KANPUR INSTITUTE OF TECHNOLOGY AND PHARMACY

Laboratory Name: Pharmacology Lab – III **Lab No: P-402**

Course Name: Human Anatomy and Physiology-I **Course Code:** BP107P

Year/Sem: 1st / I **No of Students: 99**

S. No	Course Outcome
CO1	To recall handling of compound microscope and to memorize various animal tissues.
CO2	To summarize the characteristics of different bones (skeletal system).
CO3	To identify the bleeding/clotting time, blood group, predict the erythrocyte sedimentation rate of human blood and heart rate/ pulse rate.
CO4	To analyze the blood cells using heamocytometry and estimate the hemoglobin concentration of human blood and blood pressure.

KANPUR INSTITUTE OF TECHNOLOGY AND PHARMACY

Laboratory Name: Pharmaceutical Chemistry Lab-lll **Lab No: P-101**

Course Name: Pharmaceutical Analysis I **Course Code:** BP108P

Year/Sem: **1st/ I** **No of Students: 99**

S.No	Course Outcome
CO1	To prepare various concentrations and perform volumetric titrations.
CO2	To analyze experimental results and conclusions.
CO3	To perform precipitation, gravimetric and complexometric titration.
CO4	To perform electrochemical titration.

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Laboratory Name: Pharmaceutics Lab-I **Lab No: P-103**

Course Name: Pharmaceutics I **Course Code:** BP109P

Year/Sem: 1st/ I **No of Students: 99**

S. No	Course Outcome
CO1	To recall the principles used in the preparation of solid, liquid and semi solid dosage forms.
CO2	To experiment with monophasic liquid dosage forms for internal and external administration.
CO3	To prepare biphasic liquid dosage forms and suppositories.
CO4	To design powders and granules and develop semi solid dosage forms.

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Laboratory Name: Pharmaceutical Chemistry Lab-ll **Lab No: P-102**

Course Name: Pharmaceutical Inorganic Chemistry **Course Code:** BP110P

Year/Sem: 1st/ I **No of Students: 99**

S.No	Course Outcome
CO1	To recall the sources of limit tests, preparation and identification of compounds.
CO2	To demonstrate the preparation of inorganic pharmaceuticals and analyze the various inorganic pharmaceutical compounds.
CO3	To apply knowledge to perform modified limit tests.
CO4	To select suitable method for the preparation of inorganic pharmaceuticals and assess quality of inorganic pharmaceuticals.

KANPUR INSTITUTE OF TECHNOLOGY AND PHARMACY

Laboratory Name: Computer Lab-I **Lab No: P-201**

Course Name: Communication Skills **Course Code:** BP111P

Year/Sem: 1st/ I **No of Students: 99**

S.No	Course Outcome
CO1	To understand the behavioural needs for a pharmacist to function effectively in the areas of pharmaceutical operation.
CO2	To apply the practical skills for effective communication (Verbal and Non verbal).
CO3	To distinguish pronunciation of vowel and consonant sounds and improve in email etiquette.
CO4	To take part in advanced learning on comprehension/direct and indirect speech and develops the interview handling skills.

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Laboratory Name: Pharmacy Practice Lab **Lab No: P-115**

Course Name: Remedial Biology **Course Code:** BP112RBP

Year/Sem: 1st/ I **No of Students: 99**

S. No	Course Outcome
CO1	To know the handling of microscope and permanent slide preparation techniques.
CO2	To understand the structure of cell and its inclusions and compile the bones identification, blood group, blood pressure and tidal volume determination.
CO3	To identify various plant parts to organize their modifications and microscopical study to identification of tissues, stem, root, leaf, seed, fruit and flower.
CO4	To categorize the physiology of frog by using computer models.

KANPUR INSTITUTE OF TECHNOLOGY AND PHARMACY

Laboratory Name: Pharmaceutical Chemistry Lab-l **Lab No:P-104**

Course Name: Pharmaceutical Organic Chemistry II **Course Code:** BP305P

Year/Sem: 2nd / III **No of Students: 105**

S.No	Course Outcome
CO1	To gain the knowledge on different recrystalization and steam distillation techniques.
CO2	To remember and recall the different laboratory techniques used in pharmaceutical chemistry.
CO3	To identify the purity of fats and oils by acid value, saponification value, iodine value and test the knowledge on different electrophilic aromatic substitutions reactions like bromination, nitration in monosubstituted aromatic compounds.
CO4	To perform various reaction like diazotization, oxidation reactions and analyze named reactions like perkin and claisen schmidt reactions by using carbonyl compounds.

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Laboratory Name: Pharmacy Practice Lab **Lab No: P-115**

Course Name: Physical Pharmaceutics I **Course Code:** BP306P

Year/Sem: 2nd / III **No of Students: 105**

S.No	Course Outcome
CO1	To understand the significance of physical properties such as solubility, surface tension, artition coefficient and pKa in the design of dosage forms.
CO2	To explain adsorption isotherms and determine Freundlich-Langmuir constant using activated charcoal and understands about HLB value and critical micellar concentration of a surfactant.
CO3	To apply Henderson – Hasselbatch equation for interpretation of pKa value of drugs.
CO4	To determine the surface tension of sample liquids by drop count or drop weight methods and estimates the stability constants of complexes by solubility and pH titration methods.

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Laboratory Name: Biotechnology/microbiology **Lab No: P-411**

Course Name: Pharmaceutical Microbiology **Course Code:** BP307P

Year/Sem: 2nd / III **No of Students: 105**

S.No	Course Outcome
CO1	Preliminary phytochemical screening of crude drugs.
CO2	Determination of the alcohol content.
CO3	Evaluation of excipients of natural origin.
CO4	Preparation of herbal products.

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Laboratory Name: Pharmaceutics Lab – II **Lab No: P-401**

Course Name: Pharmaceutical Engineering **Course Code:** BP308P

Year/Sem: 2nd / III **No of Students: 105**

S.No	Course Outcome
CO1	To understand the basic principles involved in unit operations such as size reduction, size separation, distillation and drying.
CO2	To demonstrate and explain about the construction, working and applications of pharmaceutical equipments such as colloid mill, planetary mixer, fluidized bed dryer and freeze dryer.
CO3	To determine radiation constant of brass, iron, unpainted, painted glass and heat transfer coefficient by heat exchanger and calculate the efficiency of steam distillation.
CO4	To estimate moisture content, loss on drying and construct drying.

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Laboratory Name: Pharmaceutics Lab – II/ Machine room **Lab No: P-401/113**

Course Name: Industrial Pharmacy I **Course Code:** BP506P

Year/Sem: 3rd / V **No of Students: 96**

S.No	Course Outcome
CO1	To interpret the preformulation studies on drugs and explain the preparation, evaluation and coating of tablets.
CO2	To illustrate the formulation and evaluation of capsules and and design parenteral and ophthalmic products.
CO3	To describe the preparation of creams and evaluate glass containers as per pharmacopeia specifications.

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Laboratory Name: Computer Lab-I/ Pharmacology Lab - II **Lab No: P-201/P410**

Course Name: Pharmacology II **Course Code:** BP507P

Year/Sem: 3rd / V **No of Students: 96**

S.No	Course Outcome
CO1	To learn the importance of physiological salt solutions and to identify the effect of various drugs on isolated frog heart, blood pressure and heart rate of dog.
CO2	To illustrate the diuretic activity of drugs in mice/rats and interpret the effect of spasmogens, spasmolytics and analgesic and anti-inflammatory using rabbit jejunum.
CO3	To identify the dose response relationship, effect of drugs on DRC and to construct the drug concentrations by various bioassay methods using animal simulator software
CO4	To categorize the PA2 and PD2 value of drugs using rat an ococcygeus muscle and guinea pig ileum.

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Laboratory Name: Pharmacognosy Lab **Lab No: P-408**

Course Name: Pharmacognosy and Photochemistry II **Course Code:** BP508P

Year/Sem: 3rd /V **No of Students: 96**

S.No	CO
CO1	To remember the wide variety of the crude drugs and their sources by morphological characteristics and identify the powder mixture and to report the types of adulterants and substituents present.
CO2	To analyze and evaluate the powdered crude drug samples by morphological and microscopical characteristics.
CO3	To isolate the drug from the given crude drug sample and predict the crude drug by performing chromatographic techniques.

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Laboratory Name: Pharmaceutical chemistry Lab –IV/ Pharmacognosy Lab **Lab No: P-403/408**

Course Name: Instrumental Methods of Analysis/NDDS **Course Code:** BP705P

Year/Sem: 4th / VII **No of Students: 95**

S.No	Course Outcome
CO1	To recall the principle involved in spectroscopy and importance of absorption maximum in the estimation of organic compounds and experiment with selected drugs by UV, Visible spectroscopy and flourimetry.
CO2	To estimate the amount of sodium and potassium ions by flame Photometry, characterize and quantify the organic compounds/amino acids/plant pigments by using various chromatographic and spectroscopical techniques.
CO3	To analyze the various organic compounds using nepheloturbidimetry and maximize the knowledge on integration and interpretation of chromatograms and spectra.

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Laboratory Name: Computer Lab-I **Lab No: P-201**

Course Name: Practice School **Course Code:** BP706PS

Year/Sem: 4th / VII **No of Students: 95**

S.No	Course Outcome
CO1	Develop and familiarize with the aspects of realistic practice in the domain of interest.
CO2	Develop knowledge and skills related to practical learning in the domain of interest.
CO3	Analyze the problems encountered during realistic practice and make use of theoretical knowledge to resolve those problems.