



COURSE OUTCOME (CO)
PROGRAMME OUTCOME (PO)
&
CO-PO MATRICES

BACHELOR OF PHARMACY (B. PHARM.)



BENGAL SCHOOL OF TECHNOLOGY

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

Approved by PCI, Affiliated to MAKAUT & WBSCT & VE & SD

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 Website: www.bstpharmacy.in

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Sugandha, Delhi Road, Chinsurah, Hooghly, W.B-712102



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B.Pharm course structure (2017-2018)

Semester	Subject Code	Name of the subject	Page No
I	PT 101	Pharmaceutical Analysis	4
	PT 103	Pharmaceutical Inorganic Chemistry	5
	PT 105	Human Anatomy & Physiology-I	6
	PT 106	Pharmaceutics –I	7
	HU 181	Communication Skills	8
	PTM-183	Remedial Mathematics	9
	PTB-184	Remedial Biology	10

Semester	Subject Code	Name of the subject	Page No
II	PT 213	Pharmaceutical Organic Chemistry - I	11
	PT 214	Biochemistry	12
	PT 215	Human Anatomy & Physiology-II	13
	PT 216	Pathophysiology	14
	PTC 203	Computer Applications in Pharmacy	15
	HU 282	Environmental Sciences	16

Semester	Subject Code	Name of the subject	Page No
III	PT 314	Pharmaceutical Organic Chemistry - II	17
	PT 316	Physical Pharmaceutics –I	18
	PT 317	Pharmaceutical Engineering	19
	PT 319	Pharmaceutical Microbiology	20

Semester	Subject Code	Name of the subject	Page No
IV	PT 412	Pharmacognosy and Phytochemistry-I	21
	PT 413	Industrial Pharmacy-I	22
	PT 414	Pharmaceutical Organic Chemistry-III	23
	PT 416	Physical Pharmaceutics –II	24
	PT 418	Pharmacology-I	25

Semester	Subject Code	Name of the subject	Page No
V	PT 512	Pharmacognosy and Phytochemistry-II	26
	PT 513 A	Medicinal Chemistry - I	27
	PT 513 B	Medicinal Chemistry-II	28
	PT 516	Pharmaceutical Jurisprudence	29
	PT 518	Pharmacology-II	30

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Semester	Subject Code	Name of the subject	Page No
VI	PT 611	Quality Assurance	31
	PT 612	Herbal Drug Technology	32
	PT 613	Medicinal Chemistry-III	33
	PT 616	Biopharmaceutics and Pharmacokinetics	34
	PT 618	Pharmacology - III	35
	PT 619	Pharmaceutical Biotechnology	36

Semester	Subject Code	Name of the subject	Page No
VII	PT 711	Instrumental Methods of Analysis	37
	PT 716A	Industrial Pharmacy-II	38
	PT 716B	Novel Drug Delivery System	39
	PT 718	Pharmacy Practice	40

Semester	Subject Code	Name of the subject	Page No
VIII	PT 810A	Pharma Marketing Management	41
	PT 810B	Computer Aided Drug Design	42
	PT 810C	Advanced Instrumentation Technique	43
	PT 817	Biostatistics & Research Methodology	44
	PT 818	Social & Preventive Pharmacy	45

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Year	Semester	Name of the Subject	Subject Code
1 st year	1 st Semester	PHARMACEUTICAL ANALYSIS	PT 101

COURSE OUTCOME (CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	2	3	-	3	3	1	2	1	3
CO-2	3	3	3	2	-	3	3	1	2	1	3
CO-3	3	3	3	3	-	3	3	1	2	1	3
CO-4	3	3	3	3	-	3	3	1	2	1	3
CO-5	3	3	3	3	-	3	3	1	2	1	3

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Year	Semester	Name of the Subject	Subject Code
1 st year	1 st Semester	Pharmaceutical Inorganic Chemistry	PT 103

COURSE OUTCOME(CO)

CO-1	To develop knowledge about the sources and types of impurities, principles involved in the limit test; to apply various methods for the determination of impurities in inorganic drugs and pharmaceuticals
CO-2	To demonstrate the general methods of preparation of inorganic pharmaceuticals
CO-3	To analyze various inorganic pharmaceutical compounds
CO-4	To assess the quality of inorganic pharmaceutical compounds
CO-5	To apply various inorganic compounds as medicinal and pharmaceutical agents

PROGRAM OUTCOMES (PO)

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)
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CO-1	3	3	3	2	-	3	3	1	2	1	3
CO-2	3	3	3	2	-	3	3	1	2	1	3
CO-3	3	3	3	2	-	3	3	1	2	1	3
CO-4	3	3	3	2	-	3	3	1	2	1	3
CO-5	3	3	-	-	-	3	3	1	3	1	3

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Year	Semester	Name of the Subject	Subject Code
1 st year	1 st Semester	Human Anatomy and Physiology-I	PT 105

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

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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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Year	Semester	Name of the Subject	Subject Code
1 st year	1 st Semester	Pharmaceutics- I	PT 106

COURSE OUTCOME (CO)

CO-1	To remember the history of profession of pharmacy in India related with pharmacy education, career including industry and organization.
CO-2	To know about the details of the prescription and analyze 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 know about the concepts of dosage forms and incompatibilities with Apply Pharmaceutical calculation for the design and evaluation part of the different formulation including powders, liquid dosage forms.
CO-4	To understand 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 know about the concept of solid and semisolid dosage form and Analyze their evaluation parameter and incompatibilities.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'S	PROGRAM OUTCOMES (PO)										
	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	3	2	3	2	1	1	2	2	3	2	3
CO-4	3	1	2	3	2	1	1	2	3	2	3
CO-5	3	1	3	3	1	1	2	1	2	2	3

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Year	Semester	Name of the Subject	Subject Code
1 st year	1 st Semester	Communication skills	HU-181

COURSE OUTCOME(CO)

CO-1	To understand Importance of Communication in life and it's process.
CO-2	To learn how to write Business Correspondence.
CO-3	To know Importance of Listening.
CO-4	To understand how to speak, and how to face Interviews and Group Discussion.
CO-5	To learn Pronunciation of English.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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
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	3	3	1	3
CO-5	3	3	3	3	1	2	1	2	3	1	3



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Year	Semester	Name of the Subject	Subject Code
1 st year	1 st Semester	Remedial Mathematics	PTM-183
COURSE OUTCOME(CO)			
CO-1	To develop a better qualitative & quantitative understanding of biological problems using mathematical tools.		
CO-2	To know the theory & their application in Pharmacy.		
CO-3	To predict the unseen results by the application of calculus.		
CO-4	To relate the knowledge of geometry with that of the calculus.		
CO-5	To apply the techniques in solving pharmaceutical problems, chemical kinetics & pharmacokinetics equations.		

PROGRAM OUTCOMES (PO)										
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'S	CO-PO MATRICES										
	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	1	-	-	-	-	-	-	3
CO-2	2	-	3	1	-	-	-	-	-	-	3
CO-3	2	-	3	1	-	-	-	-	-	-	3
CO-4	-	-	3	1	-	-	-	-	-	-	3
CO-5	3	-	3	1	-	-	-	-	-	-	3


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Year	Semester	Name of the Subject	Subject Code
1 st year	1 st Semester	Remedial Biology	PTB-184

COURSE OUTCOME(CO)

CO-1	To understand the component of living world, structure and functional system of plant kingdom.
CO-2	To understand the component of living world, structure and functional system of animal kingdom.
CO-3	To know the classification and salient features of five kingdoms of life.
CO-4	To understand the basic components of anatomy and physiology of plant.
CO-5	To understand the basic components of anatomy and physiology of animal with apply special reference to human.

PROGRAM OUTCOMES (PO)

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)
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CO-1	1	1	1	2	1	1	1	2	3	2	2
CO-2	1	2	3	2	1	1	1	2	3	2	2
CO-3	1	2	3	2	1	1	2	2	3	2	2
CO-4	1	1	2	3	1	1	1	2	3	2	2
CO-5	1	1	3	3	1	1	2	1	3	2	2

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Year	Semester	Name of the Subject	Subject Code
1 st year	2 nd Semester	Pharmaceutical Organic Chemistry-I	PT 213

COURSE OUTCOME(CO)

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

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CO-2	3	3	3	2	-	3	2	1	2	1	3
CO-3	3	3	3	2	-	3	2	1	2	1	3
CO-4	3	3	3	2	-	3	2	1	2	1	3
CO-5	3	3	3	2	-	3	2	1	2	1	3



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Year	Semester	Name of the Subject	Subject Code
1 st year	2 nd Semester	Biochemistry	PT 214

COURSE OUTCOME(CO)

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

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CO-1	3	1	1	2	-	3	2	1	3	3	3
CO-2	3	1	1	2	-	3	2	1	3	3	3
CO-3	3	1	2	2	-	3	2	1	3	3	3
CO-4	3	1	2	2	-	3	2	1	3	3	3
CO-5	3	1	1	2	-	3	2	1	3	3	3

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

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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 Website: www.bstpharmacy.in

Year	Semester	Name of the Subject	Subject Code
1 st year	2 nd Semester	Human Anatomy and Physiology-II	PT 215

COURSE OUTCOME(CO)

CO1	To give idea of the anatomical features and organization of nervous system, digestive system, respiratory system, urinary system, endocrinesystem and reproductive system.
CO2	To explain the physiological activity of nervous system, digestive system, respiratory system, urinary system, endocrine system and reproductive system.
CO3	To describe the functions of Nervous System, digestive system, Respiratory system, Urinary system, endocrine system and Reproductive system.
CO4	To interpret and analyze the diseases of nervous system, digestive system, respiratory system, urinary system, endocrine system and reproductive system and apply the basic concept of genetics.
CO5	To give conclusions of the diagnostic tests for the disorders of Nervous System, digestive system, Respiratory system, Urinary system, endocrine system and Reproductive system.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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)
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	2	2	3

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Year	Semester	Name of the Subject	Subject Code
1 st year	2 nd Semester	Pathophysiology	PT 216

COURSE OUTCOME(CO)

CO1	To explain the etiology pathogenesis of different diseases and response of the body to corresponding disease state.
CO2	To summarize the complications related to different disease state.
CO3	To interpret disease type based on the signs and symptoms.
CO4	To compare between multiple pathological changes for a disease.
CO5	To frame an outline for rational treatment for the disease.

PROGRAM OUTCOMES (PO)

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)
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CO's	CO-PO MATRICES										
	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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Year	Semester	Name of the Subject	Subject Code
1 st year	2 nd Semester	Computer Applications in Pharmacy	PTC 203

COURSE OUTCOME(CO)

CO1	To define & interpret their own knowledge upon number system as well as information system.
CO2	To give brief idea about web Technology & data base and its application of pharmacy field.
CO3	To quote and illustrate the technologies being applied within the platform of pharmacy in addition to some label of software.
CO4	To recite the utilization of computer in the field of bioinformatics in addition to database, scope, application, vacancies development and its limitations to identify in the broad spectrum of pharmaceutical research and formulation development on basis of existing information related to bioinformatics.
CO5	To describe the process of separation technique to be utilized in the field of preclinical studies and to summarize the information related to laboratories as well as text.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO's	CO-PO MATRICES										
	PO ₁ (Pharmacy Knowledge)	PO ₂ (Planning Abilities)	PO ₃ (Problem Analysis)	PO ₄ (Modern tool uses)	PO ₅ (Leadership Skills)	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)
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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Year	Semester	Name of the Subject	Subject Code
1 st year	2 nd Semester	Environmental Sciences	HU-282

COURSE OUTCOME(CO)

CO-1	To define & interpret their knowledge about different Natural Resources.
CO-2	To expand their knowledge regarding problems associated with different Natural Resources.
CO-3	To judge causes and solution of pollution...
CO-4	To ascertain the Classification of ecosystem and their composition.
CO-5	To describe problems associated with ecosystem and their depletion.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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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Year	Semester	Name of the Subject	Subject Code
2 nd year	3 rd Semester	Pharmaceutical Organic Chemistry II	PT-314

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	2	1	2	2	3
CO-2	3	3	3	2	-	3	2	1	2	2	3
CO-3	3	3	3	2	-	3	2	1	2	2	3
CO-4	3	3	3	2	-	3	2	1	2	2	3
CO-5	3	3	3	2	-	3	2	1	2	2	3

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Year	Semester	Name of the Subject	Subject Code
2 nd year	3 rd Semester	Physical Pharmaceutics - I	PT-316

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	2	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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Year	Semester	Name of the Subject	Subject code
2 nd year	3 rd Semester	Pharmaceutical Engineering	PT-317
COURSE OUTCOME(CO)			
CO-1	To understand 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 remember 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 know about the mixing process or techniques for different phases like solid and liquid mixing and to analyze different mathematical model used for the mixing techniques.		
CO-4	To apply 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 understand 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.		

PROGRAM OUTCOMES (PO)										
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'S	CO-PO MATRICES										
	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	2	1	1	2	1	3
CO-2	3	2	3	3	1	2	1	2	2	1	3
CO-3	3	2	3	3	1	2	1	1	1	1	3
CO-4	3	2	3	3	1	2	1	1	1	1	3
CO-5	3	2	3	3	2	2	1	2	2	2	3


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Year	Semester	Name of the Subject	Subject Code
2 nd year	3 rd Semester	Pharmaceutical Microbiology	PT-319
COURSE OUTCOME(CO)			
CO-1	To understand 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	To understand about different microscope and microscopically techniques and Apply for the identification of bacteria using different staining method.		
CO-3	To remember 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	To understand 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	To apply 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.		

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	2	1	1	2	1	2	1	2	3
CO-2	3	1	1	3	1	2	1	2	2	2	3
CO-3	3	2	2	3	1	3	1	2	2	2	3
CO-4	3	2	2	2	1	3	1	2	2	2	3
CO-5	3	2	2	1	1	3	1	2	2	3	3

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Year	Semester	Name of the Subject	Subject Code
2 nd year	4 th Semester	Pharmacognosy and Phytochemistry I	PT-412

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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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Year	Semester	Name of the Subject	Subject Code
2 nd year	4 th Semester	Industrial Pharmacy-I	PT-413

COURSE OUTCOME(CO)

CO-1	To summarizes the different levels of understanding that can affect on medicinal products efficacy of pharmaceutical additives and different pharmaceutical dosage forms with an illustrative concept.
CO-2	To understand the various pharmaceutical dosage forms manufacturing techniques and a protocol to comply the data and to comprehend the complexity of the safety certifications that apply to pharmaceutical companies.
CO-3	To understand 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 predict the preparation, packaging and quality control tests of parenteral products followed by concepts of master formula record, SOP, quality audit, quality review and distribution reports and articles as well as its application.
CO-5	To outline , and demonstrate the manufacturing process of cosmetics, aerosols and their calibration principles as well as its illustration and paraphrasing followed by breakdown of packaging materials science.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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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Year	Semester	Name of the Subject	Subject Code
2 nd year	4 th Semester	Pharmaceutical Organic Chemistry-III	PT-414

COURSE OUTCOME(CO)

CO-1	To determine stereo-chemical aspects of organic compounds and to demonstrate stereo-chemical reactions
CO-2	To solve the nomenclature of heterocyclic compounds by analyzing chemical structure and vice versa; to classify heterocyclic compounds; and to relate physical properties with the structure of heterocyclic compounds
CO-3	To synthesize heterocyclic compounds by different methods employing name reactions
CO-4	To find the mechanism of important chemical reactions of organic compounds
CO-5	To appraise the medicinal uses and other applications of heterocyclic compounds

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'S	CO-PO MATRICES										
	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	-	3	2	1	2	2	3
CO-2	3	2	3	2	-	3	2	1	2	2	3
CO-3	3	3	3	2	-	3	2	1	2	2	3
CO-4	3	3	3	2	-	3	2	1	2	2	3
CO-5	3	1	-	2	-	3	2	1	2	2	3

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E Mail: principale@bstpharmacy.in Website: www.bstpharmacy.in

Year	Semester	Name of the Subject	Subject Code
2 nd year	4 th Semester	Physical Pharmaceutics - II	PT-416

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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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Year	Semester	Name of the Subject	Subject Code
2 nd year	4 th Semester	Pharmacology – I	PT-418

COURSE OUTCOME(CO)

CO1	To define & interpret the basic knowledge of pharmacology and correlate the study in drug discovery process.
CO2	To explain 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 outline and illustrate 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 describe 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 describe 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.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	-	2	1	-	1	3	1	2	1	3
CO2	3	-	3	1	-	1	3	1	2	1	3
CO3	3	-	3	1	-	1	2	1	2	1	3
CO4	3	-	2	1	-	1	2	1	2	1	3
CO5	3	-	2	1	-	1	2	1	2	1	3

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Year	Semester	Name of the Subject	Subject Code
3 rd year	5 th Semester	Pharmacognosy and Phytochemistry-II	PT-512

COURSE OUTCOME(CO)

CO-1	To illustrate the basic plant metabolites and the various metabolic pathways to form secondary metabolites
CO-2	To describe the details of photochemical for various pharmacological uses
CO-3	To discover the modern extraction techniques, characterization of the herbal drugs and phytoconstituents
CO-4	To demonstrate isolation and identification of phytoconstituents
CO-5	To ascertain the modern evaluation techniques for the herbal drugs

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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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Year	Semester	Name of the Subject	Subject Code
3 rd year	5 th Semester	Medicinal Chemistry-I	PT-513A

COURSE OUTCOME(CO)

CO-1	To relate the physicochemical properties of drugs to their pharmacological action
CO-2	To solve 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 find the mechanism of action, metabolic pathways, adverse effect and therapeutic value of different classes of drugs
CO-4	To determine the Structure Activity Relationship (SAR) of different classes of drugs
CO-5	To synthesize different classes of drugs.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	-	3	2	1	2	2	3
CO-5	3	3	3	2	-	3	2	1	2	2	3

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Year	Semester	Name of the Subject	Subject Code
3 rd year	5 th Semester	Medicinal Chemistry-II	PT-513B

COURSE OUTCOME(CO)

CO-1	To relate the physicochemical properties of drugs to their pharmacological action
CO-2	To solve 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 find the mechanism of action, metabolic pathways, adverse effect and therapeutic value of different classes of drugs
CO-4	To determine the Structure Activity Relationship (SAR) of different classes of drugs
CO-5	To synthesize different classes of drugs

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'S	CO-PO MATRICES										
	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	-	3	2	1	2	2	3
CO-5	3	3	3	2	-	3	2	1	2	2	3

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Year	Semester	Name of the Subject	Subject Code
3 rd year	5 th Semester	Pharmaceutical Jurisprudence	PT-516

COURSE OUTCOME(CO)

CO-1	To know about the pharmaceutical legislation including different committees and to Understand about objectives of the Drug and Cosmetics Act.
CO-2	To get knowledge 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 understand 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 remember 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 understand about the objectives and rules regulations of Medical Termination and Pregnancy and the all types of Intellectual property rights.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	2	2	1	3	1	3	2	2
CO-2	3	1	1	2	2	1	3	1	3	2	2
CO-3	3	1	1	2	2	1	3	1	3	2	2
CO-4	3	1	1	2	2	2	3	1	3	2	2
CO-5	3	1	2	2	2	2	3	1	3	2	2



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Year	Semester	Name of the Subject	Subject Code
3 rd year	5 th Semester	Pharmacology - II	PT-518

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	1	-	2	2	2	3	2	3
CO2	3	-	3	1	-	2	1	2	3	2	3
CO3	3	-	3	1	-	2	1	2	3	2	3
CO4	3	-	3	1	-	2	1	2	3	2	3
CO5	3	-	3	2	-	2	3	2	3	2	3

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Year	Semester	Name of the Subject	Subject Code
3 rd year	6 th Semester	Quality Assurance	PT-611

COURSE OUTCOME(CO)

CO-1	To summarize the different levels of pharmaceutical quality development and quality assurance such as cGMP, QC tests, literature and regulatory issues.
CO-2	To get knowledge cGMP perspectives and QA and QC departments' roles.
CO-3	To understand 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 outline 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 understand calibration principles, certification and validation concepts, validation significance and scale, forms of validation, master plan for validation.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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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Year	Semester	Name of the Subject	Subject Code
3 rd year	6 th Semester	Herbal Drug Technology	PT-612

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'S	CO-PO MATRICES										
	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	2	2	1	3	1	3	2	3
CO-2	3	1	1	2	2	1	3	1	3	2	3
CO-3	3	1	1	2	2	1	3	1	3	2	3
CO-4	3	1	1	2	2	2	3	1	3	2	3
CO-5	3	1	2	2	2	2	3	1	3	2	3

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Year	Semester	Name of the Subject	Subject Code
3 rd year	6 th Semester	Medicinal Chemistry-III	PT-613
COURSE OUTCOME(CO)			
CO-1	To solve 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 find the mechanism of action, metabolic pathways, adverse effect and therapeutic value of different classes of drugs.		
CO-3	To determine the Structure Activity Relationship (SAR) of different classes of drugs.		
CO-4	To synthesize different classes of drugs.		
CO-5	To apply modern techniques like Quantitative Structure Activity Relationship (QSAR), Prodrug concept, Combinatorial Chemistry and Computer Aided Drug Design (CADD) in rational drug design.		

PROGRAM OUTCOMES (PO)										
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'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	2	1	2	2	3
CO-2	3	3	3	2	-	3	2	1	2	2	3
CO-3	3	3	3	3	-	3	2	1	2	2	3
CO-4	3	3	3	2	-	3	2	1	2	2	3
CO-5	3	3	3	3	-	3	2	1	2	2	3

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Year	Semester	Name of the Subject	Subject Code
3 rd year	6 th Semester	Biopharmaceutics & Pharmacokinetics	PT-616

COURSE OUTCOME(CO)

CO-1	To implement Biopharmaceutics and pharmacokinetics knowledge and skills in the pharmaceutical field for dose and dosage form production and problem-solving process.
CO-2	To understand 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 describe 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 define and explain 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 interpret the data and to understand the basic principles of multi-compartmental & nonlinear Pharmacokinetic models.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	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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Year	Semester	Name of the Subject	Subject Code
3 rd year	6 th Semester	Pharmacology - III	PT-618
COURSE OUTCOME(CO)			
CO1	To describe and determine the concept of various categories and their mechanism of action involving Respiratory system, Gastrointestinal tract, Immune System, Chemotherapeutics and chronopharmacology.		
CO2	To analyze and evaluate the pharmacokinetic, dosage and therapeutic implications of the drugs acting on Respiratory system, Gastrointestinal tract, Immune System and Chemotherapeutics		
CO3	To predict 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 determine the side-effects and adverse effects of drugs interfering with chronotherapy, Respiratory system, Gastrointestinal tract, Immune System and Chemotherapeutics		
CO5	To outline and design various preclinical toxicity studies.		

PROGRAM OUTCOMES (PO)										
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'S	CO-PO MATRICES										
	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)
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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Year	Semester	Name of the Subject	Subject Code
3 rd year	6 th Semester	Pharmaceutical Biotechnology	PT-619

COURSE OUTCOME(CO)

CO-1	To explain various biotechnological or relevant terminologies relevant to pharmaceutical technology.
CO-2	To analyze the principles pivoting the biotechnological or related process.
CO-3	To evaluate the methodology for the working of biotechnological or related process.
CO-4	To apply the knowledge of biotechnological or related process relevant to pharmaceutical technology.
CO-5	To evaluate various biotechnological products relevant to pharmaceutical technology.

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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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Year	Semester	Name of the Subject	Subject Code
4 th year	7 th Semester	Instrumental Methods of Analysis	PT-711

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	2	1	2	2	3
CO-2	3	3	3	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	-	3	2	1	2	2	3
CO-5	3	3	3	3	-	3	2	1	2	2	3

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Year	Semester	Name of the Subject	Subject Code
4 th year	7 th Semester	Industrial Pharmacy – II	PT-716A

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	3	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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Year	Semester	Name of the Subject	Subject Code
4 th year	7 th Semester	Novel Drug Delivery System	PT-716B

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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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Year	Semester	Name of the Subject	Subject Code
4 th year	7 th Semester	Pharmacy Practice	PT-718

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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PROGRAM OUTCOMES (PO's)

CO'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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Year	Semester	Name of the Subject	Subject Code
4 th year	8 th Semester	Pharma Marketing Management	PT-810A
COURSE OUTCOME(CO)			
CO-1	To define & interpret their knowledge about different aspects of Marketing & Pharmaceutical market.		
CO-2	To expand their knowledge regarding various aspects of Product decision.		
CO-3	To judge about various aspects related to Promotion of products.		
CO-4	To ascertain the different aspects of pharmaceutical marketing channels.		
CO-5	To describe various aspects of pricing & Emerging concepts in Marketing		

PROGRAM OUTCOMES (PO)										
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'S	CO-PO MATRICES										
	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	3	2	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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Year	Semester	Name of the Subject	Subject Code
4 th year	8 th Semester	Computer Aided Drug Design	PT-810B

COURSE OUTCOME(CO)

CO-1	To develop knowledge on various techniques used in rational drug design process and its role in discovery of lead molecules
CO-2	To explain the concept of QSAR, and to apply various softwares for physicochemical property prediction
CO-3	To employ 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 appraise the applications of bioinformatics, cheminformatics, and to apply ADME databases, chemical, biochemical and pharmaceutical databases in drug design
CO-5	To interpret the conformational analysis of molecules using molecular and quantum mechanics approach, and to determine the global conformational minima

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	2	1	1	1	-	-	-	3
CO-2	3	3	3	3	1	1	1	-	-	-	3
CO-3	3	3	3	3	1	1	1	-	-	-	3
CO-4	3	3	3	3	1	1	1	-	-	-	3
CO-5	3	3	3	3	1	1	1	-	-	-	3

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Year	Semester	Name of the Subject	Subject Code
4 th year	8 th Semester	Advanced Instrumentation Techniques	PT-810C

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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PROGRAM OUTCOMES (PO's)

CO'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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Year	Semester	Name of the Subject	Subject Code
4 th year	8 th Semester	Biostatistics and Research Methodology	PT-817

COURSE OUTCOME(CO)

CO-1	To analyze the basis knowledge regarding Mean, Median, Mode-standard deviation pharmaceutical examples, pharmaceutical problems and their solving.
CO-2	To analyze & interpret 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 describe , methodology, outline & evaluate of Experiential Design Technique, plagiarism, Report writing and presentation of data, Protocol, Cohorts studies, Observational studies, Experimental studies.
CO-4	To prepare , 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 design , analysis of Factorial Design: Definition, 2 ² , 2 ³ design. Advantage of factorial design & Optimization Techniques

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	1	2	2	1	1	1	2
CO-2	3	2	3	3	1	2	2	1	2	1	2
CO-3	3	2	3	2	3	2	3	1	3	3	2
CO-4	3	2	3	2	2	2	3	1	3	2	2
CO-5	3	2	3	2	2	2	2	1	1	1	2

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BENGAL SCHOOL OF TECHNOLOGY

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

Approved by PCI, Affiliated to MAKAUT & WBST & VE & SD

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

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Year	Semester	Name of the Subject	Subject Code
4 th year	8 th Semester	Social and Preventive Pharmacy	PT-818

COURSE OUTCOME(CO)

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

PROGRAM OUTCOMES (PO)

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)
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CO-PO MATRICES

CO'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	-	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

DR. P. SURESH
PRINCIPAL

BENGAL SCHOOL OF TECHNOLOGY

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