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# COURSE OUTCOME (CO)

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Bachelor of Pharmacy (B. Pharm.)



## BENGAL SCHOOL OF TECHNOLOGY

(Courses offered: B. Pharm., M. Pharm. (Pharmaceutics), M. Pharm. (Pharmacology))

Approved by PCI, Affiliated to MAKAUT

Accredited by NAAC, Accredited by NBA for B. Pharm.

Sugandha, Delhi Road, Near Chinsurah RS, Hooghly-712 102, West Bengal

Phone: 033 26866064/4913, Telefax: 03326864281,

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**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Communication Skill **Subject Code:** HU-181

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>understand</b> Importance of Communication in life and its process.
CO-2	To <b>learn</b> how to write Business Correspondance.
CO-3	To <b>know</b> Importance of Listening.
CO-4	To <b>understand</b> how to speak, and how to face Interviews and Group Discussion.
CO-5	To <b>learn</b> Pronunciation of english.

## CO-PO MATRICES

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	1	1	1	2	3	1	3
CO-2	3	2	3	3	1	1	1	3	3	1	3
CO-3	3	1	3	3	1	1	1	2	3	1	3
CO-4	3	3	3	3	1	2	1	2	3	1	3
CO-5	3	3	3	3	1	2	1	1	3	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmaceutical Analysis I

Subject Code: PT 101

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>explain</b> the principles and procedure employed in volumetric and electrochemical analysis
CO-2	To <b>illustrate</b> sources of errors in analytical techniques, methods to minimize them; to <b>explain</b> the theoretical basis of commonly used statistical methods; and to <b>analyze</b> and <b>interpret</b> the results of statistical data from experiments
CO-3	To <b>employ</b> volumetric and electrochemical techniques in quality control of pharmaceuticals
CO-4	To <b>interpret</b> the physiochemical concepts of analysis, theories of acids and bases, stoichiometry etc.; to <b>assess</b> problems based on the volumetric and electrochemical principles
CO-5	To <b>analyze</b> drugs by volumetric and electrochemical titrations and develop analytical skills

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	-	-	3	-	-	-	-	-	-	3
CO-2	3	3	3	1	-	-	-	-	-	-	3
CO-3	3	3	3	3	-	-	-	-	-	-	3
CO-4	3	3	3	-	-	-	-	-	-	-	3
CO-5	3	3	3	3	-	-	-	-	-	-	3





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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmaceutics-I

Subject Code: (PT-106)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>remember</b> the history of profession of pharmacy in India related with pharmacy education, career including industry and organization.
CO-2	To <b>know</b> about the details of the prescription and <b>analyze</b> every parts and handling process of the prescription with the correction of errors and include posology for the dose calculation with respects of different factors.
CO-3	To <b>know</b> about the concepts of dosage forms and incompatibilities with <b>Apply</b> Pharmaceutical calculation for the design and evaluation part of the different formulation including powders, liquid dosage forms.
CO-4	To <b>understand</b> the concepts of every Biphasic and Monophasic dosage form including suspension, emulsion with the study of evaluation and incompatibilities of dosage forms.
CO-5	To <b>know</b> about the concept of solid and semisolid dosage form and <b>Analyze</b> their evaluation parameter and incompatibilities.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	1	1	1	1	1	1	2	2	2	3
CO-2	3	2	3	2	1	1	1	2	2	2	3
CO-3	2	2	3	2	1	1	2	2	3	2	3
CO-4	2	1	2	3	2	1	1	2	3	2	3
CO-5	2	1	3	3	1	1	2	1	2	2	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: HUMAN ANATOMY AND PHYSIOLOGY-I

Subject Code: (PT-105)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>Explain</b> the gross morphology, structure, and functions of various organs of the human body.
CO-2	To <b>Describe</b> the various homeostatic mechanisms and their imbalances
CO-3	To <b>Identify</b> the various tissues and organs of different systems of the human body.
CO-4	To <b>perform</b> the various experiments related to special senses and the nervous system.
CO-5	To <b>Appreciate</b> coordinated working pattern of different organs of each system

## CO-PO MATRICES

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustainability)	PO-11 (Life Long Learning)
CO-1	3	-	2	2	-	2	2	2	2	3	3
CO-2	3	-	2	2	-	2	2	2	3	2	3
CO-3	3	-	2	2	-	2	-	2	2	2	3
CO-4	3	-	2	2	-	2	2	1	2	2	3
CO-5	3	2	2	2	-	2	3	3	3	3	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Environmental Sciences

Subject Code: HU 282

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>define &amp; interpret</b> their knowledge about different Natural Resources.
CO-2	To <b>expand their knowledge regarding</b> problems associated with different Natural Resources.
CO-3	To <b>judge</b> causes and solution of pollution...
CO-4	To <b>ascertain the Classification of ecosystem and their composition.</b>
CO-5	To <b>describe</b> problems associated with ecosystem and their depletion.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	1	3	3	1	3	1	1	2	1	1	3
CO-2	1	3	2	1	3	2	1	3	1	2	3
CO-3	1	3	2	1	2	1	1	2	2	3	3
CO-4	1	1	1	1	1	1	1	2	1	2	3
CO-5	1	3	1	1	1	1	1	2	1	1	3



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**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Computer Application in Pharmacy

**Subject Code:** (PTC-203)

CO (Course Outcome)	OBJECTIVES (DESCRIPTIONS)
CO <sub>1</sub>	To <b>define &amp; interpret</b> their own knowledge upon number system as well as information system.
CO <sub>2</sub>	To <b>give brief idea</b> about web Technology & data base and its application of pharmacy field.
CO <sub>3</sub>	To <b>quote and illustrate</b> the technologies being applied within the platform of pharmacy in addition to some label of software.
CO <sub>4</sub>	To <b>recite</b> the utilization of computer in the field of bioinformatics in addition to database, scope, application, vacancies development and its limitations to <b>identify</b> in the broad spectrum of pharmaceutical research and formulation development on basis of existing information related to bioinformatics.
CO <sub>5</sub>	To <b>describe</b> the process of separation technique to be utilized in the field of preclinical studies and to <b>summarize</b> the information related to laboratories as well as text.

## CO-PO MATRICES

CO's ↓	PO's										
	PO <sub>1</sub> (Pharmacy Knowledge)	PO <sub>2</sub> (Planning Abilities)	PO <sub>3</sub> (Problem Analysis)	PO <sub>4</sub> (Modern tool uses)	PO <sub>5</sub> (Leadership Skills)	PO <sub>6</sub> (Professional identity)	PO <sub>7</sub> (Pharmaceutical Ethics)	PO <sub>8</sub> (Communication)	PO <sub>9</sub> (Pharmacist & society)	PO <sub>10</sub> (Environment & sustain ability)	PO <sub>11</sub> (Life long learning)
CO1	2	2	3	1	1	1	1	2	1	1	3
CO2	3	3	2	3	3	2	1	1	1	2	3
CO3	3	3	2	1	2	1	1	2	2	3	3
CO4	3	2	1	1	1	1	1	2	1	2	3
CO5	3	3	3	1	1	1	1	2	1	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmaceutical Organic Chemistry-I

Subject Code: PT 213

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>solve</b> the nomenclature of simple organic compounds by analyzing chemical structure and vice versa; and to <b>classify</b> structural Isomerism
CO-2	To <b>synthesize</b> organic compounds by different methods; and to <b>relate</b> the structure of organic compounds with their physical Properties
CO-3	To <b>find</b> the mechanism and orientation of important name reactions of organic compounds
CO-4	To <b>interpret</b> reactivity/stability of organic compounds
CO-5	To <b>apply</b> the knowledge for the identification of organic compounds; and to <b>appraise</b> their medicinal and pharmaceutical applications

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	1	3	-	-	-	-	-	-	-	3
CO-2	3	3	3	2	-	-	-	-	-	-	3
CO-3	3	3	3	-	-	-	-	-	-	-	3
CO-4	3	3	3	-	-	-	-	-	-	-	3
CO-5	3	3	3	2	-	-	-	-	-	-	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Biochemistry

Subject Code: PT-214

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>find</b> the molecular levels of the chemical process associated with the living cells; and to <b>interpret</b> the role of biomolecules
CO-2	To <b>describe</b> the principle involved in the metabolism of nutrient molecules; and to <b>interpret</b> their effect on physiological and pathological condition
CO-3	To <b>explain</b> the concept of bioenergetics, energy rich compounds; and to <b>apply</b> their principle in Electron Transport Chain and Oxidative Phosphorylation
CO-4	To <b>find</b> the catalytic role of enzymes, their application in therapeutic and diagnostic level; and to <b>assess</b> the significance of enzyme inhibitors in design of new drugs
CO-5	To <b>illustrate</b> the genetic organization of mammalian genome and the hetero and autolytic function of DNA in RNA and protein Synthesis

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	1	1	-	-	-	-	-	-	-	3
CO-2	3	1	1	-	-	-	-	-	-	-	3
CO-3	3	1	2	-	-	-	-	-	-	-	3
CO-4	3	1	2	2	-	-	-	-	-	-	3
CO-5	3	1	1	2	-	-	-	-	-	-	3



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**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Pathophysiology

**Subject Code:** PT-216

COURSE OUTCOME (CO)	COURSE OUTCOMES (CO's)
CO1	To <b>explain</b> the etiology pathogenesis of different diseases and response of the body to corresponding disease state.
CO2	To <b>summarize</b> the complications related to different disease state.
CO3	To <b>interpret</b> disease type based on the signs and symptoms.
CO4	To <b>compare</b> between multiple pathological changes for a disease.
CO5	To frame an <b>outline</b> for rational treatment for the disease.

## CO-PO MATRICES

CO's ↓	PROGRAM-OUTCOME (PO's)										
	PO1 (Pharmacy Knowledge)	PO2 (Planning Abilities)	PO3 (Problem Analysis)	PO4 (Modern tool uses)	PO5 (Leadership Skills)	PO6 (Professional identity)	PO7 (Pharmaceutical Ethics)	PO8 (Communication)	PO9 (Pharmacist & society)	PO10 (Environment & sustain ability)	PO11 (Lifelong learning)
CO1	3	-	3	3	-	2	-	2	3	-	3
CO2	3	-	3	3	-	2	-	2	3	3	3
CO3	3	-	3	3	-	2	2	3	3	3	3
CO4	3	-	2	3	2	2	2	3	3	3	3
CO5	3	-	2	3	2	2	2	3	3	3	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: HUMAN ANATOMY AND PHYSIOLOGY-II

Subject Code: PT-215

COURSE OUTCOME (CO)	COURSE OUTCOMES (CO's)
CO1	To <b>give idea</b> of the anatomical features and organization of nervous system, digestive system, respiratory system, urinary system, endocrine system and reproductive system.
CO2	To <b>explain</b> the physiological activity of nervous system, digestive system, respiratory system, urinary system, endocrine system and reproductive system.
CO3	To <b>describe</b> the functions of Nervous System, digestive system, Respiratory system, Urinary system, endocrine system and Reproductive system.
CO4	To <b>interpret</b> and <b>analyze</b> the diseases of nervous system, digestive system, respiratory system, urinary system, endocrine system and reproductive system and <b>apply</b> the basic concept of genetics.
CO5	To give <b>conclusions</b> of the diagnostic tests for the disorders of Nervous System, digestive system, Respiratory system, Urinary system, endocrine system and Reproductive system.

## CO-PO MATRICES

CO's	PROGRAM OUTCOMES (PO's)										
	PO1 (Pharmacy Knowledge)	PO2 (Planning Abilities)	PO3 (Problem Analysis)	PO4 (Modern tool uses)	PO5 (Leadership Skills)	PO6 (Professional Identity)	PO7 (Pharmaceutical Ethics)	PO8 (Communication)	PO9 (Pharmacist & society)	PO10 (Environment & sustainability)	PO11 (Lifelong learning)
CO1	3	-	3	3	-	2	2	2	2	2	3
CO2	3	-	3	3	-	2	2	2	3	2	3
CO3	3	-	3	3	-	2	-	2	3	2	3
CO4	3	-	3	3	-	2	3	2	3	2	3
CO5	3	2	3	3	-	2	3	2	3	2	3



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**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Physical Pharmaceutics - I

**Subject Code:** (PT-316)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>understand</b> the concept and principles followed in the use of different substances (solids, liquids and gases), their interaction with each other
CO-2	To <b>develop</b> knowledge solubility of different substances – its alteration and modification.
CO-3	To <b>demonstrate</b> the use of various physicochemical properties in the formulation development and evaluation of dosage forms.
CO-4	To <b>apply</b> knowledge on rheology and interfacial phenomena in the preparation of dosage form.
CO-5	To <b>access</b> the stability parameters of the products based on laws and order of reaction kinetics.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	1	1	1	2	3	1	3
CO-2	3	2	3	3	1	1	1	3	3	1	3
CO-3	3	1	3	3	1	1	1	2	3	1	3
CO-4	3	3	3	3	1	2	1	2	3	1	3
CO-5	3	3	3	3	1	2	1	2	3	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmaceutical Organic Chemistry II

Subject Code: PT 314

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>solve</b> the nomenclature of aromatic compounds by analyzing chemical structure and vice versa; and to <b>relate</b> the structures with their physical properties
CO-2	To <b>synthesize</b> aromatic compounds by different methods; and to <b>interpret</b> reactivity/stability of organic compounds
CO-3	To <b>find</b> the mechanism and orientation of important name reactions of aromatic compounds
CO-4	To <b>apply</b> the knowledge for the identification of aromatic compounds; and to <b>appraise</b> their medicinal and pharmaceutical Applications
CO-5	To <b>explain</b> the chemistry of fats and oils; and to <b>evaluate</b> the analytical constants of fats and oils

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	1	3	-	-	-	-	-	-	-	3
CO-2	3	3	3	2	-	-	-	-	-	-	3
CO-3	3	3	3	-	-	-	-	-	-	-	3
CO-4	3	3	3	-	-	-	-	-	-	-	3
CO-5	3	3	3	2	-	-	-	-	-	-	3



# BENGAL SCHOOL OF TECHNOLOGY

(Courses offered: D. Pharm., B. Pharm., M. Pharm. (Pharmaceutics), M. Pharm. (Pharmacology))

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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmaceutical Microbiology

Subject Code: (PT-319)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	<b>To understand</b> about the importance of microbiology in pharmaceutical sciences and know the isolation and preservation methods for animal cell and transformed cell cultures, pure cultures including quantitative measurement of bacterial growth and cell cultures application in pharmaceutical industry.
CO-2	<b>To understand</b> about different microscope and microscopical techniques and Apply for the identification of bacteria using different staining method.
CO-3	<b>To remember</b> about the different sterilization methods, sterility indicators, and different disinfectant techniques, sterility testing and their factors affect on the fungi and virus depends on their proper study.
CO-4	<b>To understand</b> about the design of aseptic area and the different source of contamination present in aseptic area with the help of different microbial assay techniques.
CO-5	<b>To apply</b> different aseptic techniques like laminar air flow for take the preventive measurement from contamination and make aseptic or clean area for manufacturing as well as preservation of pharmaceutical products and the microbial stability of formulations.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	1	1	2	1	1	2	1	2	1	2	3
CO-2	1	1	1	3	1	2	1	2	2	2	3
CO-3	1	2	1	3	1	2	1	2	2	2	3
CO-4	2	2	2	2	1	2	1	2	2	2	3
CO-5	2	2	2	1	1	2	1	2	2	2	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmaceutical Engineering

Subject Code: (PT-317)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>understand</b> about the concept of flow of fluids on the basis of different theorems and the fluidity, pressure difference, energy loss with the help of different manometers and to get a concept about size reduction and size separation.
CO-2	To <b>remember</b> about the heat transfer by conduction, convection & radiation mechanisms including heat exchangers which is required for the drying, evaporation and distillation phenomenon for the pharmaceutical product.
CO-3	To <b>know</b> about the mixing process or techniques for different phases like solid and liquid mixing and to <b>analyze</b> different mathematical model used for the mixing techniques.
CO-4	To <b>apply</b> filtration and centrifugation techniques with the different pressure and forces required for the filtration, centrifugation phenomenon and know about the construction of instruments including different mathematical model used for those phenomenon.
CO-5	To <b>understand</b> about the materials used for the construction of different machineries and instrument in laboratory and industrial scale for the manufacturing as well as evaluation of dosage form.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	2	2	3	3	1	2	1	1	2	1	3
CO-2	2	2	3	3	1	2	1	2	2	1	3
CO-3	2	2	3	3	1	2	1	1	1	1	3
CO-4	2	2	3	3	1	2	1	1	1	1	3
CO-5	2	2	3	3	1	2	1	2	2	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmacognosy and Phytochemistry I

Subject Code: PT412

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>explain</b> the fundamentals of Pharmacognosy, quality controls of crude drugs and its involvement in society
CO-2	To <b>illustrate</b> the techniques in the cultivation and production of crude drugs
CO-3	To <b>discover</b> the modern evaluation techniques for the herbal drugs
CO-4	To <b>describe</b> the Basics of Plant metabolites and various techniques of traditional system of medicine
CO-5	To <b>cite</b> the crude drugs according to their morphological, microscopical, chemical parameters and their uses

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	1	1	1	2	3	1	3
CO-2	3	2	3	3	1	1	1	3	3	1	3
CO-3	3	1	3	3	1	1	1	2	3	1	3
CO-4	3	3	3	3	1	2	1	2	3	1	3
CO-5	3	3	3	3	1	2	1	1	3	1	3



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**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Physical Pharmaceutics - II

**Subject Code:** (PT-416)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>understand</b> the various characteristics of colloidal dispersion and coarse dispersion and <b>apply</b> the knowledge in designing of pharmaceutical dosage forms
CO-2	To <b>gain</b> knowledge about different rheological or thixotropic behavior of different pharmaceutical dosage forms & deformation of solids and to <b>demonstrate, modify &amp; predict</b> the designing of different pharmaceutical dosage forms.
CO-3	To <b>get overview</b> of chemical kinetics and to <b>apply</b> them for stability testing and determination of expiry date of formulations.
CO-4	To <b>apply</b> the knowledge and theories of emulsification and HLB method for preparation of emulsion.
CO-5	To <b>understand</b> various Preformulation parameter (particle size determination, derived properties of powder of drug molecules and excipient in the designing of dosage form.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	1	1	1	2	3	1	3
CO-2	3	2	3	3	1	1	1	3	3	1	3
CO-3	3	1	3	3	1	1	1	2	3	1	3
CO-4	3	3	3	3	1	2	1	2	3	1	3
CO-5	3	3	3	3	1	2	1	1	3	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Medicinal chemistry -I

Subject Code: (PT-413)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>relate</b> the physicochemical properties of drugs to their pharmaceutical action
CO-2	To <b>solve</b> the nomenclature of different categories of drugs by analyzing chemical structure and to classify different categories of drugs and to apprise their medicinal and pharmaceutical application
CO-3	To <b>find</b> the mechanism of action, metabolic pathways, adverse action and therapeutic values of different classes of drugs
CO-4	To <b>determine</b> the structural activity relationship (SAR) of different classes of drugs
CO-5	To <b>synthesize</b> the different classes of drugs

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	-	3	2	1	2	2	3
CO-2	3	1	1	3	-	3	2	1	2	2	3
CO-3	3	3	3	3	-	3	2	1	2	2	3
CO-4	3	3	3	3	-	2	2	1	2	2	3
CO-5	3	3	3	2	-	2	2	1	2	2	3





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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmacology – II

Subject Code: PT 418

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO1	To <b>define &amp; interpret</b> the basic knowledge of pharmacology and correlate the study in drug discovery process.
CO2	To <b>explain</b> the routes of drug administration and Pharmacokinetics (ADME) and apply the knowledge in clinical uses of drugs, doses, PK/PD interactions and contraindications for CNS and ANS drugs.
CO3	To <b>outline and illustrate</b> the various mechanisms of drug actions in organ system/sub cellular/ macromolecular levels along with the Combined effects and adverse effects of CNS and ANS drugs.
CO4	To <b>describe</b> organization, function, and neurohumoral transmission of Autonomic Nervous System and employ the knowledge to study the pharmacological actions of drugs acting on ANS.
CO5	To <b>describe</b> neurohumoral transmission of the Central Nervous System with reference to Excitatory and Inhibitory neurotransmitters and apply the basics in studying the pharmacological actions of drugs acting on the CNS.

## CO-PO MATRICES

CO's ↓	PROGRAM OUTCOMES (PO's)										
	PO1 (Pharmacy Knowledge)	PO2 (Planning Abilities)	PO3 (Problem Analysis)	PO4 (Modern tool uses)	PO5 (Leadership Skills)	PO6 (Professional Identity)	PO7 (Pharmaceutical Ethics)	PO8 (Communication)	PO9 (Pharmacist & society)	PO10 (Environment & sustainability)	PO11 (Lifelong learning)
CO1	3	-	2	1	-	-	3	1	2	1	3
CO2	3	-	3	1	-	-	3	1	2	1	3
CO3	3	-	3	1	-	-	2	1	2	1	3
CO4	3	-	2	1	-	-	2	1	2	1	3
CO5	3	-	2	1	-	-	2	1	2	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmacognosy and Phytochemistry II

Subject Code: PT512

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>illustrate</b> the basic plant metabolites and the various metabolic pathways to form secondary metabolites
CO-2	To <b>describe</b> the details of phytochemicals for various pharmacological uses
CO-3	To <b>discover</b> the modern extraction techniques, characterization of the herbal drugs and phytoconstituents
CO-4	To <b>demonstrate</b> isolation and identification of phytoconstituents
CO-5	To <b>ascertain</b> the modern evaluation techniques for the herbal drugs

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	1	1	1	2	3	1	3
CO-2	3	2	3	3	1	1	1	3	3	1	3
CO-3	3	1	3	3	1	1	1	2	3	1	3
CO-4	3	3	3	3	1	2	1	2	3	1	3
CO-5	3	3	3	3	1	2	1	2	3	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Industrial Pharmacy-I

Subject Code: PT 515

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>summarize</b> the different level of understanding that can effect the medicinal products efficacy of pharmaceutical additives & different pharmaceutical dosage forms with an illustrative concept
CO-2	To <b>understand</b> the various pharmaceutical dosage forms manufacturing techniques & a protocol to comply the data and to comprehend the complexity of the safety certifications that apply to pharmaceutical companies.
CO-3	To <b>understand</b> the development of pharmaceutical dosage forms and to differentiate solid, liquid and semisolid dosage forms and evaluate them for their quality and storage condition.
CO-4	To <b>predict</b> the preparation , packaging & quality control tests for parenteral products followed by concepts of master formula record, SOP, quality audit, quality review and distribution reports and article as well as its application.
CO-5	To <b>outline</b> , and demonstrate the manufacturing process of cosmetics , aerosols, and their calibration principles as well as illustration and paraphrasing followed by breakdown of packing material sciences.

## CO-PO MATRICES

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	1	1	1	2	3	1	3
CO-2	3	2	3	3	1	1	1	3	3	2	3
CO-3	3	1	3	3	1	1	1	2	3	1	3
CO-4	3	3	3	3	1	2	1	2	3	1	3
CO-5	3	3	3	3	1	2	1	1	3	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Medicinal Chemistry II

Subject Code: PT 513B

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>relate</b> the physicochemical properties of drugs to their pharmacological action
CO-2	To <b>solve</b> the nomenclature of different categories of drugs by analyzing chemical structure and; to classify different categories of drugs; and to appraise their medicinal and pharmaceutical applications
CO-3	To <b>find</b> the mechanism of action, metabolic pathways, adverse effect and therapeutic value of different classes of drugs
CO-4	To <b>determine</b> the Structure Activity Relationship (SAR) of different classes of drugs
CO-5	To <b>synthesize</b> different classes of drugs

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	-	-	-	-	-	-	-	3
CO-2	3	1	1	-	-	-	-	-	-	-	3
CO-3	3	3	3	-	-	-	-	-	-	-	3
CO-4	3	3	3	-	-	-	-	-	-	-	3
CO-5	3	3	3	2	-	-	-	-	-	-	3



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**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Pharmaceutical Jurisprudence

**Subject Code:** (PT-516)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>know</b> about the pharmaceutical legislation including different committees and to Understand about objectives of the Drug and Cosmetics Act.
CO-2	To get <b>knowledge</b> about the code of pharmaceutical ethics with the importance of pharmacist role and pharmacists' oath and to remember Pharmacy Act with the education regulation & to get knowledge about Medical and toilet preparation Act.
CO-3	To <b>understand</b> the constitution and functions of narcotic & Psychotropic consultative committee and to remember the objectives of Drug and Magic remedies Act with the prohibition of certain advertisements, offences and penalties.
CO-4	To <b>remember</b> the objectives of prevention of cruelty to animal Act with ethical committee and guidelines and to know about drug price control order on bulk drugs and the sale price.
CO-5	To <b>understand</b> about the objectives and rules regulations of Medical Termination and Pregnancy and the all types of Intellectual property rights.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustainability)	PO-11 (Life Long Learning)
CO-1	2	1	1	2	2	1	3	1	3	2	2
CO-2	2	1	1	2	2	1	3	1	3	2	2
CO-3	2	1	1	2	2	1	3	1	3	2	2
CO-4	2	1	1	2	2	2	3	1	3	2	2
CO-5	2	1	2	2	2	2	3	1	3	2	2



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmacology - II

Subject Code: (PT-518)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO1	To <b>define &amp; interpret</b> about the physiology, pharmacokinetics, dosage, usage of the drugs acting on Endocrine system, Cardiovascular system and Urinary system.
CO2	To <b>explain</b> the mechanism of action of different classes of drugs acting on Endocrine system, Cardiovascular system and Urinary system.
CO3	To <b>illustrate</b> the Adverse Drug Reactions and drug interactions of different classes of drugs acting on Endocrine system, Cardiovascular system and Urinary system.
CO4	To <b>describe</b> mechanism of action, pharmacological action and adverse drug reactions of different classes of Non-Steroidal Anti-Inflammatory agents and Autacoids.
CO5	To <b>describe</b> the principle of bioassay and apply the basics in studying applications of bioassay.

## CO-PO MATRICES

CO's ↓	PROGRAM OUTCOMES (PO's)										
	PO1 (Pharmacy Knowledge)	PO2 (Planning Abilities)	PO3 (Problem Analysis)	PO4 (Modern tool uses)	PO5 (Leadership Skills)	PO6 (Professional identity)	PO7 (Pharmaceutical Ethics)	PO8 (Communication)	PO9 (Pharmacist & society)	PO10 (Environment & sustainability)	PO11 (Lifelong learning)
CO1	3	-	3	1	-	-	2	2	3	2	3
CO2	3	-	3	1	-	-	1	2	3	2	3
CO3	3	-	3	1	-	-	1	2	3	2	3
CO4	3	-	3	1	-	-	1	2	3	2	3
CO5	3	-	3	2	-	-	3	2	3	2	3



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**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Herbal Drug Technology

**Subject Code:** PT-612

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>discover</b> raw materials as sources of herbal drugs according to the alternative system of medicine.
CO-2	To <b>describe</b> different techniques of cultivation of herbal drug products.
CO-3	To <b>appraise</b> the quality and quantity of herbal drugs according to WHO and ICH guidelines.
CO-4	To <b>compose</b> and analyze herbal cosmetics and nutraceuticals.
CO-5	To <b>explain</b> patenting of herbal drugs and Practice of GMP.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	2	1	1	2	2	1	3	1	3	2	2
CO-2	2	1	1	2	2	1	3	1	3	2	2
CO-3	2	1	1	2	2	1	3	1	3	2	2
CO-4	2	1	1	2	2	2	3	1	3	2	2
CO-5	2	1	2	2	2	2	3	1	3	2	2



# BENGAL SCHOOL OF TECHNOLOGY

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E Mail: [principal@bstpharmacy.in](mailto:principal@bstpharmacy.in) Website: [www.bstpharmacy.in](http://www.bstpharmacy.in)

**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Pharmaceutical Quality Assurance

**Subject Code:** (PT-611)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>summarize</b> the different levels of pharmaceutical quality development and quality assurance such as cGMP, QC tests, literature and regulatory issues.
CO-2	To get <b>knowledge</b> cGMP perspectives and QA and QC departments' roles.
CO-3	To <b>understand</b> guidelines related to ICH, Q-series, SOP and Testing protocols. Once the pupil has completed a course will be able to differentiate, and demonstrate the value of personnel responsibilities, training, hygiene and maintenance of stores.
CO-4	To <b>outline</b> the concept of demands and approval, return handling, recall and waste management, request and assessment. Followed by concepts of master formula record, SOP, quality audit, quality review and recording of quality, distribution reports and articles as well as its application.
CO-5	To <b>understand</b> calibration principles, certification and validation concepts, validation significance and scale, forms of validation, master plan for validation.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	1	2	1	3	2	3	1	3
CO-2	3	2	3	1	2	1	3	3	3	2	3
CO-3	3	1	3	1	2	1	3	2	3	2	3
CO-4	3	3	3	1	2	2	3	2	3	3	3
CO-5	3	3	3	1	2	2	3	1	3	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Biopharmaceutics & Pharmacokinetics

Subject Code: (PT-611)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>implement</b> biopharmaceutics and pharmacokinetics knowledge and skills in the pharmaceutical field for dose and dosage form production and problem-solving process.
CO-2	To <b>understand</b> the fundamental concepts in the pharmaceutical production, dose design and dose scheme and result analysis to maintain the environmental, social and ethical aspects of life.
CO-3	To <b>describe</b> the kinetics of drugs with the plasma concentration time data and to maintain the quality of the result they can modify the operation to maintain the ethical framework.
CO-4	To <b>define and explain</b> the principles and importance of drug products as they are bioavailable and bioequivalent as well as to outline the results by using the hyphenated tools to interpret the results.
CO-5	To <b>interpret</b> the data and to understand the basic principles of multi-compartmental & nonlinear Pharmacokinetic models.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustainability)	PO-11 (Life Long Learning)
CO-1	3	1	3	1	1	2	1	1	2	1	3
CO-2	3	1	3	3	1	2	3	1	3	3	3
CO-3	3	3	3	1	1	2	3	1	2	2	3
CO-4	3	1	3	3	1	2	1	1	2	1	3
CO-5	3	1	3	1	1	2	1	1	2	1	3



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**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Pharmaceutical Biotechnology

**Subject Code:** (PT-619)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>explain</b> various biotechnological or relevant terminologies relevant to pharmaceutical technology.
CO-2	To <b>analyze</b> the principles pivoting the biotechnological or related process.
CO-3	To <b>evaluate</b> the methodology for the working of biotechnological or related process.
CO-4	To <b>apply</b> the knowledge of biotechnological or related process relevant to pharmaceutical technology.
CO-5	To <b>evaluate</b> various biotechnological products relevant to pharmaceutical technology.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	1	1	1	1	1	1	2	3	1	3
CO-2	3	2	3	2	1	1	1	3	3	1	3
CO-3	3	3	3	3	1	1	1	2	3	1	3
CO-4	3	2	3	3	1	2	1	2	3	1	3
CO-5	3	2	3	3	1	2	1	1	3	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Medicinal Chemistry III

Subject Code: PT 613

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>solve</b> the nomenclature of different categories of drugs by analyzing chemical structure; to classify different categories of drugs; and to appraise their medicinal and pharmaceutical applications.
CO-2	To <b>find</b> the mechanism of action, metabolic pathways, adverse effect and therapeutic value of different classes of drugs.
CO-3	To <b>determine</b> the Structure Activity Relationship (SAR) of different classes of drugs.
CO-4	To <b>synthesize</b> different classes of drugs.
CO-5	To <b>apply</b> modern techniques like Quantitative Structure Activity Relationship (QSAR), Prodrug concept, Combinatorial Chemistry and Computer Aided Drug Design (CADD) in rational drug design.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	1	1	-	-	-	-	-	-	-	3
CO-2	3	3	3	-	-	-	-	-	-	-	3
CO-3	3	3	3	-	-	-	-	-	-	-	3
CO-4	3	3	3	2	-	-	-	-	-	-	3
CO-5	3	3	3	2	-	-	-	-	-	-	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharmacology - III

Subject Code: PT 618

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO1	To <b>describe</b> and determine the concept of various categories and their mechanism of action involving Respiratory system, Gastrointestinal tract, Immune System, Chemotherapeutics and chronopharmacology.
CO2	To <b>analyze</b> and <b>evaluate</b> the pharmacokinetic, dosage and therapeutic implications of the drugs acting on Respiratory system, Gastrointestinal tract, Immune System and Chemotherapeutics
CO3	To <b>predict</b> the mechanism of resistance and tolerance, drug-drug and drug-food interactions interfering with chronotherapy, Respiratory system, Gastrointestinal tract, Immune System and Chemotherapeutics.
CO4	To <b>determine</b> the side-effects and adverse effects of drugs interfering with chronotherapy, Respiratory system, Gastrointestinal tract, Immune System and Chemotherapeutics
CO5	To <b>outline</b> and <b>design</b> various preclinical toxicity studies.

## CO-PO MATRICES

	PROGRAM OUTCOMES (PO's)										
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	-	1	1	-	3	2	1	2	1	3
CO2	3	-	2	1	-	3	2	1	2	1	3
CO3	3	-	2	1	-	3	2	1	2	1	3
CO4	3	-	2	1	-	3	2	1	1	1	3
CO5	3	-	2	1	-	3	2	1	2	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Industrial Pharmacy – II

Subject Code: (PT-716A)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>Know</b> the process of pilot plant and scale up of pharmaceutical dosage forms.
CO-2	To <b>understand</b> the process of technology transfer from lab scale to commercial batch.
CO-3	To <b>Know</b> different Laws and Acts that regulate pharmaceutical industry.
CO-4	To <b>understand</b> about the quality management system and to apply QbD for selection of polymers & to introduce GLP.
CO-5	To <b>Understand</b> the approval process and regulatory requirements for drug products.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	1	1	1	2	3	1	3
CO-2	3	2	3	3	1	1	1	3	3	1	3
CO-3	3	1	3	3	1	1	1	2	3	1	3
CO-4	3	3	3	3	1	2	1	2	3	1	3
CO-5	3	3	3	3	1	2	1	1	3	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Novel Drug Delivery System

Subject Code: (PT-716B)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To get <b>knowledge</b> about various approaches for development of novel drug delivery systems.
CO-2	To <b>understand</b> the criteria for selection of drugs and polymers for the development of delivering system.
CO-3	To <b>understand</b> the criteria for the formulation and evaluation of novel drug delivery systems.
CO-4	To <b>apply</b> the criteria for selection of drugs and polymers for the development of Targeted Drug Delivery System.
CO-5	To <b>understand</b> the design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutical parameters.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	1	1	1	2	3	1	3
CO-2	3	2	3	3	1	1	1	3	3	1	3
CO-3	3	1	3	3	1	1	1	2	3	1	3
CO-4	3	3	3	3	1	2	1	2	3	1	3
CO-5	3	3	3	3	1	2	1	1	3	1	3



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**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Pharmacy Practice

**Subject Code:** (PT-718)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>understand</b> the professional roles of pharmacists in community, hospital and clinical pharmacy areas.
CO-2	To <b>know</b> various drug distribution methods in a hospital, clinical and pharmaceutical care services.
CO-3	To <b>understand</b> the professional responsibilities of the pharmacists like patient counselling and
CO-4	To <b>analyze</b> & to monitor drug therapy of patient through medication chart review and clinical review.
CO-5	To <b>understand</b> the pharmacy stores management system, and inventory control.

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	2	3	3	1	1	1	2	3	1	3
CO-2	3	2	3	3	1	1	1	3	3	1	3
CO-3	3	1	3	3	1	1	1	2	3	1	3
CO-4	3	3	3	3	1	2	1	2	3	1	3
CO-5	3	3	3	3	1	2	1	1	3	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Instrumental Methods of Analysis

Subject Code: PT 711

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>illustrate</b> the principle and instrumentation of spectroscopic and chromatographic techniques
CO-2	To <b>analyze</b> the interaction of matter with electromagnetic radiations; and to apply the knowledge in drug analysis by spectral Techniques
CO-3	To <b>interpret</b> chromatographic separation & analysis of drugs
CO-4	To <b>create</b> protocol for analysis of pharmaceutical substances by spectroscopic and chromatographic techniques
CO-5	To <b>assess</b> quantitative & qualitative analysis of drugs using various analytical instruments

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	1	1	3	-	-	-	-	-	-	3
CO-2	3	3	3	-	-	-	-	-	-	-	3
CO-3	3	3	3	3	-	-	-	-	-	-	3
CO-4	3	3	3	3	-	-	-	-	-	-	3
CO-5	3	3	3	3	-	-	-	-	-	-	3



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Name of the Course: Bachelor of Pharmacy (8 Sem.)

Name of the Subject: BIostatistics and Research Methodology

Subject Code: (PT-817)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>analyze</b> the basis knowledge regarding Mean, Median, Mode-standard deviation pharmaceutical examples, pharmaceutical problems and their solving.
CO-2	To <b>analyze &amp; interpret</b> of different types statistical experimental design like Parametric test: t-test (Sample, Pooled or Unpaired and Paired), ANOVA, (One way and Two way).
CO-3	To <b>describe</b> , methodology, outline & evaluate of Experimental Design Technique, plagiarism, Report writing and presentation of data, Protocol, Cohorts studies, Observational studies, Experimental studies.
CO-4	To <b>prepare</b> , solve analysis & application of software based Statistical Analysis Using Excel, SPSS, MINITAB®, DESIGN OF EXPERIMENTS, R - Online Statistical Software's to Industrial and Clinical trial approach.
CO-5	To <b>design</b> , analysis of Factorial Design: Definition, 2 <sup>2</sup> , 2 <sup>3</sup> design. Advantage of factorial design & Optimization Techniques

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustainability)	PO-11 (Life Long Learning)
CO-1	3	-	3	3	-	2	2	1	1	1	2
CO-2	3	-	3	3	-	2	2	1	2	1	2
CO-3	3	-	3	2	3	2	3	1	3	3	2
CO-4	3	-	3	2	2	2	3	1	3	2	2
CO-5	3	-	3	2	-	2	2	1	1	1	2



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Pharma Marketing Management (Theory)

Subject Code: (PT-810A)

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>define &amp; interpret</b> their knowledge about different aspects of Marketing & Pharmaceutical market.
CO-2	To <b>expand</b> their knowledge regarding various aspects of Product decision.
CO-3	To <b>judge</b> about various aspects related to Promotion of products.
CO-4	To <b>ascertain</b> the different aspects of pharmaceutical marketing channels.
CO-5	To <b>describe</b> various aspects of pricing & Emerging concepts in Marketing

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	2	3	3	2	3	3	2	3	2	1	3
CO-2	2	3	3	2	3	3	2	3	2	1	3
CO-3	2	3	3	2	3	3	2	3	2	1	3
CO-4	2	3	3	2	3	3	2	3	2	1	3
CO-5	2	3	3	2	3	3	2	3	2	1	3



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Name of the Course: Bachelor of Pharmacy

Name of the Subject: Computer Aided Drug Design

Subject Code: PT 810B

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>develop</b> knowledge on various techniques used in rational drug design process and its role in discovery of lead molecules
CO-2	To <b>explain</b> the concept of QSAR; and to apply various softwares for physicochemical property prediction
CO-3	To <b>employ</b> various molecular modeling softwares in the design of novel drug-like molecules; to apply pharmacophore modeling and docking techniques and to examine the binding interactions of ligand with molecular targets through de novo drug design or virtual screening
CO-4	To <b>appraise</b> the applications of bioinformatics, cheminformatics, and to apply ADME databases, chemical, biochemical and pharmaceutical databases in drug design
CO-5	To <b>interpret</b> the conformational analysis of molecules using molecular and quantum mechanics approach; and to determine the global conformational minima

## CO-PO MATRICES

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustainability)	PO-11 (Life Long Learning)
CO-1	3	1	1	-	-	-	-	-	-	-	3
CO-2	3	3	3	3	-	-	-	-	-	-	3
CO-3	3	3	3	3	-	-	-	-	-	-	3
CO-4	3	3	3	3	-	-	-	-	-	-	3
CO-5	3	3	3	3	-	-	-	-	-	-	3



# BENGAL SCHOOL OF TECHNOLOGY

(Courses offered: D. Pharm., B. Pharm., M. Pharm. (Pharmaceutics), M. Pharm. (Pharmacology) Approved by PCI, Affiliated to MAKAUT. Accredited by NAAC, Accredited by NBA for B. Pharm.  
Sugandha, Delhi Road, Near Chinsurah RS, Hooghly-712 102, West Bengal Phone: 033 26866064/4913, Telefax: 03326864281,  
E Mail: [principal@bstpharmacy.in](mailto:principal@bstpharmacy.in) Website: [www.bstpharmacy.in](http://www.bstpharmacy.in)

**Name of the Course:** Bachelor of Pharmacy

**Name of the Subject:** Advanced Instrumentation Techniques

**Subject Code:** PT 810C

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO-1	To <b>illustrate</b> the principle and instrumentation of analytical techniques (spectroscopy, chromatographic hyphenated, thermal and diffraction methods)
CO-2	To <b>analyze</b> the interaction of matter with electromagnetic radiations; and to apply the knowledge in drug analysis by spectral techniques
CO-3	To <b>interpret</b> calibration and validation of various analytical instruments
CO-4	To <b>assess</b> analysis of drugs employing various analytical instruments
CO-5	To <b>explain</b> principle, application, and procedure employed in radio-immuno assay and extraction techniques

## CO-PO MATRICES

### PROGRAM OUTCOMES (PO's)

CO'S	PROGRAM OUTCOMES (PO's)										
	PO-1 (Pharmacy Knowledge)	PO-2 (Planning Abilities)	PO-3 (Problem Analysis)	PO-4 (Modern tool uses)	PO-5 (Leadership Skill)	PO-6 (Professional Identity)	PO-7 (Pharmaceutical Ethics)	PO-8 (Communication)	PO-9 (Pharmacist & Society)	PO-10 (Environment & Sustain ability)	PO-11 (Life Long Learning)
CO-1	3	1	1	3	-	-	-	-	-	-	3
CO-2	3	3	3	-	-	-	-	-	-	-	3
CO-3	3	3	3	3	-	-	-	-	-	-	3
CO-4	3	3	3	3	-	-	-	-	-	-	3
CO-5	3	1	1	3	-	-	-	-	-	-	3



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Phone: 033 26866064/4913, Telefax: 03326864281,

E Mail: [principal@bstpharmacy.in](mailto:principal@bstpharmacy.in) Website: [www.bstpharmacy.in](http://www.bstpharmacy.in)

Name of the Course: Bachelor of Pharmacy

Name of the Subject: Social and Preventive Pharmacy

Subject Code: PT-818

COURSE OUTCOME (CO)	OBJECTIVES (DESCRIPTIONS)
CO1	To <b>analyze</b> the various health related issues affecting the society on national and international aspect.
CO2	To <b>conclude</b> about the preventive and control measures to be adopted for healthy society.
CO3	To <b>apply</b> the knowledge of various schemes for welfare of the society.
CO4	To <b>recognize</b> health hazards and to design programme healthcare development.
CO5	To <b>develop</b> healthy community in rural and urban areas.

## CO-PO MATRICES

CO's ↓	PROGRAM OUTCOMES (PO's)										
	PO1 (Pharmacy Knowledge)	PO2 (Planning Abilities)	PO3 (Problem Analysis)	PO4 (Modern tool uses)	PO5 (Leadership Skills)	PO6 (Professional Identity)	PO7 (Pharmaceutical Ethics)	PO8 (Communication)	PO9 (Pharmacist & society)	PO10 (Environment & sustainability)	PO11 (Lifelong learning)
CO1	3	-	3	3	-	3	3	3	3	3	3
CO2	3	-	2	3	-	2	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3
CO5	3	-	2	2	3	3	3	2	3	3	3