food web and Ecological pyramids.
AECCES.2	Know the different natural sources and their conservation to save the environment.
AECCES.3	Know the current problems of environment and how to solve them, Role of individual in conservation of environment and natural resources.
AECCES.4	Understand the different factors of environmental pollution and measures to minimize it.

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SEM 4

AECC Environment Studies [Theory | Regular]

CO ID. Course Outcome

AECCES.1 Understand human community and its impact on environment

AECCES.2 Get knowledge about environmental policies

AECCES.3 Understand about environmental pollution and its control measures

AECCES.4 Motivate to students about environmental awareness by field visit

BP401T Pharmaceutical Organic Chemistry III (BP401T) [Theory | Regular]

CO ID. Course Outcome

BP401T.1 Understand the methods of preparation and properties of organic compounds.

BP401T.2 Explain the stereochemical aspects of organic compounds and stereo chemical reactions.

BP401T.3 Know the medicinal uses and other applications of organic compounds

BP401T.4 Understand the reactions and mechanism of name reactions.

BP402T Medicinal Chemistry I (BP402T) [Theory | Regular]

CO ID. Course Outcome

BP402T.1 Know the connection in between physicochemical properties, mechanism of action, uses and structural features of various drugs with respect to pharmacological activities.

BP402T.2 Understand the drug metabolic pathways, adverse effect and therapeutic value of Drugs

BP402T.3 Write synthesis of drugs and remember the structure of important drugs with its activity.

BP402T.4 Know the Structural Activity Relationship (SAR) of different class of drugs.

BP402T.5 Understand classification, Mechanism of action, Uses of Drugs acting on Autonomic nervous system and Central nervous system.

BP403T Physical Pharmaceutics II (BP403T) [Theory | Regular]

CO ID. Course Outcome

BP403T.1 Understand various physicochemical properties of drug & excipient molecules in designing the dosage form

BP403T.2 Describe the flow behavior of fluids and the concept of thixotropy in pharmaceutical formulations

BP403T.3 Explain the concept of surface and interfacial tension and HLB scale & method of formulation.

BP403T.4 Understand the fundamentals of chemical kinetics and stability of the drugs under accelerated conditions.

BP403T.5 Know the behavior and mechanism of drugs and excipients in the formulation development and evaluation of dosage forms.

BP403T.6 Determine the concept of micromeritics along with methods & its applications.

BP404T Pharmacology I (BP404T) [Theory | Regular]

CO ID. Course Outcome

BP404T.1 Know basics of Pharmacology like history, scope and general principles.

BP404T.2 Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels

BP404T.3 Know basics of Peripheral nervous system and pharmacology of drugs acting on PNS.

BP404T.4 Know basics of Central nervous system and pharmacology of drugs acting on CNS.



BP404T.5 Know the basics pharmacology of drugs acting on CNS and action of drugs in treatment of diseases.

BP405T Pharmacognosy and Phytochemistry I (BP405T) [Theory | Regular]

CO ID. Course Outcome

BP405T.1 know the techniques in the cultivation and production of crude drugs

BP405T.2 know the crude drugs, their uses and chemical nature

BP405T.3 know the evaluation techniques for the herbal drugs

BP405T.4 carry out the microscopic and morphological evaluation of crude drugs

BP405T.5 Understand the concept of plant tissue culture and its applications in pharmacognosy

BP405T.6 Understand the classification of crude drugs, its sources and scope of Pharmacognosy

BP406P Medicinal Chemistry I (BP406P) [Practical | Regular]

CO ID. Course Outcome

BP406P.1 Study the different purification techniques including Recrystallization, TLC.

BP406P.2 Prepare small organic compounds / drugs / drug intermediates.

BP406P.3 Perform purification of synthesized compounds by Column chromatography.

BP406P.4 Determine the Partition coefficient and Ionisation constants.

BP407P Physical Pharmaceutics II (BP407P) [Practical | Regular]

CO ID. Course Outcome

BP407P.1 Determine the particle size, particle size distribution by various meyhods.

BP407P.2 Evaluate bulk density, true density, porosity, the angle of repose of powder & study the influence of lubricant on angle of repose..

BP407P.3 Determine the viscosity of liquids by using different viscometer.

BP407P.4 Evaluate sedimentation volume of suspension.

BP407P.5 Calculate energy of activation of acid hydrolysis, order of given reaction, relative strength of two acids.

BP408P Pharmacology I (BP408P) [Practical | Regular]

CO ID. Course Outcome

BP408P.1 Understand the pharmacological actions of different categories of drugs

BP408P.2 Observe the effect of drugs on animals by simulated experiments

BP408P.3 Appreciate correlation of pharmacology with other bio medical sciences

BP408P.4 Get knowledge about pharmacology lab, eg. animals, instruments, animal handling skills etc...

BP409P Pharmacognosy and Phytochemistry I (BP409P) [Practical | Regular]

CO ID. Course Outcome

BP409P.1 Analyze unorganized crude drug by chemical tests

BP409P.2 Evaluate and identify crude drug by microscopical study

BP409P.3 Evaluate crude drugs by physicochemical parameter

BP409P.4 Explain use of equipment's in Pharmacognosy lab

BP409P.5 Compare, interpret, and calculate the results



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SEM 5

BP501T Medicinal Chemistry II (BP501T) [Theory | Regular]

CO ID.	Course Outcome
BP501T.1	Helps in correlating between pharmacology of a disease and its mitigation or cure of different drug classes and their side effects
BP501T.2	Know the structural activity relationship of different class of drugs.
BP501T.3	Explain synthesis of drugs and also recall the structure of some important drugs.
BP501T.4	Apply the core theoretical knowledge and explain the rational use of autacoids and related drugs.
BP501T.5	Understand classification, Mechanism of action, Uses of Drugs acting on Cardiovascular systems.
BP501T.6	Understand drugs acting on Endocrine system : Sexhormones, Drugs for erectile dysfunction, Oral contraceptives, Corticosteroids,Thyroid and Antithyroid drugs
BP501T.7	Learn Drugs used as Local anesthetics & anti diabetic agents

BP502T Industrial Pharmacy - I (BP502T) [Theory | Regular]

CO ID.	Course Outcome
BP502T.1	Describe the physicochemical properties which are important for formulation development of solid, liquid and sterile dosage forms.
BP502T.2	Interpret formulation data and subsequent analysis data towards selection of the most stable and effective formulations.
BP502T.3	Prepare quality pharmaceutical formulations from known references which are suitable for patient use.
BP502T.4	Explain the concept and importance of evaluation of product performance and interpret such data
BP502T.5	Describe the principles of sterile preparations and also why quality assurance and validation of critical steps in the production process are of significant importance.
BP502T.6	Develop cosmetic preparations with desired Safety, stability, and efficacy
BP502T.7	Develop aerosol formulations and understand the importance of evaluation tests for aerosols.
BP502T.8	Understand the importance of pharmaceutical packaging and its applications.

BP503T Pharmacology II (BP503T) [Theory | Regular]

CO ID.	Course Outcome
BP503T.1	Analyze the mechanism of drugs acting on cardiovascular system
BP503T.2	Express in depth knowledge about pharmacology and pharmacotherapy of drugs used in against autacoids
BP503T.3	Summarize the detail classification, mechanism of action, pharmacokinetics, therapeutic uses, adverse effects drug interactions of drugs acting on cardiovascular drugs and endocrine system
BP503T.4	Summarize the detail mechanism of Principles, applications and types of bioassay
BP503T.5	Study of Principles, applications and types of bioassay

BP504T Pharmacognosy and Phytochemistry II (BP504T) [Theory | Regular]

CO ID.	Course Outcome
BP504T.1	Highlight applicability and understand the relevance and significance of pharmacognosy and phytochemistry to pharmaceutical sciences
BP504T.2	Clarify principles of modern extraction techniques & explain how these can be applied in characterization and identification of the herbal drug and phytoconstituents..
BP504T.3	Explain correct use of various equipment in pharmacognosy laboratory.



BP504T.4	Understand the principle & applications of chromatographic & non-chromatographic separation methods
BP504T.5	Understand the metabolic pathway in formation of secondary metabolites and application of bio genetic Study.
BP504T.6	Know the different classes of secondary metabolites with their composition, chemistry and chemical classes, biological source, method of extraction, uses and application.

BP505T Pharmaceutical Jurisprudence (BP505T) [Theory | Regular]

CO ID.	Course Outcome
BP505T.1	The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
BP505T.2	Various Indian pharmaceutical Acts and Laws
BP505T.3	The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
BP505T.4	The code of ethics during the pharmaceutical practice.

BP506P Industrial Pharmacy-I (BP506P) [Practical | Regular]

CO ID.	Course Outcome
BP506P.2	Understand and evaluate the concept of preformulation and develop the stable and efficient dosage forms
BP506P.1	Prepare and evaluate different solid dosage forms such as tablets capsules, pellets etc.
BP506P.3	Demonstrate the coating procedure of the tablets with proper understanding of steps involved in the film coating as well as sugar coating
BP506P.4	Practice the aseptic technique while preparing parenteral formulations.
BP506P.5	Practice the preparation and development of ophthalmic formulations.
BP506P.6	Understand Importance of pharmaceutical packaging and able to perform the various tests of packaging containers. (evaluation tests for glass containers)
BP506P.7	Know the preparation & evaluation parameters for cosmetic preparations.

BP507P Pharmacology - II (BP507P) [Practical | Regular]

CO ID.	Course Outcome
BP507P.1	Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
BP507P.2	Demonstrate the various receptor actions using isolated tissue preparation
BP507P.3	Understand the mechanism of drug action and its relevance in the treatment of different diseases
BP507P.4	Elaborate correlation of pharmacology with related medical sciences
BP507P.5	Understand in-vitro pharmacology and different physiological salt solutions.

BP508P Pharmacognosy and Phytochemistry II (BP508P) [Practical | Regular]

CO ID.	Course Outcome
BP508P1	Explain correct use of various equipments in Pharmacognosy laboratory
BP508P2	Handle simple and compound microscope technically in a correct way
BP508P3	Demonstrate skill of plant material sectioning, staining, mounting & focusing.
BP508P4	Draw morphological & microscopical diagrams & able to label component.
BP508P5	Understand the different cellular structures in powder characteristics of plant organ.
BP508P6	Understand the isolation process, role of solvent and identification of different secondary metabolites.
BP508P7	Understand the use of chromatography in identification of plant material, extracts and isolated compounds.
BP508P8	Understand the organized and unorganized drug and develop skill to identify it by chemical tests.

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Subjectwise Course Outcome - [B. Pharmacy - 2021-22]

SEM 6

Quality Assurance (BP606T) [Theory | Regular]

CO ID.	Course Outcome
BP606T.1	Understand the importance of quality in pharmaceutical products
BP606T.2	Understands the regulatory aspects of pharmaceuticals
BP606T.3	Learn the process involved in manufacturing of pharmaceuticals in different section/department and their activities
BP606T.4	Describe various documentation process and concept of calibration and validation
BP606T.5	Know the responsibilities of QA & QC departments
BP606T.6	Understand the scope of quality certifications applicable to pharmaceutical industries

BP601T Medicinal Chemistry III (BP601T) [Theory | Regular]

CO ID.	Course Outcome
BP601T.1	Know the general aspects of design, history, nomenclature, MOA, therapeutic uses, and recent developments of drugs.
BP601T.2	Understand variety of drug classes and some pharmacological properties.
BP601T.3	Know the importance of SAR of drugs.
BP601T.4	Understand the chemistry of drugs with respect to their biological activity
BP601T.5	Understand the importance of drug design and different techniques of drug design.
BP601T.6	Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
BP601T.7	Understand synthesis of some important class of drugs.
BP601T.8	Acquire knowledge on thrust areas for further research.

BP602T Pharmacology III (BP602T) [Theory | Regular]

CO ID.	Course Outcome
BP602T1	Explain the mechanism of drug action and its relevance in the treatment of different infectious diseases
BP602T2	Illustrate the principles of toxicology
BP602T3	Discuss treatment of various poisonings
BP602T4	Analyse correlation of pharmacology with related medical sciences.
BP602T5	Explain the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology

BP603T Herbal Drug Technology (BP603T) [Theory | Regular]

CO ID.	Course Outcome
BP603T1	Understand the raw material as source of herbal drug from cultivation of herbal drug product.
BP603T2	Know the different Indian systems of medicines.
BP603T3	Understand the concept of nutraceutical and know the benefits of nutraceuticals in different ailments and study the herb drug interaction.
BP603T4	Understand the concept of herbal cosmetic with herbal excipients and herbal formulations.
BP603T5	Know the WHO and ICH Guidelines of evaluation of herbal drugs



BP603T6 Know the patenting of herbal drug and GMP in herbal drug industry.

BP604T Biopharmaceutics and Pharmacokinetics (BP604T) [Theory | Regular]

CO ID. Course Outcome

BP604T.1 Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.

BP604T.2 Apply the knowledge plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination

BP604T.3 Understand the concepts of bioavailability and bioequivalence of drug products and their significance. Able to evaluate factors influencing the drug availability that correspondingly influence drug treatment efficacy.

BP604T.4 Understand and explain various pharmacokinetic models and its applications.

BP604T.5 Estimate the Non-linear pharmacokinetics with special reference to its assessment

BP605T Pharmaceutical Biotechnology (BP605T) [Theory | Regular]

CO ID. Course Outcome

BP605T.1 Understanding the concept related to enzymes, importance of Immobilized enzymes in Pharmaceutical Industries, Biosensors and basic principal of protein and genetic engineering

BP605T.2 Understand the concept related to genetic engineering, recombinant DNA technology and applications in relation to production of pharmaceuticals

BP605T.3 Importance of Monoclonal antibodies, Immunoglobulins, blood products and Plasma Substitutes in Industries

BP605T.4 Understand importance and use of microorganisms in fermentation technology

BP605T.5 Understand the various concepts related to advanced biotechnological techniques like PCR.

BP605T.6 Understand the immunity system and various types and terminology related to immune system.

BP605T.7 Understand the advanced techniques used in biotechnology.

BP607P Medicinal chemistry III (BP607P) [Practical | Regular]

CO ID. Course Outcome

BP607P.1 Understand use of various equipments and safety measures while working in medicinal chemistry laboratory.

BP607P.2 Perform synthesis of medicinally important compounds/ drug intermediates.

BP607P.3 Understand reaction scheme, mechanism and theory involved in synthesis of medicinally important organic compounds.

BP607P.4 Draw chemical structures and reactions by Chem draw software.

BP607P.5 Explain the physicochemical properties of drugs using drug design software.

BP608P Pharmacology III (BP608P) [Practical | Regular]

CO ID. Course Outcome

BP608P1 Learn dose calculations in pharmacological practical

BP608P2 Determine the anti-ulcer and anti-allergic activity

BP608P3 Study the effects of the drug on gastrointestinal motility and saline purgative on frog intestine

BP608P4 Study the effect of agonist and antagonist

BP608P5 Write and learn applications of different biostatistical methods

BP609P Herbal Drug Technology (BP609P) [Practical | Regular]

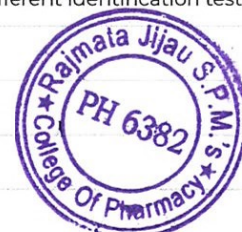
CO ID. Course Outcome

BP609P1 Understand the concept of preliminary phytochemical screening with ability of performing different identification test.

BP609P2 Determine the alcohol content and evaluate the excipients in different herbal preparations.

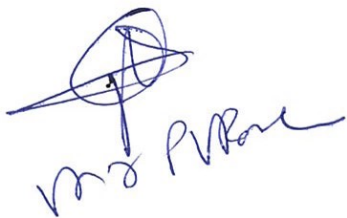
BP609P3 Preparation and standardization of extract and different herbal dosage forms..

BP609P4 Study the monograph of analysis of herbal drugs from recent pharmacopoeias.



BP609P5 Determine the different chemical constituents in crude drug.

BP609P6 Determine the excipients of natural origin by chemical tests



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SEM 7

BP701T Instrumental Methods of Analysis (BP701T) [Theory | Regular]

CO ID.	Course Outcome
BP701T.2	Understand and explain the instrumentation of analytical techniques.
BP701T.3	Understand and explain applications of analytical techniques.
BP701T.1	Understand and explain the principle involved in analytical techniques.
BP701T.4	To interpret the given IR spectrum.

BP702T Industrial Pharmacy-II (BP702T) [Theory | Regular]

CO ID.	Course Outcome
BP702T.1	Know the process of pilot plant and scale up of pharmaceutical dosage forms.
BP702T.2	Understand the process of technology transfer from lab scale to commercial batch.
BP702T.3	Know different Laws and Acts that regulate pharmaceutical industry.
BP702T.4	Understand the approval process and regulatory requirements for drug products.
BP702T.5	Know about pharmaceutical product development and product movement from laboratory to market.

BP703T Pharmacy Practice (DP703T) [Theory | Regular]

CO ID.	Course Outcome
BP703T.1	Understand various drug distribution methods in a hospital and pharmaceutical care services.
BP703T.2	Understand the pharmacy stores management and inventory control.
BP703T.3	Examine drug therapy of patient through medication chart review and clinical review.
BP703T.4	Prepare medication history interview and counsel the patients.
BP703T.5	Determine drug related problems and adverse drug reactions.
BP703T.6	Interpret selected laboratory results of specific disease states. (as monitoring parameters in therapeutics)
BP703T.7	Know pharmaceutical care services
BP703T.8	Do patient counseling in community pharmacy AND Appreciate the concept of Rational drug therapy.

BP704T Novel Drug Delivery System (BP704T) [Theory | Regular]

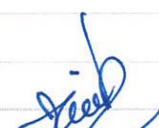
CO ID.	Course Outcome
BP704T.1	Understand the fundamental concepts of controlled drug release and prerequisites of drug candidates along with the polymers, their advantages and disadvantages.
BP704T.2	Knowledge of microencapsulation and gastroretentive like mucosal as well as implantable drug delivery systems
BP704T.3	Describe the concepts, approaches & formulation of transdermal, ocular, nasopulmonary and intrauterine drug delivery systems.
BP704T.1.4	Explain the concept & approaches of targeted drug delivery system

BP705P BP705P Instrumental Methods of Analysis [Practical | Regular]

CO ID.	Course Outcome
BP705P.1	To understand the different types of instrumental analytical techniques available for quality control of APIs & formulations.
BP705P.2	Quantification of API by using various instrumental methods of analysis.
BP705P.3	Determination of functional group in the compound by using IR spectroscopy.
BP705P.4	Qualitative analysis by analytical techniques






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BP706PS - Pharmaceutics

BP706PS BP706PS - Pharmaceutics [Practical | Regular]

CO ID.	Course Outcome
BP706PS.PH1	Describe the overview of subject, present status and future aspects of Pharmaceutics
BP706PS.PH2	Explain the concept of literature, how literature review perform and its importance of research and development of pharmaceuticals
BP706PS.PH3	Describe the importance and principals of pharmaceutical industry and their developments.
BP706PS.PH4	Understand the Regulatory aspects of pharmaceuticals, need, advantages, limitation and importance in pharmaceutical sector.
BP706PS.PH5	Describe the importance and basic principals of Pharmaceutical Quality Assurance department and Documents review
BP706PS.PH6	Explain the concept and principal of Drug discovery and development
BP706PS.PH7	Describe the Formulation research & development of various dosage forms like Tablet , capsules and parenteral formulation
BP706PS.PH8	Understand the importance , principals and working of various instruments used in pharmaceutics industries.

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BP706PS - Pharmaceutical Chemistry

BP706PS.PC BP706PS - Pharmaceutical Chemistry [Practical | Regular]

CO ID.	Course Outcome
BP706PS.PC.1	Understand Research & Review paper writing methodically and tools.
BP706PS.PC.2	Know drug design and discovery techniques
BP706PS.PC.3	Understand various aspects of process chemistry
BP706PS.PC.4	Prepare drugs / Drug intermediates
BP706PS.PC.5	Develop TLC of synthesized compounds
BP706PS.PC.6	Demonstrate recrystallization of organic compounds
BP706PS.PC.7	Demonstrate various softwares used in Pharmaceutical Chemistry
BP706PS.PC.8	Evaluate case studies on infringement of a pharmaceutical patents


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BP706PS - Pharmacognosy

BP706PS BP706PS - Pharmacognosy [Practical | Regular]

CO ID.	Course Outcome
BP706PS.PGY1	understand Referencing and literature review in Pharmacognosy
BP706PS.PGY2	understand extraction, isolation and analysis of Phytopharmaceuticals
BP706PS.PGY3	understand different Herbal Novel Drug Delivery System with their details
BP706PS.PGY4	study about industries based on herbal drug, GST and loan licensing process, IPR, FSSAI Herbal NDDS, Import and export of herbal drugs and organic farming.
BP706PS.PGY5	study various funding agencies and their schemes
BP706PS.PGY6	perform to extract and isolate, identify adulterants in food and isolate volatile oil from the crude drugs

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Subjectwise Course Outcome - [B. Pharmacy - 2021-22]

SEM 8

(BP811ET) Advanced Instrumentation Techniques (BP811ET) [Theory | Elective]

CO ID.	Course Outcome
BP811ET2	Understand and explain the instrumentation of analytical techniques.
BP811ET3	Understand and explain applications of analytical techniques.
BP811ET1	Understand and explain the principle involved in analytical techniques.

BP801T Biostatistics and Research Methodology (BP801T) [Theory | Regular]

CO ID.	Course Outcome
BP801T.1	Understand the importance and concept of Statistics, Biostatistics, Measures of central tendency, Measures of dispersion and Correlation with pharmaceutical examples
BP801T.2	Describe the concept and principal about Regression ,Probability ,Parametric test with pharmaceutical examples.
BP801T.3	Understand the importance of Parametric ,Non Parametric tests ,Research Need for research, Need for design of Experiments, Graphs ,Designing the methodology with Pharmaceutical Examples.
BP801T.4	Understand the importance of factorial design ,Regression modeling, Introduction to Practical components of Industrial and Clinical Trials Problems with pharmaceutical examples
BP801T.5	Understand the concept and knowledge regarding Design and Analysis of experiments ,Factorial Design ,Response Surface methodology with pharmaceutical examples

BP802T Social and Preventive Pharmacy (BP802T) [Theory | Regular]

CO ID.	Course Outcome
BP802T.1	Understand the concept of health and disease
BP802T.2	Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide
BP802T.3	Know about Personal hygiene and health
BP802T.4	Implementing general principles of prevention and control of diseases
BP802T.5	Explain national health programs, its objectives, functioning and outcome

BP805ET Pharmacovigilance (BP805ET) [Theory | Elective]

CO ID.	Course Outcome
BP805ET1	Explain the role of national agencies and international bodies in medicines regulation
BP805ET2	Outline the classification of adverse events / adverse drug reactions.
BP805ET3	Discuss drug and disease classification, drug dictionaries and coding and Information resources in pharmacovigilance
BP805ET4	Explain the fundamental knowledge on vaccine safety surveillance, pharmacovigilance methods and communication in pharmacovigilance
BP805ET5	Discuss the place of the International Conference on Harmonisation (ICH) in medicines regulation
BP805ET6	Describe the genetics related ADR, drug safety evaluation in special population and schedule Y

BP807ET Computer Aided Drug Design (BP807ET) [Theory | Elective]

CO ID.	Course Outcome
BP807ET.1	Understand the design and discovery of lead molecules
BP807ET.2	Classify the role of drug design tools for drug discovery process



BP807ET.3	Understand and analyse concepts of QSAR and docking
BP807ET.4	Analyse and apply various strategies to develop new drug-like molecules.
BP807ET.5	Use various molecular modeling software to design new drug molecule
BP809ET Cosmetic Science (BP809ET) [Theory Elective]	
CO ID.	Course Outcome
BP809ET.1	Knowledge of various regulatory requirement for cosmetic and cosmeceutical products.
BP809ET.2	Understand the concepts of cosmetics; anatomy of skin v/s hair, general excipients used in cosmetics
BP809ET.3	Explain the principles and key building blocks of various skin care, hair care and oral care products etc
BP809ET.4	Discuss the cosmetic evaluation principles and cosmetic problems associate with skin, hair and oral cavity.
BP809ET.5	Explain the concept of cosmeceuticals, history, difference between cosmetics & cosmeceuticals& cosmeceuticals agents
BP812ET DIETARY SUPPLEMENTS AND NUTRACEUTICALS (BP 812 ET) [Theory Elective]	
CO ID.	Course Outcome
BP812ET1	Understand the need of supplements by the different group of people to mentain healthy life.
BP812ET2	Understand the outcome of deficiencies in dietary supplements
BP812ET3	Recoqnize the occurrence and characteristic features of phytochemicals as nutraceuticals
BP812ET4	Understand the concept of free radicals and antioxidants
BP812ET5	Acquaint with the regulatory and commercial aspects of dietary supplements including health claim.

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Subjectwise Course Outcome - [B. Pharmacy - 2020-21]

Semester 1

BP101T Human Anatomy and Physiology I (BP101T) [Theory | Regular]

CO ID.	Course Outcome
BP101T.1	Explain the gross morphology, structure and functions of various organs of the human body.
BP101T.2	Describe the various homeostatic mechanisms and their imbalances
BP101T.3	Identify the various tissues and organs of different systems of human body.
BP101T.4	Appreciate coordinated working pattern of different organs of each system

BP102T Pharmaceutical Analysis I (BP102T) [Theory | Regular]

CO ID.	Course Outcome
BP102T.1	Understands the concept of pharmaceutical analysis, its scope and methods of expressing concentration
BP102T.2	Develop analytical skills through lab exercises to minimize errors in qualitative and quantitative analysis. Apply concept accuracy, precision, significant figures with examples.
BP102T.3	Discuss significance of quality control in pharmaceutical analysis and Employ different theories (acid base theories, Neutralization curves, indicator theory, law of mass action, Henderson Hassalbach equation).
BP102T.4	Explain basic concepts and principles of aqueous acid base titrations and clarify need of non-aqueous acid base titrations as well as acknowledge the basic principle of redox titration, precipitation titration, Complexometric titration, Gravimetric analysis.
BP102T.5	Understands the electrochemical methods of analysis including conductometry, potentiometry and polarography.
BP102T.6	Acquire the knowledge of principle and theory of refractometry, refractive index, and instruments used in determination of refractometry.

BP103T Pharmaceutics I (BP103T) [Theory | Regular]

CO ID.	Course Outcome
BP103T.1	Know the history of profession of Pharmacy
BP103T.2	Understand the various dosage form, pharmaceutical calculation
BP103T.3	Understand professional way of handling of prescription
BP103T.4	Preparation of various dosage form

BP104T Pharmaceutical Inorganic Chemistry (BP104T) [Theory | Regular]

CO ID.	Course Outcome
BP104T.1	Recite the history of Pharmacopoeia.
BP104T.2	Understand different sources of impurities & method for determining the impurities in inorganic drugs & pharmaceuticals.
BP104T.3	Recognize types of water and methods for reducing hardness of water.
BP104T.4	Understand the basic concepts of acidity & basicity, buffers and tonicity applicable in pharmaceuticals & also explain the methods of adjusting isotonicity.
BP104T.5	Acquire knowledge of various major intra and extra cellular electrolytes and their physiological role along with pharmaceutical compounds.
BP104T.6	Recall the medicinal and pharmaceutical importance of inorganic compounds.
BP104T.7	Explain various aspects of radiopharmaceuticals

BP105T Communication skills (BP105T) [Theory | Regular]

CO ID.	Course Outcome
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BP105T.1	Knowledge of basic aspects & soft skills for effective communication.
BP105T.2	Distinguish the elements of communication & communication style & its application for effectively manage the team as a team player.
BP105T.3	Understand the basic listening skills & its importance in pharmacy practice.
BP105T.4	Acquire the knowledge of technical writing skill
BP105T.5	Develop the interview skills & group discussion skills.

BP107P Human Anatomy and Physiology I [Practical | Regular]

CO ID.	Course Outcome
BP107P.1	Explain the gross morphology, structure and functions of various organs of the human body.
BP107P.2	Identify the various tissues and organs of different systems of human body
BP107P.3	Understand the parts of compound microscope and its function
BP107P.4	Determine the heart rate, pulse rate and parameters of blood such as bleeding time, clotting time, erythrocyte sedimentation rate and haemoglobin content
BP107P.5	Know the basic knowledge of haemocytometry
BP107P.6	Record the blood pressure of subject.

BP108P Pharmaceutical Analysis [Practical | Regular]

CO ID.	Course Outcome
BP108P.1	Understand the apparatus and glasswares used in analytical chemistry
BP108P.2	Know the importance of calibration process during analysis of any compound.
BP108P.3	Understand the principles, reaction condition, factor calculations for various methods of volumetric and electrochemical methods of analysis.
BP108P.4	Study different errors during analysis
BP108P.5	Demonstrate and explain different titrimetric methods as well as preparation and standardization of solutions with different strength
BP108P.6	Study concept of refractometry.

BP109P Pharmaceutics I [Practical | Regular]

CO ID.	Course Outcome
BP109P.1	Explain formulation ,evaluation,and labeling of syrup,elixir powder,ointments
BP109P.2	Understand the various dosage form,pharmaceutical calculations
BP109P.3	Understand handling of prescription
BP109P.4	describe use of ingredients in formulation and category of formulation
BP109P.5	Compare various monophasic liquid dosage form
BP109P.6	Compare various semisolid dosage forms

BP110P Pharmaceutical Inorganic Chemistry [Practical | Regular]

CO ID.	Course Outcome
BP110P.1	Understand & perform the limit test of chloride, sulfate, Iron, arsenic, lead and heavy metals
BP110P.2	Know about identification test for the sodium bicarbonate, magnesium hydroxide, copper sulfate, calcium gluconate & ferrous sulphate.
BP110P.3	Understand and perform the test of purification of Bentonite by measuring swelling power/index
BP110P.4	Understand and perform the test for purification of neutralizing capacity of Aluminium hydroxide gel
BP110P.5	Determination of potassium iodate and iodine in potassium iodide
BP110P.6	Preparation of inorganic pharmaceuticals such as boric acid, potash alum and ferrous sulphate



CO ID.	Course Outcome
BP111P.1	Understand basic communication skills to interact effectively.
BP111P.2	Knowledge of soft skills set to work cohesively with team as a team player.


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Subjectwise Course Outcome - [B. Pharmacy - 2020-21]

Second semester

DEG (TH) [Theory | Regular]

CO ID.	Course Outcome
DEG1	Introduce the students meaning of democracy and its different models
DEG2	Know the role of the governance
DEG3	Understand the various approaches to the study of democracy and governance
DEG4	Understand and classify different parts of the constitution of india
DEG5	Understand and describe different amendments and provisions in the constitution of India

Biochemistry (BP209P) [Practical | Regular]

CO ID.	Course Outcome
BP209P.1	Know about the qualitative analysis of carbohydrates (glucose,fructose,lactose,maltose,sucrose,and starch)
BP209P.2	Know about the identification test for proteins
BP209P.3	Know about the qualitative analysis of reducing sugars(DNSA method) and proteins (Biuret method)
BP209P.4	Understand the qualitative analysis of urine for abnormal constituents
BP209P.5	Study about the determination of blood creatinine, blood sugars
BP209P.6	Understand the determination of serum total cholesterol and preparation of buffer solution and measurement of PH
BP209P.7	Study of the enzymatic hydrolysis of starch
BP209P.8	Determination of salivary amylase activity

BP201T Human Anatomy and Physiology II (BP201T) [Theory | Regular]

CO ID.	Course Outcome
BP201T.1	Understand fundamental knowledge of the structure and functions of various systems of the body.
BP201T.2	Describe the various homeostatic mechanism and their imbalance.
BP201T.3	Identify various tissues and organs of different systems of human body.
BP201T.4	Appreciate co-ordinated working pattern of different organs of each system.

BP202T Pharmaceutical Organic Chemistry I (BP202T) [Theory | Regular]

CO ID.	Course Outcome
BP202T.1	Study the basic principles of organic chemistry like hybridization, bond fission, intermolecular forces, structural effects, concept of isomerism and tautomerism etc.
BP202T.2	Describe the classification of organic compounds and Practice the IUPAC nomenclature system.
BP202T.3	Understand stabilities of alkenes, conjugated dienes, mechanism, orientation of elimination, Electrophilic, free radical and Nucleophilic addition reaction and mechanism, kinetics, stereochemistry and factors affecting SN1 & SN2 reaction.
BP202T.4	Discuss the acidity of carboxylic acids and basicity of amines and Know different qualitative test for the different functional group.
BP202T.5	Discuss the mechanism of some named reaction.
BP202T.6	Study structures, qualitative tests and uses of different functional groups and related organic compounds

BP203T Biochemistry (BP203T) [Theory | Regular]

CO ID.	Course Outcome
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BP203T.1	Understand the catalytic role of enzyme and importance of enzymes in biochemical process
BP203T.2	Understand the metabolism of nutrient molecules in physiological and pathological conditions
BP203T.3	Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins

BP204T Pathophysiology (BP204T) [Theory | Regular]

CO ID.	Course Outcome
BP204T.1	Learn the basic principles of cell injury and cellular adaptation
BP204T.2	Study the basic mechanism involved in the process of inflammation and repair
BP204T.3	Describe the etiology of the selected disease states
BP204T.4	Explain the pathogenesis of the selected disease states
BP204T.5	Name the signs and symptoms of the selected disease states
BP204T.6	Know the clinical features and diagnostic tests for detection of the selected disease states

BP205T Computer Applications in Pharmacy (BP205T) [Theory | Regular]

CO ID.	Course Outcome
BP205T .1	Know various types of application of computers in pharmacy
BP205T .2	Know the various types of databases.
BP205T .3	.Know the various applications of databases in pharmacy.
BP205T .4	Know the number system used in computer
BP205T .5	know the concepts of information system and software
BP205T .6	know the various bioinformatics and its impact on vaccines

BP206T ENVIRONMENTAL SCIENCE (BP206T) [Theory | Regular]

CO ID.	Course Outcome
BP206T.1	Create the awareness about environmental problems among learners.
BP206T.2	Impart basic knowledge about the environment and its allied problems.
BP206T.3	Develop an attitude of concern for the environment.
BP206T.4	Motivate learner to participate in environment protection and environment improvement.
BP206T.5	Acquire skills to help the concerned individuals in identifying and solving environmental problems.
BP206T.6	Strive to attain harmony with Nature.

BP207P Human Anatomy and Physiology II (BP207P) [Practical | Regular]

CO ID.	Course Outcome
BP207P.1	Understand various systems using specimen, models, etc.,
BP207P.2	Demonstrate the neurological examination, function of olfactory nerve, visual acuity, reflex activity and positive and negative feedback mechanism
BP207P.3	Record the body temperature and and basal mass index
BP207P.4	Determine different types of taste as well as tidal volume and vital capacity
BP207P.5	Study the family planning devices and pregnancy diagnosis test

BP208P Pharmaceutical Organic Chemistry I (BP208P) [Practical | Regular]

CO ID.	Course Outcome
BP208P.1	Explain and understand the principle and application of each experiment performed in laboratory.
BP208P.2	Understand and apply safe laboratory practices through the use of appropriate personal protective equipment and appropriate handling of all chemicals, including proper disposal of waste.



BP208P.3	Understand the basic organic chemistry laboratory techniques, including calibration of thermometer, distillation, recrystallization, melting point and boiling determination.
BP208P.4	Know the Preparation methods of suitable solid derivatives from organic compounds with their reaction mechanism.
BP208P.5	Discuss principle behind various qualitative tests and analyse the given unknown organic compounds having different functional groups.
BP208P.6	Construct molecular models of compounds using atomic models sets.

BP210P Computer Applications in Pharmacy (BP210P) [Practical | Regular]

CO ID.	Course Outcome
BP210P.1	make a list of questionnaires using MS. Word
BP210P.2	Understand and create HTML web page
BP210P.3	Retrieve information about drugs
BP210P.4	Creating (a database, working with queries, mailing labels with labeling wizard, invoice table)
BP210P.5	know how to export data and reports to and HTML and XML

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Subjectwise Course Outcome - [B. Pharmacy - 2020-21]

Third Semester

AECC Environmental s AECC Environment Studies I [Theory | Regular]

CO ID. Course Outcome

AECCES.1 Create awareness about environmental problems

AECCES.2 Understand about various ecosystems

AECCES.3 Get know about renewable and non renewable resources

AECCES.4 Understand about biodiversity and its conservation

BP301T Pharmaceutical Organic Chemistry II (BP301T) [Theory | Regular]

CO ID. Course Outcome

BP301T.1 Write the structure, name and the type of isomerism of the organic compound

BP301T.2 Write the reaction, name the reaction, and orientation of the reactions

BP301T.3 Account for reactivity/stability of compounds

BP301T.4 Understand the preparation of various organic compounds.

BP302T Physical Pharmaceutics I (BP302T) [Theory | Regular]

CO ID. Course Outcome

BP302T.1 Understand the basics of chemical and physical phenomena that govern the in vivo and in vitro actions of pharmaceutical products such as solubility, refractive index, optical rotation, dielectric constant etc.

BP302T.2 Learn the interrelationships between the physio-chemical properties of a drug, its dosage form, route of administration and bio-availability

BP302T.3 Know various gases laws and theories in correlation with formation of aerosols, crystallization & parameters, colligative properties of non-electrolytic and electrolytic solutions, solubility and distribution phenomenon and apply them in the pharmaceutical practices.

BP302T.4 Understand the various methods for the determination of surface & interracial tension of liquids.

BP302T.5 Acquire knowledge of the methods of detection of complexes and describe the properties and applications of polymers.

BP302T.6 Analyze the Buffer solution, buffer equations and buffer capacity, isotonicity.

BP303T Pharmaceutical Microbiology (BP303T) [Theory | Regular]

CO ID. Course Outcome

BP303T.1 Study historical development of microbiology, it's scope, branches and classification of microbes

BP303T.2 Compare and contrast the various structural features, biology & characteristics of microbes

BP303T.3 Describe the classification, methods of identification, isolation, microbial growth/reproduction, cultivation, quantification, preservation and staining of microorganisms

BP303T.4 Understand microbial control techniques such as sterilization, sterility tests, disinfection and preservation of pharmaceutical products

BP303T.5 Enumerate microbial spoilage, microbial contamination and it's assessment

BP303T.6 Describe the cell culture technology and its applications in pharmaceutical industries

BP304T Pharmaceutical Engineering (BP304T) [Theory | Regular]

CO ID. Course Outcome

BP304T.1 Gain knowledge about various unit operations used in Pharmaceutical industries



BP304T.2	Procure knowledge about the basics of various material handling techniques in pharmaceutical industry
BP304T.3	Understand the significance of plant lay out design for optimum use of resources and gain the knowledge of various materials used for pharmaceutical plant construction.
BP304T.4	Understand the various types of corrosion and the preventive methods that can be adopted for corrosion control in Pharmaceutical industries.
BP304T.5	Appreciate various preventive methods used for corrosion control in pharmaceutical industry.
BP304T.6	Analyze fundamentals of centrifuge for particle separation as well as mixer for particle mixing in pharmacy practice

BP305P PHARMACEUTICAL ORGANIC CHEMISTRY II (BP305P) [Practical | Regular]

CO ID. Course Outcome

BP305P.1	Learn different techniques like recrystallization and steam distillation
BP305P.2	Separate the given organic binary mixture
BP305P.3	Understand saponification value and its determination of different oil samples.
BP305P.4	Understand how to prepare small organic compound.

BP306P PHYSICAL PHARMACEUTICS - I (BP306P) [Practical | Regular]

CO ID. Course Outcome

BP306P.1	Analyze the physicochemical properties such as solubility, pH, refractive index, partition coefficient, PKa values etc. experimentally.
BP306P.2	Study the effect of electrolyte on upper consolute temperature in phase diagram.
BP306P.3	Demonstrate the various adsorption Isotherms by experimentally.
BP306P.4	Determine the surface tension, critical micellar concentration, HLB value of various surfactants.

BP307P PHARMACEUTICAL MICROBIOLOGY (BP307P) [Practical | Regular]

CO ID. Course Outcome

BP307P.1	Know the principle, construction and working of equipments and skill to handle microscope for observation of microbes
BP307P.2	Prepare and sterilize nutrient broth, nutrient agar, slants, stabs and plates and adopt the skills required for maintaining strictly aseptic condition & handling inoculating loop, its sterilization and inoculation procedure
BP307P.3	Practice aseptic procedures for inoculation and examine sterility testing of pharmaceuticals
BP307P.4	Practice different methods of sterilization and isolate pure culture of microorganism
BP307P.5	Adapt the technique involved to see motility of bacteria i.e. hanging drop technique
BP307P.6	Develop skill to execute morphology of bacteria by staining and determine quality of water by Most probable number test (bacteriological analysis)
BP307P.7	Differentiate Gram negative intestinal bacteria by performing IMVIC test
BP307P.8	Learn standardization of pharmaceutical products microbiologically

BP308P PHARMACEUTICAL ENGINEERING (BP308P) [Practical | Regular]

CO ID. Course Outcome

BP308P.1	Study various pharmaceutical machines and the equipment's used in pharmaceutical industry.
BP308P.2	Perform various processes used in pharmaceutical manufacturing process
BP308P.3	Study the different methods used for determination of humidity
BP308P.4	Develop rigorous experimental and analytical skills for extraction and drying of sample in laboratory
BP308P.5	Study various unit operations used in pharmaceutical industry and the effect of factors influencing them

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Subjectwise Course Outcome - [B. Pharmacy - 2020-21]

Direct Second Year

BP105T.1 Communication skills (BP105T) [Theory | Regular]

CO ID.	Course Outcome
BP105T.1	Knowledge of basic aspects & soft skills for effective communication.
BP105T.2	Distinguish the elements of communication & communication style & its application for effectively manage the team as a team player.
BP105T.3	Understand the basic listening skills & its importance in pharmacy practice.
BP105T.4	Acquire the knowledge of technical writing skill
BP105T.5	Develop the interview skills & group discussion skills.

BP111P Communication Skills (PR) [Practical | Regular]

CO ID.	Course Outcome
BP111P.1	Understand basic communication skills to interact effectively.
BP111P.2	Knowledge of soft skills set to work cohesively with team as a team player.

BP205T Computer Applications in Pharmacy (BP205T) [Theory | Regular]

CO ID.	Course Outcome
BP205T.1	Know various types of application of computers in pharmacy
BP205T.2	Know the various types of databases.
BP205T.3	Know the various applications of databases in pharmacy.
BP205T.4	Know the number system used in computer
BP205T.5	know the concepts of information system and software
BP205T.6	know the various bioinformatics and its impact on vaccines

BP210P Computer Applications in Pharmacy (BP210P) [Practical | Regular]

CO ID.	Course Outcome
BP210P.1	make a list of questionnaires using MS. Word
BP210P.2	Understand and create HTML web page
BP210P.3	Retrieve information about drugs
BP210P.4	Creating (a database, working with queries, mailing labels with labeling wizard, invoice table)
BP210P.5	know how to export data and reports to and HTML and XML

BP301T Pharmaceutical Organic Chemistry II (BP301T) [Theory | Regular]

CO ID.	Course Outcome
BP301T.1	Write the structure, name and the type of isomerism of the organic compound
BP301T.2	Write the reaction, name the reaction, and orientation of the reactions
BP301T.3	Account for reactivity/stability of compounds
BP301T.4	Understand the preparation of various organic compounds.

BP302T Physical Pharmaceutics I (BP302T) [Theory | Regular]



CO ID.	Course Outcome
BP302T.1	Understand the basics of chemical and physical phenomena that govern the in vivo and in vitro actions of pharmaceutical products such as solubility, refractive index, optical rotation, dielectric constant etc.
BP302T.2	Learn the interrelationships between the physio-chemical properties of a drug, its dosage form, route of administration and bio-availability
BP302T.3	Know various gases laws and theories in correlation with formation of aerosols, crystallization & parameters, colligative properties of non-electrolytic and electrolytic solutions, solubility and distribution phenomenon and apply them in the pharmaceutical practices.
BP302T.4	Understand the various methods for the determination of surface & interracial tension of liquids.
BP302T.5	Acquire knowledge of the methods of detection of complexes and describe the properties and applications of polymers.
BP302T.6	Analyze the Buffer solution, buffer equations and buffer capacity, isotonicity.

BP303T Pharmaceutical Microbiology (BP303T) [Theory | Regular]

CO ID.	Course Outcome
BP303T.1	Study historical development of microbiology, its scope, branches and classification of microbes
BP303T.2	Compare and contrast the various structural features, biology & characteristics of microbes
BP303T.3	Describe the classification, methods of identification, isolation, microbial growth/reproduction, cultivation, quantification, preservation and staining of microorganisms
BP303T.4	Understand microbial control techniques such as sterilization, sterility tests, disinfection and preservation of pharmaceutical products
BP303T.5	Enumerate microbial spoilage, microbial contamination and its assessment
BP303T.6	Describe the cell culture technology and its applications in pharmaceutical industries
BP303T.7	Study of microscopy, dark and contrast media
BP303T.8	Study of different disinfectant
BP303T.9	Study of antibiotics and vitamins assay

BP304T Pharmaceutical Engineering (BP304T) [Theory | Regular]

CO ID.	Course Outcome
BP304T.1	Know the various unit operations used in pharmaceutical industries
BP304T.2	Understand the material handling techniques.
BP304T.3	Perform various processes involved in pharmaceutical manufacturing process
BP304T.4	Carry out various test to prevent environmental pollution
BP304T.5	Appreciate and comprehend significance of plant layout design for optimum use of resources
BP304T.6	Appreciate the various preventive methods used for corrosion control in pharmaceutical industries

BP305P PHARMACEUTICAL ORGANIC CHEMISTRY II (BP305P) [Practical | Regular]

CO ID.	Course Outcome
BP305P.1	Learn different techniques like recrystallization and steam distillation
BP305P.2	Separate the given organic binary mixture
BP305P.3	Understand saponification value and its determination of different oil samples.
BP305P.4	Understand how to prepare small organic compound.

BP306P PHYSICAL PHARMACEUTICS - I (BP306P) [Practical | Regular]

CO ID.	Course Outcome
BP306P.1	Analyze the physicochemical properties such as solubility, pH, refractive index, partition coefficient, PKa values etc. experimentally.
BP306P.2	Study the effect of electrolyte on upper consolute temperature in phase diagram.
BP306P.3	Demonstrate the various adsorption isotherms by experimentally.



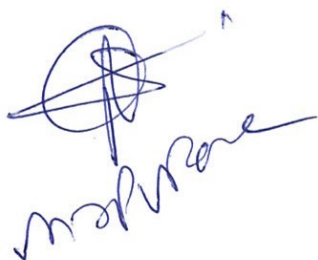
BP306P.4 Determine the surface tension, critical micellar concentration, HLB value of various surfactants.

BP307P PHARMACEUTICAL MICROBIOLOGY (BP307P) [Practical | Regular]

CO ID.	Course Outcome
BP307P.1	Know the principle, construction and working of equipments and skill to handle microscope for observation of microbes
BP307P.2	Prepare and sterilize nutrient broth, nutrient agar, slants, stabs and plates and adopt the skills required for maintaining strictly aseptic condition & handling inoculating loop, its sterilization and inoculation procedure
BP307P.3	Practice aseptic procedures for inoculation and examine sterility testing of pharmaceuticals
BP307P.4	Practice different methods of sterilization and isolate pure culture of microorganism
BP307P.5	Adapt the technique involved to see motility of bacteria i.e. hanging drop technique
BP307P.6	Develop skill to execute morphology of bacteria by staining and determine quality of water by Most probable number test (bacteriological analysis)
BP307P.7	Differentiate Gram negative intestinal bacteria by performing IMVIC test
BP307P.8	Learn standardization of pharmaceutical products microbiologically

BP308P PHARMACEUTICAL ENGINEERING (BP308P) [Practical | Regular]

CO ID.	Course Outcome
BP308P.1	Study various pharmaceutical machines and the equipment's used in the pharmaceutical industry
BP308P.2	Perform various processes used in pharmaceutical manufacturing process
BP308P.3	Study the different methods used for the determination of humidity
BP308P.4	Develop rigorous experimental and analytical skills for extraction and drying sample in laboratory
BP308P.5	Study various unit operations used in pharmaceutical industry and the effect of factors influencing them




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Subjectwise Course Outcome - [B. Pharmacy - 2020-21]

Fourth Semester

Pharmacology I (BP404T) [Theory | Regular]

CO ID. Course Outcome

BP404T.1	Understand the pharmacological actions of different categories of drugs
BP404T.2	Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels
BP404T.3	Apply the basic pharmacological knowledge in the prevention and treatment of various diseases
BP404T.4	Know basics of pharmacology like history, scope and general principles
BP404T.5	Understand the process of new drug discovery and development of drug.

Pharmacognosy and Phytochemistry I (BP409P) [Practical | Regular]

CO ID. Course Outcome

BP409P.1	know the evaluation techniques of crude drugs
BP409P.2	carry out the microscopic and morphological evaluation of crude drugs
BP409P.3	Understand chemical identification tests of crude drugs
BP409P.4	Interpret the results
BP409P.5	Identify purity and adulteration of drugs
BP409P.6	Compare results with standards
BP409P.7	Handle various instruments and equipment
BP409P.8	Calculate the results

AECC environmental s AECC Environment Studies 2 [Theory | Regular]

CO ID. Course Outcome

AECCES.1	Understand human community and its impact on environment
AECCES.2	Get knowledge about environmental policies
AECCES.3	Understand about environmental pollution and its control measures
AECCES.4	Motivate to students about environmental awareness by field visit

BO408P Pharmacology I (BP408P) [Practical | Regular]

CO ID. Course Outcome

BP408P.1	Understand the pharmacological actions of different categories of drugs
BP408P.2	Observe the effect of drugs on animals by simulated experiments
BP408P.3	Appreciate correlation of pharmacology with other bio medical sciences
BP408P.4	Get knowledge about pharmacology lab, eg. animals, instruments, animal handling skills etc...

BP40IT Pharmaceutical Organic Chemistry III (BP40IT) [Theory | Regular]

CO ID. Course Outcome

BP40IT.1	Understand the Chemistry, methods of preparation, properties, reactions of organic compounds.
BP40IT.2	Explain the stereochemical aspects of organic compounds and stereochemical reactions.
BP40IT.3	Know the medicinal uses and other applications of organic compounds



BP401T.4 Understand the reactions and mechanism of name reactions.

BP402T Medicinal Chemistry I (BP402T) [Theory | Regular]

CO ID. Course Outcome

BP402T.1 Know the connection in between physicochemical properties, mechanism of action, uses and structural features of various drugs with respect to pharmacological activities.

BP402T.2 Understand the drug metabolic pathways, adverse effect and therapeutic value of Drugs.

BP402T.3 Write synthesis of drugs and remember the structure of important drugs with its activity.

BP402T.4 Know the Structural Activity Relationship (SAR) of different class of drugs.

BP402T.5 Understand classification, Mechanism of action, Uses of Drugs acting on Autonomic nervous system and Central nervous system.

BP403T Physical Pharmaceutics II (BP403T) [Theory | Regular]

CO ID. Course Outcome

BP403T.1 Understand various physicochemical properties of drug & excipient molecules in designing the dosage form

BP403T.2 Describe the flow behavior of fluids and the concept of thixotropy in pharmaceutical formulations

BP403T.3 Explain the concept of surface and interfacial tension and HLB scale & method of formulation.

BP403T.4 Understand the fundamentals of chemical kinetics and stability of the drugs under accelerated conditions.

BP403T.5 Know the behavior and mechanism of drugs and excipients in the formulation development and evaluation of dosage forms.

BP403T.6 Determine the concept of micromeritics along with methods & its applications.

BP405T Pharmacognosy and Phytochemistry I (BP405T) [Theory | Regular]

CO ID. Course Outcome

BP405T.1 know the techniques in the cultivation and production of crude drugs

BP405T.2 know the crude drugs, their uses and chemical nature

BP405T.3 know the evaluation techniques for the herbal drugs

BP405T.4 understand the history and development of the subject Pharmacognosy

BP405T.5 understand different methods of crude drug classification

BP405T.6 understand concepts of plant tissue culture

BP405T.7 understand Plant description, morphology and anatomy

BP405T.8 classify plant metabolites and differentiate between various types of metabolites

BP405T.9 understand pharmacognosy of drugs belongs to primary metabolites

BP406P Medicinal Chemistry I (BP406P) [Practical | Regular]

CO ID. Course Outcome

BP406P.1 Study the different purification techniques including Recrystallization, TLC.

BP406P.2 Prepare small organic compounds / drugs / drug intermediates.

BP406P.3 Perform purification of synthesized compounds by Column chromatography.

BP406P.4 Determine the Partition coefficient and Ionisation constants.

BP407 Physical Pharmaceutics II (BP407P) [Practical | Regular]

CO ID. Course Outcome

BP407.1 Determine the particle size, particle size distribution by various methods.

BP407.2 Evaluate bulk density, true density, porosity, the angle of repose of powder & study the influence of lubricant on angle of repose..

BP407.3 Determine the viscosity of liquids by using different viscometer.

BP407.4 Evaluate sedimentation volume of suspension.



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Subjectwise Course Outcome - [B. Pharmacy - 2020-21]

Fifth Semester

Pharmacology II (BP503T) [Theory | Regular]

CO ID.	Course Outcome
BP503T.1	Understand classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications of drugs acting on cardiovascular and urinary system.
BP503T.2	Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
BP503T.3	Demonstrate the various receptor actions using isolated tissue preparation
BP503T.4	Elaborate correlation of pharmacology with related medical sciences
BP503T.5	Understand concepts in endocrine pharmacology i.e pituitary and thyroid hormones.

Pharmacology - II (BP507P) [Practical | Regular]

ID.	Course Outcome
BP507P.1	Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
BP507P.2	Demonstrate the various receptor actions using isolated tissue preparation
BP507P.3	Understand the mechanism of drug action and its relevance in the treatment of different diseases
BP507P.4	Elaborate correlation of pharmacology with related medical sciences
BP507P.5	Understand in-vitro pharmacology and different physiological salt solutions.

BP501T Medicinal Chemistry II (BP501T) [Theory | Regular]

CO ID.	Course Outcome
BP501T.1	Helps in correlating between pharmacology of a disease and its mitigation or cure of different drug classes and their side effects
BP501T.2	Know the structural activity relationship of different class of drugs.
BP501T.3	Explain synthesis of drugs and also recall the structure of some important drugs.
BP501T.4	Apply the core theoretical knowledge and explain the rational use of autacoids and related drugs.
BP501T.5	Understand classification, Mechanism of action, Uses of Drugs acting on Cardiovascular systems.
BP501T.6	Understand drugs acting on Endocrine system : Sex hormones, Drugs for erectile dysfunction, Oral contraceptives, Corticosteroids, Thyroid and Antithyroid drugs
BP501T.7	Learn Drugs used as Local anesthetics & anti diabetic agents

BP502T Industrial Pharmacy (BP502T) (formerly known as Formulative Pharmacy) [Theory | Regular]

CO ID.	Course Outcome
BP502T.1	Describe the physicochemical properties which are important for formulation development of solid, liquid and sterile dosage forms.
BP502T.2	Interpret formulation data and subsequent analysis data towards selection of the most stable and effective formulations.
BP502T.3	Prepare quality pharmaceutical formulations from known references which are suitable for patient use.
BP502T.4	Explain the concept and importance of evaluation of product performance and interpret such data
BP502T.5	Describe the principles of sterile preparations and also why quality assurance and validation of critical steps in the production process are of significant importance.
BP502T.6	Develop cosmetic preparations with desired Safety, stability, and efficacy
BP502T.7	Develop aerosol formulations and understand the importance of evaluation tests for aerosols.



BP502T.8 Understand the importance of pharmaceutical packaging and its applications.

BP504T Pharmacognosy and Phytochemistry II (BP504T) [Theory | Regular]

CO ID.	Course Outcome
BP504T.1	Highlight applicability and understand the relevance and significance of pharmacognosy and phytochemistry to pharmaceutical sciences
BP504T.2	Clarify principles of modern extraction techniques & explain how these can be applied in characterization and identification of the herbal drug and phytoconstituents.
BP504T.3	Explain correct use of various equipment in pharmacognosy laboratory.
BP504T.4	Understand the principle & applications of chromatographic & non-chromatographic separation methods
BP504T.5	Understand the metabolic pathway in formation of secondary metabolites and application of bio genetic Study.
BP504T.6	Know the different classes of secondary metabolites with their composition, chemistry and chemical classes, biological source, method of extraction, uses and application.

BP505T Pharmaceutical Jurisprudence (BP505T) [Theory | Regular]

CO ID.	Course Outcome
BP505T.1	Understand pharmaceutical legislation, schedules, administrative bodies and their implications in the development and marketing of pharmaceuticals.
BP505T.2	Study various Indian pharmaceutical acts, rules and laws.
BP505T.3	Study various regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.
BP505T.4	Understand code of ethics during the pharmaceutical practice.

BP506P Industrial Pharmacy-I (BP506P) [Practical | Regular]

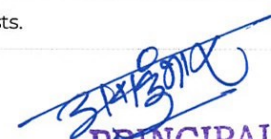
CO ID.	Course Outcome
BP506P.1	Understand and evaluate the concept of preformulation and develop the stable and efficient dosage forms
BP506P.2	Prepare and evaluate different solid dosage forms such as tablets, capsules, pellets etc.
BP506P.3	Demonstrate the coating procedure of the tablets with proper understanding of steps involved in the film coating as well as sugar coating
BP506P.4	Practice the aseptic technique while preparing parenteral formulations. Prepare and develop various parenteral formulations.
BP506P.5	Practice the preparation and development of ophthalmic formulations.
BP506P.6	Understand importance of pharmaceutical packaging and able to perform the various tests of packaging containers. (evaluation tests for glass containers)

BP508P Pharmacognosy and Phytochemistry II (BP508P) [Practical | Regular]

CO ID.	Course Outcome
BP508P.1	Explain correct use of various equipments in Pharmacognosy laboratory
BP508P.2	Handle simple and compound microscope technically in a correct way
BP508P.3	Demonstrate skill of plant material sectioning, staining, mounting & focusing.
BP508P.4	Draw morphological & microscopical diagrams & able to label component.
BP508P.5	Understand the different cellular structures in powder characteristics of plant organ.
BP508P.6	Understand the isolation process, role of solvent and identification of different secondary metabolites.
BP508P.7	Understand the use of chromatography in identification of plant material, extracts and isolated compounds.
BP508P.8	Understand the organized and unorganized drug and develop skill to identify it by chemical tests.


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Subjectwise Course Outcome - [B. Pharmacy - 2020-21]

Sixth Semester

BP601T Medicinal Chemistry III (BP601T) [Theory | Regular]

CO ID.	Course Outcome
BP601T.1	Know the general aspects of design, history, nomenclature, MOA, therapeutic uses, and recent developments of drugs.
BP601T.2	Understand variety of drug classes and some pharmacological properties.
BP601T.3	Know the importance of SAR of drugs.
BP601T.4	Understand the chemistry of drugs with respect to their biological activity
BP601T.5	Understand the importance of drug design and different techniques of drug design.
BP601T.6	Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
BP601T.7	Understand synthesis of some important class of drugs.
BP601T.8	Acquire knowledge on thrust areas for further research.

BP602T Pharmacology III (BP602T) [Theory | Regular]

CO ID.	Course Outcome
BP602T.1	Explain the mechanism of drug action and its relevance in the treatment of different infectious diseases
BP602T.2	Illustrate the principles of toxicology
BP602T.3	Discuss treatment of various poisonings
BP602T.4	Analyse correlation of pharmacology with related medical sciences.
BP602T.5	Explain the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology

BP603T Herbal Drug Technology (BP603T) [Theory | Regular]

CO ID.	Course Outcome
BP603T.1	Understand the raw material as source of herbal drug from cultivation of herbal drug product.
BP603T.2	Know the different Indian systems of medicines.
BP603T.3	Understand the concept of nutraceutical and know the benefits of nutraceuticals in different aliments and study the herb drug interaction.
BP603T.4	Understand the concept of herbal cosmetic with herbal excipients and herbal formulations.
BP603T.5	Know the WHO and ICH Guidelines of evaluation of herbal drugs
BP603T.6	Know the patenting of herbal drug and GMP in herbal drug industry.

BP604T Biopharmaceutics and Pharmacokinetics (BP604T) [Theory | Regular]

CO ID.	Course Outcome
BP604T.1	Understand the passage of drug through the body after administration i.e. The concept of ADME
BP604T.2	Understand and explain the various routs of administration and biopharmaceutical factors related to this.
BP604T.3	Understand the concept of nonlinearity.
BP604T.4	Apply the knowledge plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination



BP604T.5 Understand the concepts of bioavailability and bioequivalence of drug products and their significance. Able to evaluate factors influencing the drug availability that correspondingly influence drug treatment efficacy.

BP604T.6 Understand and explain various pharmacokinetic models and its applications.

BP605T Pharmaceutical Biotechnology (BP605T) [Theory | Regular]

CO ID. Course Outcome

BP605T.1 Understanding the concept related to enzymes, importance of Immobilized enzymes in Pharmaceutical Industries, Biosensors and basic principle of protein and genetic engineering

BP605T.2 Understand the concept related to genetic engineering, recombinant DNA technology and applications in relation to production of pharmaceuticals

BP605T.3 Importance of Monoclonal antibodies, Immunoglobulins, blood products and Plasma Substitutes in Industries

BP605T.4 Understand importance and use of microorganisms in fermentation technology

BP606T Quality Assurance (BP606T) [Theory | Regular]

CO ID. Course Outcome

BP606T.1 Understand the importance of quality in pharmaceutical products

BP606T.2 Understands the regulatory aspects of pharmaceuticals

BP606T.3 Learn the process involved in manufacturing of pharmaceuticals in different section/department and their activities

BP606T.4 Describe various documentation process and concept of calibration and validation

BP606T.5 Know the responsibilities of QA & QC departments

BP606T.6 Understand the scope of quality certifications applicable to pharmaceutical industries

BP607P Medicinal chemistry III (BP607P) [Practical | Regular]

CO ID. Course Outcome

BP607P.1 Understand use of various equipments and safety measures while working in medicinal chemistry laboratory.

BP607P.2 Perform synthesis of medicinally important compounds/ drug intermediates.

BP607P.3 Understand reaction scheme, mechanism and theory involved in synthesis of medicinally important organic compounds.

BP607P.4 Draw chemical structures and reactions by Chem draw software.

BP607P.5 Explain the physicochemical properties of drugs using drug design software.

BP608P Pharmacology III (BP608P) [Practical | Regular]

CO ID. Course Outcome

BP608P1 Learn dose calculations in pharmacological practical

BP608P2 Determine the anti-ulcer and anti-allergic activity

BP608P3 Study the effects of the drug on gastrointestinal motility and saline purgative on frog intestine

BP608P4 Study the effect of agonist and antagonist

BP608P5 Write and learn applications of different biostatistical methods

BP609P Herbal Drug Technology (BP609P) [Practical | Regular]

CO ID. Course Outcome

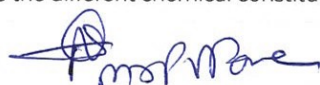
BP609.1 Understand the concept of preliminary phytochemical screening with ability of performing different identification test.

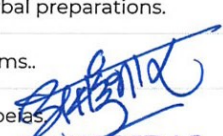
BP609.2 Determine the alcohol content and evaluate the excipients in different herbal preparations.

BP609.3 Preparation and standardization of extract and different herbal dosage forms.

BP609.4 Study the monograph of analysis of herbal drugs from recent pharmacopoeias.

BP609.5 Determine the different chemical constituents in crude drug.




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Subjectwise Course Outcome - [B. Pharmacy - 2020-21]

Seventh Semester

Pharmacology-IV (474 T) [Theory | Regular]

CO ID.	Course Outcome
474T.1	Analyze the mechanism of resistance to antibiotics.
474T.2	Express in-depth knowledge about pharmacology and pharmacotherapy of drugs used in infectious diseases, cardiovascular disorders etc
474T.3	Summarize the detail classification, mechanism of action, pharmacological actions, pharmacokinetics, therapeutic uses, adverse effects, drug interactions, contraindications and dosages of drugs.
474T.4	Explain mechanism of drug action and its relevance in the treatment of different infectious diseases
474T.5	Evaluate mechanism of hormone action and treatment of various hormonal disorder

471 T Sterile Products (471 T) [Theory | Regular]

CO ID.	Course Outcome
471 T.1	Describe the general requirements, routes of administration, significance of tonicity adjustment, sterility and Pre-formulation of sterile products.
471 T.2	Understand various packaging materials used, types, choice of containers, official quality control tests and methods of evaluation. .
471 T.3	Describe the GMP design and layout of parenteral production facility, environmental control zones, heating ventilation air conditioning (HVAC), HEPA filter and laminar air flow systems
471 T.4	Explain classification, formulation, types, selection of vehicles added substance, processing, manufacturing and quality control of SVP's with Special types of SVPs. Pilot plant scale up.
471 T.5	Understand large volume parenterals (LVPs), Types, concept of formulation, influence of physiological factors, processing, manufacturing and quality control of LVPs, along with parenteral nutrition, intravenous admixture, peritoneal dialysis fluid.
471 T.6	Understand principle, steps, formulation, construction-working and application of freeze drying process.
471 T.7	Study of general requirements, formulation, types, evaluation of ophthalmic products and injectable devices.
471 T.8	Knowledge of blood products and surgical dressings.

471 P Sterile Products (471 P) [Practical | Regular]

CO ID.	Course Outcome
471 P.1	Understand ampoule sealing techniques, formulation development, Pharmacopoeial evaluation and labeling of SVPs, LVPs, and ophthalmic preparations .
471 P.2	Describe use of ingredients in formulation and category of formulation.
471 P.3	Study and scrutinize labels of marketed parenteral products and evaluation of packaging materials as per Pharmacopoeia.
471 P.4	Understand importance and validation of aseptic area.
471 P.5	Understand how to do evaluation of marketed preparations.
471 P.6	Study significance and accelerated stability testing of marketed samples.

472 P Pharmaceutical Analysis V (472 P) [Practical | Regular]

CO ID.	Course Outcome
472P.1	Explain the different types of instrumental analytical techniques available for quality control of APIs & formulations.
472 P.2	Quantification of API by using simultaneous equation method.



472 P.3 Determination of functional group in the compound by using IR spectroscopy.

472P.4 Quantification of API by using Q method.

472-T Pharmaceutical Analysis-V (472 T) [Theory | Regular]

CO ID. Course Outcome

472 T.1 Understand and explain the principle involved in analytical techniques.

472 T.2 Explain the different types of instrumental analytical techniques available for quality control of APIs & formulations.

472 T.3 Understand and explain the instrumentation of analytical techniques.

472 T.4 Understand and explain applications of analytical techniques.

472 T.5 Determination of functional group in the compound.

472 T.6 Study various sampling techniques employed in analytical techniques.

473 P Medicinal Chemistry III (473 P) [Practical | Regular]

CO ID. Course Outcome

473P.1 Understand use of various equipments & safety measures while working in medicinal chemistry laboratory.

473P.2 Perform synthesis and purification by recrystallisation of medicinally important compounds/ drug intermediates.

473P.3 Understand reaction scheme, mechanism and theory involved in synthesis of medicinally important organic compounds.

473P.4 Develop skills involved in thin layer chromatography techniques and purification of synthesized compounds by column chromatography.

473P.5 Interpret the spectral characterizations made by IR and ¹H-NMRs of synthesized compounds

473P.6 Understand and develop skills in various demonstrated experiments such as Gas Chromatography/ Atomic Absorption Spectrophotometry/ SEM.

473 T Medicinal Chemistry-III (473 T) [Theory | Regular]

CO ID. Course Outcome

473T.1 Know the general aspects of design of the drugs, history, nomenclature, therapeutic uses, and recent developments in the antibiotics, anti-infective agents and anti-neoplastic agents.

473T.2 Understand variety of drug classes and some pharmacological properties.

473T.3 Know the structural activity relationship (SAR) of different class of drugs.

473T.4 Understand the chemistry of drugs with respect to their pharmacological activity

473T.5 Know the mechanism of action (MOA) of different class of drugs.

473T.6 Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs

473T.7 Understand synthesis of some important class of drugs.

473T.8 Acquire knowledge on thrust areas for further research.

474P Pharmacology IV (474 P) [Practical | Regular]

CO ID. Course Outcome

474P.1 Represent the importance of isolated preparation, mechanism of action of drugs on isolated tissues, expertise in performing bioassay of drugs.

474P.2 Explain the rational and irrational fixed dose combinations based on various parameters.

474P.4 Understand basic aspect to carry out critical appraisal of marketed fixed dose combination

474P.3 Study the prescription pattern and rational use of drugs by performing case study from different reference books and during hospital visit.

474P.5 Represent know importance of review of Prescription:

475 T Natural Drug Technology (475 T) [Theory | Regular]



CO ID.	Course Outcome
475 T.1	Comprehend & explain various factors affect on level of secondary metabolites, how these can be minimized to ensure quality in raw material, effect of post harvesting manipulations, and changes during storage etc & methods to control these modification.
475 T.2	Explain various guidelines issued by WHO in relation with cultivation, collection, storage etc.
475 T.3	Understand & explain concept of health & pathogenesis, philosophical basis, diagnosis & treatment aspects of Ayurveda, Unani, Siddha & Homeopathic system of medicine; Understand & explain method of preparation of Ayurvedic dosage forms; significance of novel drug delivery of natural products; herbs used in cosmetic preparation & methods of their formulations.
475 T.4	Understand and explain the applications of plant tissue culture for Secondary metabolite production.
475 T.5	Explain in-vitro screening methods and its applications for biological evaluation of natural products
475 T.6	Explain the approaches and potentials of herbal new drug delivery systems like liposomes, phytosomes, nanoparticles and vesicles
475 T.7	Understand & explain various physical, chemical, spectroscopic means & methods used in structural elucidation of natural products. Interpret data generated from above techniques.
475 T.8	Understand the concept of cosmeceuticals, their formulations and evaluation process along with herbs used in cosmeceuticals

475P Natural Drug Technology (475 P) [Practical | Regular]

CO ID.	Course Outcome
475 P.1	Prepare, label & evaluate herbal/TSM formulations
475 P.2	Evaluate marketed cosmetic & nutraceutical formulations
475 P.3	Conduct preformulation parameters & understand underlying rationale
475 P.4	Conduct in vitro assays for correlation with biological efficacy
475 P.5	Handle equipment's as per SOPs & learn various demonstrations (of experiments)
475 P.6	Listen carefully, raise logical query, draw information, understand rationale during field visits & prepare brief report for evaluation.

477T Pharmaceutical Jurisprudence (477 T) [Theory | Regular]

CO ID.	Course Outcome
477T.1	Describe pharmaceutical legislations and their inference related to pharma practice
477T.2	Explain the importance of code of pharmaceutical ethics
477T.3	Recognize the provisions of acts pertaining to drugs and cosmetics
477T.4	Explain the latest amendments with respect to DPCO, patent act and intellectual property rights
477T.5	Discuss the concepts of price fixation of pharmaceutical products and inspections by the Board or its representative
477T.6	Explain the definitions in the Act, identify potential offences and penalty related to legal issues of narcotic & psychotropic substance
477T.7	Summarize the Pharmaceutical Acts, laws and their implications in the development and marketing of pharmaceuticals
477T.8	Describe the standard institutions and regulatory authorities governing the manufacture and sale of pharmaceuticals

Not yet 4.7.6 T Bio-pharmaceutics & Pharmacokinetics (476 T) [Theory | Regular]

CO ID.	Course Outcome
476T.1	Understand the passage of drug through the body after administration i.e. The concept of ADME
476T.2	Understand and explain the various routes of administration and biopharmaceutical factors related to this.
476T.3	Understand the concept of nonlinearity.
476T.4	Understand and explain various pharmacokinetic models and its applications.



476T.5	Understand the concepts of drug clearance, and apply the knowledge of change in the phase of drug with the help of various pharmacokinetic models
476T.6	Understand and able to apply the concept of bioavailability and bioequivalence.
476T.7	Analyze the various pharmacokinetics parameters which are influencing on drug dosing


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Subjectwise Course Outcome - [B. Pharmacy - 2020-21]

Eighth Semester

Pharmacology- V(Including Biostatistics) (485 T) [Theory | Regular]

CO ID. Course Outcome

- 485T.1 Discuss important aspect, classification, mechanism of drug-drug interaction and ADRs.
- 485T.2 Explain basic aspects of drug safety and Pharmacovigilance in relation to monitoring and reporting of ADRs.
- 485T.3 Explain functioning and role of hospital pharmacy and practice of rational drug therapy and methods of assessment of patient compliance and non-compliance.
- 485T.4 Illustrate clinical trials, ethics and practice of Good Clinical Practice involved in clinical trials.
- 485T.5 Express process, working and personnel involved in clinical data management and their roles.

481 P Advanced Drug Delivery System (481 P) [Practical | Regular]

D. Course Outcome

- 481 P.1 Understand evaluation of polymers
- 481 P.2 Understand formulation of microencapsulation and their evaluation
- 481 P.3 Understand formulation and evaluation of sustain release formulations
- 481 P.4 Study different evaluation methods of Control and sustain release marketed formulation
- 481 P.5 Study formulation and evaluation of gastroretentative formulation
- 481 P.6 Understand design of experiment software for optimization of pharmaceutical formulation.

481 T Advanced Drug Delivery System (481 T) [Theory | Regular]

CO ID. Course Outcome

- 481 T.1 Understand the Fundamental Concept of Modified Drug Release and Prerequisites of drug candidates and various approaches with classification
- 481 T.2 Study and understand polymers with respect to introduction to polymers, classification, types, selection, application and examples
- 481 T.3 Study about Introduction, formulation, merits, demerits, application and evaluation of Novel Drug Delivery Systems
- 481 T.4 Understand fundamental concept of Therapeutic Aerosols along with typical formulations from, metered dose, intranasal and topical applications
- 481 T.5 Explain concept of microencapsulation, merits, demerits and application, Types of Microencapsulation and Evaluation of microcapsules
- 481 T.6 Understand Basic concept of optimization

482 T Cosmetic science (482 T) [Theory | Regular]

CO ID. Course Outcome

- 482T.1 Understand the concepts of cosmetics, anatomy of skin versus hair, general excipients used in cosmetics
- 482T.2 Explain formulation of cosmetics for skin, manufacturing, equipment's & evaluation of creams like cold cream, vanishing cream etc. & powder cosmetics
- 482T.3 Explain formulation of cosmetics for hair, manufacturing & evaluation of hair shampoos, tonics and shaving preparations
- 482T.4 Describe formulation, evaluation of eye cosmetics and manicure products
- 482T.5 Learn formulation, manufacture & evaluation of baby cosmetics and dental care products
- 482T.6 Explain the concept of cosmeceuticals, history, difference between cosmetics & cosmeceuticals agents
- 482T.7 Understand some formulation for Hygiene maintenance and cleaning purpose



482P Cosmetic Science (482P) [Practical | Regular]

CO ID.	Course Outcome
482P.1	Understand the concepts of cosmetics; anatomy of skin v/s hair, general excipients used in cosmetics.
482P.2	Learn the formulation of cosmetics for skin, manufacturing, equipments & evaluation of Cosmetics
482P.3	Understand formulation of cosmetics for hair, manufacturing & evaluation of hairshampoos, tonics etc.
482P.4	Learn the formulation of cosmetics for eyes, manufacturing & evaluation of eyemascara, shadow etc.
482P.5	Understand formulation of manicure products like nail lacquer, remover etc.
482P.6	Learn formulation, manufacture & evaluation of baby cosmetics like baby oils, powders etc
482P.7	Learn the formulation, ingredients used for maintain hygiene of Tooth cavity.

483 P Pharmaceutical Analysis V I (483P) [Practical | Regular]

CO ID.	Course Outcome
483P.1	Explain the different types of instrumental analytical techniques available for quality control of APIs & formulations.
483P.2	Validation of Assay of APIs by using UV-Visible spectrophotometer.
483P.3	Determination of structure of the simple organic compound by using IR, MASS, NMR spectroscopy.
483P.4	Interpretation of given Mass spectrum.

483 T Pharmaceutical Analysis-VI (483 T) [Theory | Regular]

CO ID.	Course Outcome
483 T.1	Understand and explain the principle involved in analytical techniques.
483 T.2	Explain the different types of instrumental analytical techniques available for quality control of APIs & formulations.
483 T.3	Understand and explain the instrumentation of analytical techniques.
483 T.4	Understand and explain applications of analytical techniques.
483 T.5	Structure elucidation of the simple organic compound.

484 P Medicinal Chemistry-IV (484 P) [Practical | Regular]

CO ID.	Course Outcome
484P.1	Understand use of various equipments & safety measures while working in medicinal chemistry laboratory.
484P.2	Perform synthesis and purification by recrystallisation of medicinally important compounds/ drug intermediates.
484P.3	Understand reaction scheme, mechanism and theory involved in synthesis of medicinally important organic compounds.
484P.4	Develop skills involved in thin layer chromatography techniques and purification of synthesized compounds by column chromatography.
484P.5	Interpret the spectral characterizations made by IR of synthesized compounds
484P.6	Understand and develop skills in various demonstrated experiments such as High Vacuum distillation, CADD.

484 T Medicinal Chemistry-IV (484 T) [Theory | Regular]

CO ID.	Course Outcome
484T.1	Know the general aspects of design of the drugs, history, nomenclature, therapeutic uses, and recent developments in the antihistaminics, proton pump inhibitors, serotonergic agents, Autacoids, NSAIDs, analgesics & antipyretics, Narcotic agents, Steroidal Drugs, Hormones, Insulin & Oral Anti-hyperglycemic drugs and Diagnostic agents.
484T.2	Understand variety of drug classes and some pharmacological properties.
484T.3	Know the structural activity relationship (SAR) of different class of drugs.
484T.4	Understand the chemistry of drugs with respect to their pharmacological activity
484T.5	Know the mechanism of action (MOA) of different class of drugs.



484T.6 Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs

484T.7 Understand synthesis of some important class of drugs.

484T.8 Acquire knowledge on thrust areas for further research.

485P Pharmacology V (485P) [Practical | Regular]

CO ID. Course Outcome

485P.1 Explain use of isolated tissue preparations for antagonistic bioassay methods.

485T.2 Discuss basic aspects to carry out neurobehavioral characterization

485T.3 Conclude understanding various parametric and non-parametric tests used in biostatistics

485T.4 Illustrate basic concepts of statistics, its application and importance

485T.5 Describe statistical problems using suitable software.

486T Natural Products: Commerce, Industry & Regulations (486 T) [Theory | Regular]

CO ID. Course Outcome

486T.1 Understand the significance of natural products.

486T.2 know the global and domestic market size of various natural products in commerce

486T.3 Understand the setup of herbal drug industry with different products, regulations, Intellectual Property and funding assistance scheme.

486T.4 Understand the safe use of natural products, possible toxicities and interaction.

486T.5 Know the significance of pharmacovigilance and safety guidelines of monitoring of herbal medicines as per WHO.

486T.6 Understand the concept of plant allergens.

487 T Quality Assurance Techniques (487 T) [Theory | Regular]

CO ID. Course Outcome

487 T.2 Explain various types of validations and understand its applications.

487 T.3 Understand and practice the GMP regulations.


487 T.4 Apply knowledge of record keeping for quality assurance.

487 T.5 Understand various regulatory authorities and guidelines given by them.

487 T.1 Explain concept of quality quality assurance and quality control


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