

COURSE OUTCOMES (COs) FOR PRACTICAL COURSES

B.Pharm. (all Semesters)

SEMESTER – I

1.1. HUMAN ANATOMY AND PHYSIOLOGY (BP107P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Examine the tissues and bones by using the compound microscopes
2. Perform the hemocytometric studies
3. Determine the blood parameters
4. Record heart rate and blood pressure in human beings

1.2. PHARMACEUTICAL ANALYSIS (BP108P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Identify the chloride, sulfate, iron and arsenic
2. Prepare and standardize the acids, bases and buffer solutions
3. Standardize the titrants
4. Normality determination of acids and bases by applying electro analytical methods

1.3. PHARMACEUTICS – I (BP109P) 3 HRS/W

Upon completion of this course, the student shall be able to

1. Analyze the suspension, emulsion, monophasic and biphasic liquids
2. Understand and calculate the various dosages of drugs
3. Acquire knowledge of the advantages and disadvantages of suppositories
4. Prepare the gargles and mouthwashes

1.4. PHARMACEUTICAL INORGANIC CHEMISTRY (BP110P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Estimate the limits of ions
2. Identify the presence of pharmaceutical compounds

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3. Conclude the purity of pharmaceutical substances
4. Perform the preparation of inorganic pharmaceuticals

1.5. COMMUNICATION SKILLS (BP111P) 2HRS/W

Upon completion of this course, the student shall be able to

1. Communicate in English and convey their thoughts to others
2. Use correct pronunciations in their English communications
3. Develop reading, writing and listening skills
4. Acquire presentation and interview appearance skills

1.6. REMEDIAL BIOLOGY (BP112RBP) 30 HRS

Upon completion of this course, the student shall be able to

1. Understand the basic functions of the microscope perform section cuttings of sample plants and preparation of slides and mountings
2. Understand modifications in the plants and their parts
3. Detail the frog anatomy by using the simulated models
4. Determine the human blood parameters by applying suitable methods

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SEMESTER – II

2.1. HUMAN ANATOMY AND PHYSIOLOGY (BP207P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Describe various systems in the human body by using specimens and simulated models
2. Explain the general and olfactory nerves of the human nervous system
3. Distinguish various types of taste and sense buds in the human body
4. Understand reflex activities and significance
5. Record human body temperature and basal mass index

2.2. PHARMACEUTICAL ORGANIC CHEMISTRY (BP208P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Identify the unknown organic compounds by qualitative analysis
2. Prepare the solid derivatives from organic compounds
3. Construct the molecular models
4. Test the functional group of selected organic compounds

2.3. BIOCHEMISTRY (BP209P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Qualitative analysis of carbohydrates and proteins
2. Quantify the reducing sugars and proteins
3. Investigate the abnormalities in urine constituents of human beings
4. Examine blood sugar, creatinine and serum cholesterol levels of human beings
5. Analyze the salivary amylase activity in relation to temperature and substrate concentrations

2.4. COMPUTER APPLICATIONS IN PHARMACY (BP210P)

Upon completion of this course, the student shall be able to

1. Design a questionnaire for data collection on diseases

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2. Use online tools to retrieve the information on adverse effects of drugs
3. Create patient database, invoice tables and labels
4. Export data on web pages

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SEMESTER – III

3.1. PHARMACEUTICAL ORGANIC CHEMISTRY (BP305P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Experiment on recrystallization and steam distillation
2. Investigate the acid, saponification and iodine values of oil and standardization of reagents
3. Prepare various compounds by using acylation, halogenations, nitration, oxidation, hydrolysis, coupling, Claisen Schmidt reaction and Perkin reactions
4. Synthesis 2,4,6-Tribromo aniline from aniline and P-Iodo benzoic acid from P-Amino benzoic acid

3.2. PHYSICAL PHARMACEUTICS – I (BP306P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Determine pKa value, partition coefficient of benzoic acid and Iodine
2. Detect surface tension of liquid and HLB number and critical micellar concentration of surfactant
3. Find Freundlich and Langmuir constant by using activated charcoal
4. Conclude stability constant and donor-acceptor ratio by solubility and pH titration methods

3.3. PHARMACEUTICAL MICROBIOLOGY (BP307P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Handle lab equipment and prepare, sterilize and culture microbes
2. Stain and isolate bacteria from culture and assay of antibiotics
3. Determine motility and sterility testing of pharmaceuticals
4. Conduct bacteriological and biochemical tests

3.4. PHARMACEUTICAL ENGINEERING (BP308P) 4 HRS/W

Upon completion of this course, the student shall be able to

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1. Investigate radiation constant and heat transfer coefficient
2. Estimate humidity, moisture content and loss on drying
3. Describe the construction and application of pharmaceutical machinery
4. Calculate the uniformity index by using double cone blender

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SEMESTER – IV

4.1. MEDICAL CHEMISTRY (BP406P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Prepare given drugs and drug intermediates
2. Investigate the assay of drugs and partition coefficient of drugs

4.2. PHYSICAL PHARMACEUTICS – II (BP407P) 3 HRS/W

Upon completion of this course, the student shall be able to

1. Determine particle size and distribution by using sieving and microscopic methods
2. Investigation of bulk and true density and angle and lubricant on angle of repose
3. Estimate the viscosity of liquid and semisolids, and sedimentation volume with the effect of single and different suspending agents
4. Determination of first and second-order reaction rate constants

4.3. PHARMACOLOGY – I (BP408P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Experiment with pharmacology instruments and laboratory animals
2. Use and maintain laboratory animals as per CPCSEA guidelines for pharmacology experiments
3. Administrate different routes of drugs in mice, rats, frogs and rabbits
4. Conduct experiments on skeletal muscle relaxants and locomotor activity drugs by using the Rota-rod apparatus and actophotometer
5. Study the anticonvulsant effect of drugs and local anesthetics by different methods

4.4. PHARMACOGNOSY AND PHYTOCHEMISTRY – I (BP408P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Chemical analysis, extractive values and moisture content of crude drugs

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2. Determine leaf parameters viz. stomatal number, stomatal index, vein islet termination and palisade ratio
3. Count and measure the starch grains, calcium oxalate crystals, fiber length and width
4. Investigate swelling index and foaming

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SEMESTER – V

5.1. INDUSTRIAL PHARMACY – I (BP506P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Analyze the preformulation, preparation and evaluation of paracetamol and aspirin tablets and tetracycline capsules
2. Perform coating and quality control of tablets and evaluation of glass containers as per IP
3. Prepare calcium gluconate and ascorbic acid injections
4. Produce eye drops, ointments and vanishing creams

5.2. PHARMACOLOGY – II (BP507P) 4HRS/W

Upon completion of this course, the student shall be able to

1. Perform in-vitro pharmacology experiments like the effect of drugs on isolated frog heart, and blood pressure and heart rate of dog
2. Study the effect of physostigmine and atropine on DRC of acetylcholine
3. Perform the bioassay of histamine, oxytocin, serotonin and acetylcholine
4. Determine PA_2 and PD_2 values by using *Vat anococcygeus* muscle and guinea pig ileum respectively
5. Conduct the study on spasmogens and spasmolytics, and the anti-inflammatory activity of drugs

5.3. PHARMACOGNOSY AND PHYTOCHEMISTRY – II (BP508P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Investigate the morphology, histology, powder characteristics, isolation and extraction of given natural products
2. Perform the paper chromatography and TLC for the separation of sugar and herbal extracts respectively
3. Conduct TLC experiment for the detection of phytoconstituents
4. Perform chemical tests to analyze the crude drugs

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SEMESTER – VI

6.1. MEDICINAL CHEMISTRY – III (BP607P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Prepare the given drugs and intermediate drugs
2. Perform the assay of given drugs
3. Prepare the medicinal compounds by microwave irradiation techniques
4. Draw the chemical structure and reactions of chemical compounds by using ChemDraw application
5. Analyze physicochemical properties of a given class of drugs using drug design software

6.2. PHARMACOLOGY – III (BP608P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Dose calculations in pharmacology experiments
2. Examine antiulcer activity of drug by SHAY et al rat model and NSAIDS induced ulcer model
3. Analyze the effect of drugs on gastrointestinal motility
4. Estimate the serum biochemical parameters and saline purgative effects
5. Conduct the test on acute oral toxicity, skin and eye irritation of drugs
6. Calculate the pharmacokinetic parameters and biostatistical applications

6.3. HERBAL DRUG TECHNOLOGY (BP609P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Screen the phytochemical substances of crude drugs, the alcohol content of Asava and Arista, excipient evaluation and cosmetic formulations
2. Incorporate the standardized extracts in the formulation of syrups, mixtures and tablets and their evaluations
3. Monograph analysis of herbal drugs
4. Determine the aldehyde and phenol contents and total alkaloids

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SEMESTER – VII

7.1. INSTRUMENTAL METHODS OF ANALYSIS (BP705P) 4 HRS/W

Upon completion of this course, the student shall be able to

1. Determine the absorption maxima and effect of solvents on absorption maxima
2. Estimate the dextrose and sulfanilamide by calorimetric method
3. Assay of paracetamol by UV Spectroscopy
4. Quenching of fluorescence and estimation of quinine sulfate by fluorimetry
5. Determine the sodium and potassium by flame photometry and chlorides and sulfates by nephelo turbidometry
6. Separate the amino acids, sugars and plant pigments by paper chromatography, TLC and column chromatography respectively
7. Demonstrate the experiments on HPLC and gas chromatography

SEMESTER – VIII

No practical courses

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