

NIRMALA COLLEGE OF PHARMACY



NIRMALA COLLEGE OF PHARMACY MUVATTUPUZHA

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FIRST CYCLE NAAC ACCREDITATION 2023

CRITERION 2



TEACHING- LEARNING AND EVALUATION

2.6.2 Attainment of POs and COs are evaluated

Submitted to



THE NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

2.6.2 Attainment of Student Performance and Learning Outcome

EVALUATION OF POs AND COs

2018-2019



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

Course Outcomes (COs) and Program Outcomes (POs)

1. Establish the correlation between the courses and the Program Outcomes

(NBA defined Program Outcomes as mentioned in Annexure I)

1.1. Course Outcomes

Note: Number of Outcomes for a Course is expected to be around 6.

On successful completion of this Course, students will be able to:

BP101T : Theory-Human Anatomy and Physiology I	
Sl.NO	DESCRIPTION
BP101T.1	Explain the gross morphology, structure and functions of various organs of the human body
BP101T.2	Describe the various homeostatic mechanisms and their imbalances
BP101T.3	Identify the various tissues and organs of different systems of human body.
BP101T.4	To explain the physiology of special senses and nervous system.
BP101T.5	Appreciate coordinated working pattern of different organs of each system

BP102T: -Theory-Pharmaceutical Analysis I	
Sl.NO	DESCRIPTION
BP102T.1	Understand the basic concept of the various volumetric analysis and will have a firm foundation in the fundamentals and application of current chemical and scientific theories of Analytical Chemistry.
BP102T.2	Gain an understanding of common laboratory techniques and gravimetric analysis for quantitative analysis of pharmaceuticals.
BP102T.3	Understand the basic principles of electrochemical analysis of drugs.
	Skilled in preparation and standardization of various concentrations of analytical solutions



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

BP102T.4	
BP102T.5	Understand the concepts of errors, accuracy precision

BP201T: 2019-2020 – Theory-Human Anatomy and Physiology II	
Sl.NO	DESCRIPTION
BP201T.1	Explain the gross morphology, structure and functions of various organs of the human body
BP201T.2	Describe the various homeostatic mechanisms and their imbalances
BP201T.3	Identify the various tissues and organs of different systems of human body.
BP201T.4	To explain the physiology of special senses and nervous system.
BP201T.5	Appreciate coordinated working pattern of different organs of each system

BP202T: 2019-2020-Theory-Pharmaceutical Organic Chemistry-I	
SNO	DESCRIPTION
BP202T.1	Understand fundamental principles of organic chemistry.
BP202T.2	Understand the nomenclature of alkanes, alkenes, alkynes, alkyl halides, aromatic compounds, carbonyl compounds, Alcohols, ethers, phenols, amines, acids and their various derivatives using systematic (IUPAC) nomenclature
BP202T.3	Depict and explain detailed chemical mechanisms for various chemical reactions.
BP202T.4	Predict the physical properties of organic chemicals based on their structures and their hazardous nature.
BP202T.5	Understand the synthesis of various organic compounds which may be intermediates of drugs

Micro theory

SNO	DESCRIPTION
BP303.1	Understand methods of identification, cultivation and preservation of various microorganisms



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

BP303.2	Importance of sterilization in microbiology and pharmaceutical industry
BP303.3	Learn sterility testing of pharmaceutical products.
BP303.4	Microbiological standardization of Pharmaceuticals
BP303.5	Understand the cell culture technology and its applications in pharmaceutical industries.



Micro practical

SNO	DESCRIPTION
BP307.1	To understand the growth factors and physical conditions for growth of microbes
BP307.2	To understand the motility, staining and biochemical characteristics of microorganisms
BP307.3	To understand and apply the principle of aseptic transfer
BP307.4	To be able to understand and apply sterility testing I. P., microbial sensitivity testing and assay of antibiotics
BP307.5	To understand sterilization techniques



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

BP301T, 2018-2019, THEORY, PHARMACEUTICAL ORGANIC CHEMISTRY-II	
SNO	DESCRIPTION
BP301T.1	Understand about aromaticity, resonance and reactions of aromatic compounds.
BP301T.2	Understand the reactivity of phenols and aromatic amines.
BP301T.3	Depict and explain the purity and quality of oils and fats.
BP301T.4	Describe the chemistry of polynuclear aromatic hydrocarbons in terms of molecular orbital theory, aromaticity and reactions.
BP301T.5	Understand the stability of cycloalkanes & its reactions.

BP305P, 2018-2019, PRACTICAL, PHARMACEUTICAL ORGANIC CHEMISTRY- II	
S NO	DESCRIPTION
BP305P.1	Able to do the purification of organic compounds & extracted products
BP305P.2	Able to analyze the purity & quality of fats & oils in manufacturing sector
BP305P.3	Students will be able to synthesise organic drugs or intermediate involving one-step reaction in conventional methods and to report their percentage yield.
BP305P.4	Students will be able to depict and explain detailed chemical mechanisms for all chemical reactions and reactions related to synthesis.
BP305P.5	Knows the proper procedures and regulations for safe handling and use of chemicals and can follow the proper procedures and regulations for safe handling when using chemicals.



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2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

C 301 : 2016-2017 - Theory-Pharmaceutics III (Pharmaceutical Microbiology and Biotechnology)	
SNO	Statements
C301.1	To understand the structure, nutrition, cultivation, reproduction, identification and physical and chemical methods of control of different types of microorganisms which include bacteria, viruses and fungi
C301.2	To understand the basic mechanisms of defence of body, production, standardization and storage of vaccines and sera, serological reactions and their applications
C301.3	To inculcate the concept of microbial genetics, recombinant DNA technology, gene cloning, transgenesis
C301.4	To understand the microbial production of pharmaceuticals by fermentation ,recombinant DNA technology and transformation
C301.5	To understand the use of microorganisms in analysis of pharmaceuticals
C 308: 2016-2017 - Practical-Pharmaceutics III (Pharmaceutical Microbiology and Biotechnology)	
SNO	Statements
C308.1	To understand the growth factors and physical conditions for growth of microbes
C308.2	To understand the motility, staining and biochemical characteristics of microorganisms
C308.3	To understand and apply the principle of aseptic transfer
C308.4	To be able to understand and apply sterility testing I. P., microbial sensitivity testing and assay of antibiotics
C308.5	To understand sterilization techniques
C306 : 2016-2017 - Theory-Pharmacognosy –II	
SNO	Statements
C306.1	Understand and apply the knowledge of Biological Source, Cultivation/Preparation, Chemical constituents, Chemical Tests, Uses and Substitutes/Adulterants of crude drugs containing glycosides, alkaloids and traditional indigenous drugs in Herbal Drug Industry.
C306.2	Utilize the knowledge of Extraction, Chromatographic techniques and Elucidation of biogenetic pathways of phytoconstituents in Phytochemical Research Fields and Industry.
C306.3	Applying the principles of Chemotaxonomy in understanding the closely related plants which is helpful in better utilization of phytoconstituents.



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

C306.4	Employ the knowledge of Biological Source, Cultivation/Preparation, Chemical constituents, Chemical Tests, and Uses of proteins and enzymes from natural sources in biotechnology based industries.
C306.5	Utilize the knowledge of Alternative systems of medicine and types of formulations in Traditional type of Herbal Drug Industries.
C 312 : 2016-2017 - Practical-Pharmacognosy –II	
SNO	Statements
C312.1	Understand and apply the knowledge of Biological Source, Morphology and Substitutes/Adulterants of crude drugs containing glycosides, alkaloids in Herbal Drug Industry and Research.
C312.2	Utilize the knowledge of Extraction of phytoconstituents in Phytochemical Research Field and Industry.
C312.3	Applying the principles of Chromatography in identification and isolation of phytoconstituents in Herbal Research.
C312.4	Employ the knowledge of Biological Source, Morphology, Chemical constituents, Chemical Tests, and Uses of Indigenous drugs in Traditional Indigenous Drugs Based Industries.
C312.5	Utilize the knowledge of Standardisation of extracts and formulations by marker compounds in Traditional type of Herbal Drug Industries like Ayurveda based industries.
C 405 : 2016-2017 - Theory-Pharmacology –II	
SNO	Statements
C405.1	Understand about the basic principles of pharmacological bioassays and the entire drug discovery processes including clinical trials.
C405.2	Explain how drugs, toxins, chemicals act in our body at organ system/sub cellular/ macromolecular levels. (i.e mechanisms of action)
C405.3	Know the importance of molecular pharmacology techniques like gene therapy, stem cell therapies and how its evolution could redefine the therapeutics of various diseases.
C405.4	Explain the entire pharmacological aspects of drugs (such as classifications, mechanisms of action, adverse drug reactions, uses etc) acting on central nervous system, gastrointestinal tract, blood, chemotherapy, antimicrobials and immunopharmacology.



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

C405.5	Use the knowledge gained through understanding of the pharmacology of drugs and apply it in the dispensing of drugs and help in the treatment of various diseases affecting the body systems and thus improve the general health of the community. (pharmacotherapeutics)
C 411 : 2016-2017- Practical-Pharmacology –II	
SNO	Statements
C411.1	Perform different types of bioassays using isolated tissues (including matching, interpolation bioassay) and learn more about the screening processes involved in drug discovery
C411.2	Understand the design, principles and working of the commonly used instruments in experimental pharmacology like rotarod apparatus, eddy's hot plate, actophotometer etc.
C411.3	Know the technique and importance of biological screening methods like analgesic activity, anticonvulsant activity, antiulcer activity etc and how they are important in the preclinical new drug screening and drug discovery processes.
C411.4	Understand and explain the common pharmacological screenings performed in a laboratory using stimulated animal experiments.
C411.5	Solve various biostatistical problems and calculations like student's t-test and ANOVA and adopt it in the modern problem solving.
C 404 : 2016-2017 - Theory-Pharmaceutics VI (Formulative & Industrial pharmacy)	
SNO	Statements
C404.1	Gain knowledge about the preformulation studies, formulation and methods of manufacture of different conventional dosage form.
C404.2	Acquire the fundamentals and applications of novel drug delivery systems.
C404.3	Attain the understanding of formulation and manufacture of parenteral dosage forms .
C404.4	Learn about the packaging materials and validation techniques employed in pharmaceutical industries.
C404.5	Understand the basic principles of cosmetic science.
C 410 : 2016-2017 - Practical-Pharmaceutics VI (Formulative & Industrial pharmacy)	
SNO	Statements
C410.1	Attain basic understanding in the area of preformulation study, manufacturing, packaging and labeling of tablets.
C410.2	Understand the requirements of parenteral product preparation, packaging and labeling .



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

C410.3	Understand processes involved in the preparation and evaluation of controlled drug delivery systems.
C410.4	Develop skill in the manufacturing and packaging of cosmetics including the skin and hair care products.
C410.5	Learn the evaluation studies of different formulations and packaging materials.
C 413 : 2016-2017 Project work	
SNO	Statements
C413.1	Familiarize with Research Methods and techniques
C413.2	To get acquainted with advances in Research methods
C413.3	Collect and critically analyse the data
C413.4	Identify and analyze the Research Problems
C413.5	Compare the results and draw the conclusions

Table – 1.1

1.2. CO-PO matrices of courses selected in 3.1.1 (four matrices to be mentioned; one per semester from 1st to 8th semester; at least one per year)

THEORY: HUMAN ANATOMY AND PHYSIOLOGY

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP101T.1	3	1	--	3	1	3	3	1	3	--	3
BP101T.2	3	1	1	3	1	2	-	3	3	1	3
BP101T.3	3	--	--	3	--	3	3	1	3	--	3
BP101T.4	3	--	--	3	--	3	3	1	3	--	3
BP101T.5	3	1	1	2	--	3	3	3	3	--	3
BP101(Average)	3	1	1	2.8	1	2.8	3	1.8	3	1	3

THEORY: PHARMACEUTICAL ANALYSIS

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
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2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

BP102T.1	3	2	2	1	2	3	-	2	1	1	3
BP102T.2	3	2	3	-	2	3	1	3	2	-	2
BP102T.3	3	3	3	3	2	2	2	2	1	-	3
BP102T.4	3	3	2	3	1	1	2	2	-	-	1
BP102T.5	3	2	-	-	2	2	1	2	2	-	2
BP102T (Average)	3	2.4	2.5	2.3	1.8	2.2	1.5	2.2	1.5	1	2.2

THEORY: HUMAN ANATOMY AND PHYSIOLOGY

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP201T.1	3	1	--	3	1	3	3	1	3	--	3
BP201T.2	3	1	1	3	1	2	1	3	3	1	3
BP201T.3	3	--	--	3	--	3	3	1	3	--	3
BP201T.4	3	--	--	3	--	3	3	1	3	--	3
BP201T.5	3	1	1	2	--	3	3	3	3	--	3
BP201(Average)	3	1	1	2.8	1	2.8	2.6	1.8	3	1	3

THEORY: PATHOPHYSIOLOGY

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP 204T.1	3	3	3	3	2	2	-	3	3	3	2
	3	3	2	3	2	2	-	3	----	----	2

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2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

BP 204T.2											
BP 204T.3	3	3	3	3	2	2	1	3	3	--	--
BP 204T.4	3	2	2	3	2	2	1	3	3	3	2
BP 204T.5	3	3	3	3	2	2	1	3	3	----	---
Average	3	2.8	2.6	3	2	2	1	3	3	3	2

BP301T, 2018-2019, THEORY, PHARMACEUTICAL ORGANIC CHEMISTRY-II

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP301T.1	3	1	2	1	1	1	1	-	1	1	2
BP301T.2	3	1	2	1	-	-	-	1	1	1	2
BP301T.3	3	2	3	3	1	-	-	1	1	3	3
BP301T.4	3	2	2	2	1	1	-	2	1	2	3
BP301T.5	2	1	2	2	1	1	1	1	2	1	2
BP301T (Average)	2.8	1.4	2.2	1.8	0.8	0.6	0.4	1	1.2	1.6	2.4



BP301T, 2018-2019, THEORY, microbiology

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP303.1	3	2	2	1	1	2	1	2	2	2	1
	3	2	2	1	1	2	1	2	2	1	1

2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

BP303.2											
	3	2	2	1	1	2	1	2	2	1	1
BP303.3											
	3	2	2	1	1	2	2	2	2	2	1
BP303.4											
	3	2	2	1	1	2	1	2	2	1	1
BP303.5											
	3	2	2	1	1	2	1	2	2	1	1
BP301(Average)	3	2	2	1	1	2	1.2	2	2	1.4	1

Theory-Pharmaceutics III (Pharmaceutical Microbiology and Biotechnology)											
SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C301.1	3	3	3	1	2	3	2	2	2	2	2
C301.2	3	3	3	1	3	3	2	2	2	2	2
C301.3	3	3	3	1	3	2	1	2	2	2	2
C301.4	3	3	3	1	3	2	2	2	2	2	2
C301.5	3	3	3	1	2	2	2	2	2	2	1
C301 (Average)	3	3	3	1	2.6	2.4	1.8	2	2	2	1.8
Practical-Pharmaceutics III (Pharmaceutical Microbiology and Biotechnology)											
SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C308.1	3	2	2	1	1	2	1	2	2	2	1
C308.2	3	2	2	1	1	2	1	2	2	2	1
C308.3	3	2	2	1	1	2	1	2	2	2	1
C308.4	3	2	2	1	1	2	1	2	2	2	1



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

C308.5	3	2	2	1	1	2	1	2	-	-	1
C308 (Average)	3	2	2	1	1	2	1	2	2	2	1
Theory-Pharmacognosy -II											
SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C306.1	3	3	3	1	1	3	2	2	3	3	3
C306.2	3	3	3	1	1	3	2	2	3	3	3
C306.3	3	3	3	1	-	3	2	2	1	3	2
C306.4	3	3	3	1	1	3	2	2	3	3	3
C306.5	3	3	3	1	3	2	-	2	3	3	3
C306 (Average)	3	3	3	1.0	1.5	2.8	2.0	2.0	2.6	3.0	2.8
Practical-Pharmacognosy -II											
SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C312.1	3	3	3	2	2	2	3	2	2	3	3
C312.2	3	3	3	2	2	3	3	3	2	2	3
C312.3	3	3	3	1	2	1	3	2	1	2	2
C312.4	3	3	3	1	2	3	3	2	2	2	3
C312.5	3	3	3	2	2	1	1	2	2	2	3
C312 (Average)	3	3	3	1.6	2	2	2.6	2.2	1.8	2.2	2.8
Theory-Pharmacology –II											
SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C405.1	3	3	3	3	2	3	3	3	3	2	3
C405.2	3	1	2	2	-	1	1	2	1	1	3
C405.3	3	2	2	3	2	2	3	2	3	2	3
C405.4	3	2	2	2	-	2	2	2	2	-	3
C405.5	3	2	3	2	2	3	3	3	3	1	3
C405(Average)	3.0	2.0	2.4	2.4	2.0	2.2	2.4	2.4	2.4	1.5	3.0
Practical-Pharmacology –II											



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C411.1	3	3	2	2	1	3	2	2	2	1	2
C411.2	3	2	2	3	-	2	2	2	2	-	2
C411.3	3	2	2	2	-	2	2	1	2	1	3
C411.4	3	2	2	2	-	3	2	2	2	-	3
C411.5	3	2	3	2	1	2	1	2	2	1	3
C411 (Average)	3	2.2	2.2	2.2	1	2.4	1.8	1.8	2	1	2.6
Theory-Pharmaceutics VI (Formulative & Industrial pharmacy)											
SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C404.1	3	2	3	3	2	3	2	2	2	1	2
C404.2	3	1	1	3	-	2	-	-	2	1	2
C404.3	3	2	1	2	-	3	2	1	2	1	2
C404.4	3	2	2	2	2	2	2	3	2	1	1
C404.5	3	1	-	-	-	1	2	1	2	1	1
C404 (Average)	3	1.6	1.6	1.8	2	2.2	2	1.8	2	1	1.6
Practical-Pharmaceutics VI (Formulative & Industrial pharmacy)											
SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C410.1	3	2	2	3	1	3	2	2	2	1	2
C410.2	3	2	2	2	1	3	2	2	2	1	2
C410.3	3	2	1	2	1	2	2	1	1	1	2
C410.4	3	2	2	-	1	2	2	1	2	1	2
C410.5	3	2	2	3	1	3	2	1	2	1	2
C410 (Average)	3	2	1.8	2	1	2.6	2	1.4	1.8	1	2
Project work											
SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C413.1	3	2	3	2	2	2	2	3	3	1	3
C413.2	3	2	3	2	2	3	2	3	3	1	3
C413.3	3	2	3	3	3	3	2	3	3	1	3
C413.4	3	2	3	2	2	2	2	3	3	1	3
C413.5	3	2	3	2	2	3	2	3	3	1	3



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

C413 (Average)	3	2	3	2.2	2.2	2.6	2	3	3	1	3
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Table 1.2

Note: Correlation levels 1, 2 or 3 as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

It there is no correlation, put ‘-’

1.3. Course-PO matrix of courses for all four years of study

No	SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
1.	BP101T	3	1	1	2.8	1	2.8	3	1.8	3	1	3
2.	BP102T	3	3	2.8	2.3	2.4	2.4	2.5	2.8	2.2	3	2.6
3.	BP103T	3	2.6	2	1.8	1.8	3	2	2	1	1	2.2
4.	BP104T	2.6	2	2	1.5	1.8	1.7	2	1.4	1.5	2.2	2
5.	BP105T	1	2.6	2.8	2	2.6	2.2	2	3	2.8	1.7	2
6.	BP107P	3	1.6	1.8	1.8	1	2	1.6	1.8	1	1.8	2
7.	BP108P	3	3	2.8	2.4	2.3	2.6	2.6	2.8	2.8	2.5	3
8.	BP109P	3	2.6	3	2.6	2.8	3	2.2	3	2.6	1.2	2.6
9.	BP110P	2	2.2	2	2.2	2	2.4	1.8	2	1.8	2.4	1.8
10.	BP111P	1	2.2	2	2.6	2.4	2.8	2.2	3	3	2.2	1.8
11.	BP201T	3	1	1	2.8	1	2.8	2.6	1.8	3	1	3
12.	BP202T	3	1	2	2	1	2	1	2.4	1.8	1.8	3
13.	BP203T	3	2.5	2.8	3	3	2.4	3	-	2.4	3	3
14.	BP204T	3	2.8	2.6	3	2	2	1	3	3	3	2
15.	BP205T	2.4	2.4	2.6	3	2	3	2.5	1.6	2	-	3
16.	BP206T	3	3	3	2	3	3	3	3	3	3	3
17.	BP207P	3	3	2.5	3	1.7	2	2.8	2	2	1	3
18.	BP208P	3	2.4	2.8	2	1	1.2	1.2	1.6	2	1.8	3
19.	BP209P	2	2.2	2	2.2	2	2.4	1.8	2	1.8	2.4	1.8
20.	BP210P	2	-	-	-	-	-	2	1	-	-	1.6
21.	BP301T	2.8	1.4	2.2	1.8	0.8	0.6	0.4	1	1.2	1.6	2.4
22.	BP302T	3	2.6	2.6	2.5	2	2.4	-	2	1.6	-	2.8



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

23.	BP303T	3	2	2	1	1	2	1.2	2	2	1.4	1
24.	BP304T	2.4	1.2	1.2	2.6	1.2	2	0.4	1.8	0.6	0.4	1.4
25.	BP305P	3	2.6	2.8	2.4	1.2	1.8	1.6	2	2.4	2.2	3
26.	BP306P	3	3	3	1	2	3	-	3	1.4	-	3
27.	BP307P	3	2	1.8	1	1.2	1.8	1.2	2	1.6	1.8	2
28.	BP308P	3	2.4	3	3	2.2	1.8	-	1.8	0.6	1.2	3
29.	BP401T	3	2	3	2.8	1.6	1.4	1.2	1.4	1.8	2.4	3
30.	BP402T	3	2.2	2.6	2	1.2	1.8	1	2	2	1.6	2.8
31.	BP403T	3	2.6	2.6	2.5	2	2.4	3	2	1.6	-	2.8
32.	BP404T	3	1.6	1.8	1.8	1.3	1.8	1.8	1.6	2	1.2	2.8
33.	BP405T	3	2.4	2.6	1.4	1.4	2.4	1.8	1.8	2.2	2.8	2.6
34.	BP406P	2.8	3	2.4	1.4	2	2.6	1.8	2.4	2	1.3	3
35.	BP407P	3	3	3	1	2	3	2	3	1.4	-	3
36.	BP408P	3	2	2	2	1	1.8	2	1.8	1.4	1.6	2.4
37.	BP409P	2.4	2.8	2.8	1.6	2.2	2.6	2.4	2.6	2.8	2.8	2.8
38.	C301	3	3	3	1	2.6	2.4	1.8	2	2	2	1.8
39.	C302	3	2.8	2.8	3	3	3	2.5	2.8	2.4	3	2.4
40.	C303	3	1.6	1.8	1.8	1.3	1.8	1.8	1.6	2	1.2	2.8
41.	C304	3	3	3	2.8	3	3	2	3	2.8	2.2	3
42.	C305	3	2	2	2.8	3	3	2	2	2.8	2.2	3
43.	C306	3	3	3	1	1.5	2.8	2	2	2.6	3	2.8
44.	C307	2.8	2.4	2.5	2.6	2	2.2	2.8	2	1.8	2	2.8
45.	C308	3	2	2	1	1	2	1	2	2	2	1
46.	C309	2.8	2.6	2.8	2.6	2.6	3	2.8	3	2.4	2	3
47.	C310	3	2	2	2	1	1.8	2	1.8	1.4	1.6	2.4
48.	C311	3	2	3	2.8	2	2.4	2.8	2.8	2.6	3	3
49.	C312	3	3	3	1.6	2	2	2.6	2.2	1.8	2.2	2.8
50.	C401	3	2.2	2.6	2.2	1.4	1.8	1	1.8	2	1.8	2.8
51.	C402	3	2.4	2.6	2.6	1.8	2.4	1.5	1.6	1.3	1.5	2.8
52.	C403	2.6	2.4	2.2	2.4	1.8	2.4	2.6	2.4	2.4	2.4	2.6
53.	C404	3	1.6	1.6	1.8	2	2.2	2	1.8	2	1	1.6
54.	C405	3	2	2.4	2.4	2	2.2	2.4	2.4	2.4	1.5	3
55.	C406	3	2	2.6	2.6	2	2.6	2.4	2.6	2.6	1.6	2

Table 1.3*

Note: Correlation levels 1, 2 or 3, as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

It there is no correlation, put '-'

□ It may be noted that contents of Table 1.2 must be consistent with information available in Table 1.3 for all the courses.



2. Attainment of Course Outcomes

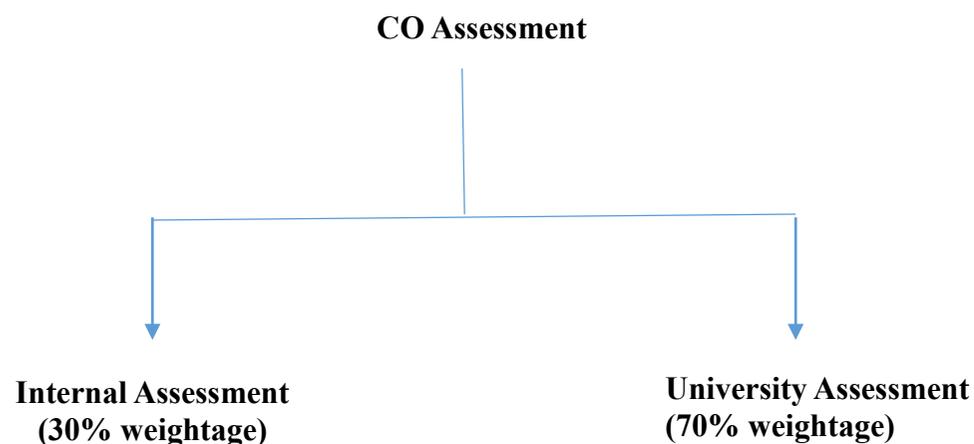
2.1. Describe the assessment processes used to gather the data

2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

56.	C407	2.8	2	2	2.4	1.6	1.4	1	1.6	1.8	2.2	2.8
57.	C408	3	2.6	2.2	2.8	1.6	2	1.3	1.8	1.3	1.3	2.8
58.	C409	2.4	2.8	2.8	1.6	2.2	2.6	2.4	2.6	2.8	2.8	2.8
59.	C410	3	2	1.8	2	1	2.6	2	1.4	1.8	1	2
60.	C411	3	2.2	2.2	2.2	1	2.4	1.8	1.8	2	1	2.6
61.	C412	3	2	2.6	2.8	2	2.6	2.6	2.8	2.8	1.6	2
62.	C413	3	2	3	2.2	2.2	2.6	2	3	3	1	3

upon which the evaluation of Course Outcome is based
The assessment processes mentioned here is for the Academic Year 2017-2018.

(i)CO Assessment Rubrics:



Course Outcome is evaluated based on the performance of students in internal assessments and in university examinations of a course. Internal assessment contributes 30% and university assessment contributes 70% to the total attainment of a CO.

(ii)CO Assessment Tools:

The various assessment tools used to evaluate COs and the frequency with which the assessment processes are carried out are listed in Table 3.2.1.

Table 2.1 Direct Assessment Tools

DIRECT ASSESSMENT TOOLS		
Course Type	Assessment Tools	Minimum Frequency

2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

Theory		Continuous assessment	Continuous
		Sessional exams	Thrice per course for year system and twice per course for semester system.
		University Exam	Once per course for year system and twice per course for semester system.
Practical		Daily Performance & viva	Every lab session
		Sessional Lab exam	Once per course
		University Exam	Once per course
Project	Phase I	Review	Once per course
	Phase II	Presentation	Once per course
		Evaluation by Guide	Continuous evaluation





FOR YEAR SYSTEM

THEORY:

Class tests: Class tests serve to encourage students to keep up with subject matter covered in class. These are of 55 minutes duration and are evaluated for 50 marks. Minimum one class test is conducted for each course in each week.

Sessional Theory exams: Three sessional examinations (evenly placed) are conducted during the academic year. The average marks of best two examinations are computed out of a maximum of 50 marks and constitute the sessional marks in theory.

University examinations

The B.Pharm course is of four years duration, with University examinations at the end of each year. Exams are of 3hours duration and the maximum marks for theory is 100.

PRACTICAL:

Lab courses provide students with first-hand experience with course concepts and with the opportunity to explore methods used in their discipline. All the students are expected to be regular and learn the practical aspects of the subject and develop the necessary skills to become professionals. In order to facilitate interaction among the students and to develop team spirit, the students are expected to carry out few experiments in groups. Students are expected to perform the number of experiments listed in the respective syllabus. Students maintain practical records for each of the practical subjects and produce at the time of practical examination to be certified by the external examiner.

Sessional practical exams: The maximum marks awarded for practical sessional is 50, out of which 30 marks are awarded for practical exercises and 20 marks for practical sessional examination conducted at the end of the academic year. Marks are awarded out of maximum of 10 to each of the practical exercises and an average of these are computed out of a maximum of 30 marks. Marks for practical experiments are awarded on the basis of preparedness of the candidate, manipulative skill, results, knowledge of the experiments, regularity in recording the reports and viva-voce.

University practical exams:

Exams cover entire syllabus of the course and are of 4hours duration and the maximum marks is 100.

A regular record of theory and practical sessional marks are maintained for each student in the institution.

Improvement of Sessional marks

2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

Candidates who wish to improve the theory sessional marks can write special sessional examination before the University examination. Only those candidates who have appeared for at least two regular sessional in theory are eligible to take up the improvement examinations. Such improvement is allowed for a maximum of two times for a particular subject. The improvement of sessional marks are not permitted for practicals. A record of the improvement sessional marks are also maintained in the institution.

UNIVERSITY EXAMINATIONS

CRITERIA FOR PASS

Candidate who has secured a minimum of 50% marks in the University examination (theory and practical separately) and 50% marks in Total (aggregate of marks in University examination and Sessional examination) for theory and practical separately in any subject or subjects is declared to have passed in that subject / subjects and exempted from appearing in subsequent examination. A subject includes both theory/practical if those subjects are having a practical examination. Candidate who fails in theory or practical examination in any subject need to appear only for the theory or the practical examination in which the candidate has failed.

PROJECT –

Project is intended to be a challenge to intellectual and innovative abilities of students. Students are expected to finalize project themes/titles with the assistance of an identified faculty member as project guide during first month of the final year. A project work based on literature survey on a current topic of relevance, consisting of about 30 pages, spirally bound is submitted to the Principal/Head of the Department.

Review: In first review the concept of the proposed project is evaluated. Relevance of the topic, knowledge in selected topic and students' communication skill are assessed based on presentation and response to questions asked by the review panel.

Evaluation by Guide: Performance of individual student is continuously evaluated by the project guide. Members of a project group shall prepare and submit separate reports. The report shall record all aspects of the work and is evaluated by project guide.

Presentation: The candidate presents the work with the help of audiovisual aids, which is evaluated by a team of faculty members of the college. The project book submitted also is evaluated. The quality of the presentation and communication skill is assessed by the evaluation committee.

Viva-voce: At the end of the presentation, the assessment panel ask questions and seek clarifications on specific issues related to the project. The effectiveness of the student's response to these queries is assessed.

The criteria for evaluation:

Relevance of the topic: 5 marks

Content: 25 marks

Scripting and editing: 20 marks

Presentation and slides: 40 marks

Discussion and defines: 10 marks

FOR SEMESTER SYSTEM

Internal assessment: Continuous mode

Nirmala College of Pharmacy



2.6.2 Course Outcomes (COs) and Program Outcomes (POs)

The marks allocated for Continuous mode of Internal Assessment shall be awarded as per the scheme given below

Scheme for awarding internal assessment: Continuous mode

Theory		
Criteria	Maximum Marks	
Attendance	4	2
Academic activities (Average of any 3 activities e.g. quiz, assignment, open book test, field work, group discussion and seminar)	3	1.5
Student – Teacher interaction	3	1.5
Total	10	5
Practical		
Attendance	2	
Based on Practical Records, Regular viva voce, etc.	3	
Total	5	



**Guidelines for the allotment of marks for attendance**

Percentage of Attendance	Theory	Practical
95 – 100	4	2
90 – 94	3	1.5
85 – 89	2	1
80 – 84	1	0.5
Less than 80	0	0

Sessional Exams

Two Sessional exams shall be conducted for each theory / practical course as per the schedule fixed by the college(s). The scheme of question paper for theory and practical Sessional examinations is given below. The average marks of two Sessional exams shall be computed for internal assessment. Sessional exam shall be conducted for 30 marks for theory and shall be computed for 15 marks. Similarly Sessional exam for practical shall be conducted for 40 marks and shall be computed for 10 marks.

Promotion and award of grades

A student shall be declared PASS and eligible for getting grade in a course of B.Pharm. program if he/she secures at least 50% marks in that particular course. For example, to be declared as PASS and to get grade, the student has to secure a minimum of 50 marks for the total of 100 and has to secure a minimum of 25 marks for the total 50 in end semester practical examination.

Carry forward of marks

In case a student fails to secure the minimum 50% in any Theory or Practical course, then he/she shall reappear for the end semester examination of that course. However, his/her marks of the Internal Assessment shall be carried over and he/she shall be entitled for grade obtained by him/her on passing.

Improvement of internal assessment

A student shall have the opportunity to improve his/her performance only once in the Sessional exam component of the internal assessment. The re-conduct of the Sessional exam shall be completed before the commencement of next end semester theory examinations.

End semester examination

The End Semester Examinations for each theory and practical course through semesters I to VIII shall be conducted by the university except for subjects for which examinations shall be conducted by the subject experts at college level and the marks/grades shall be awarded.

2.2. Record the attainment of Course Outcomes of all courses with respect to set attainment levels

Program shall have set Course Outcome attainment levels for all courses. The attainment levels shall be set considering average performance levels in the university examination or any higher value set as target for the assessment years. Attainment level is to be measured in terms of student performance in internal assessments with respect to the course outcomes of a course in addition to the performance in the University examination.

(i) Attainment Levels:

Table 2.2 (a) Attainment Levels of Cos

Academic year	CO ATTAINMENT		
	Level	Internal exams	University exams
2018-2019	Level 1	50% of students scoring 62% and more than 62%	50% of students scoring 57% and more than 57% marks in university examination.



		marks in internal assessment.	
	Level 2	60% of students scoring 62% and more than 62% marks in internal assessment.	60% of students scoring 57% and more than 57% marks in university examination.
	Level 3	70% of students scoring 62% and more than 62% marks in internal assessment.	70% of students scoring 57% and more than 57% marks in university examination.



Sl.No	Subject code	Subject Name	% of students with Target of 57%	Attainment level
1.	BP101T	Human anatomy and physiology I	75	3
2.	BP102T	Pharmaceutical analysis I	95	3
3.	BP103T	Pharmaceutics I	92	3
4.	BP104T	Pharmaceutical inorganic chemistry	92	3
5.	BP105T	Communication skills		NA
6.	BP107P	Human anatomy and physiology I practical	100	3



7.	BP108P	Pharmaceutical analysis I practical	90	3
8.	BP109P	Pharmaceutics I practical	100	3
9.	BP110P	Pharmaceutical inorganic chemistry practical	100	3
10.	BP111P	Communication skills practical		NA
11.	BP201T	Human anatomy and physiology II	76	3
12.	BP202T	Pharmaceutical organic chemistry I	68	2



13.	BP203T	Biochemistry	83	3
14.	BP204T	Pathophysiology	93	3
15.	BP205T	Computer applications in pharmacy	NA	
16.	BP206T	Environmental sciences	NA	
17.	BP207P	Human anatomy and physiology II practical	100	3
18.	BP208P	Pharmaceutical organic chemistry I practical	100	3



19.	BP209P	Biochemistry practical	97	3
20.	BP210P	Computer applications in pharmacy practical	NA	
21.	BP301T	Pharmaceutical organic chemistry II	98	3
22.	BP302T	Physical Pharmaceutics I	87	3
23.	BP303T	Pharmaceutical microbiology	94	3
24.	BP304T	Pharmaceutical engineering	55	1



25.	BP305P	Pharmaceutical organic chemistry II practical	100	3
26.	BP306P	Physical Pharmaceutics I practical	94	3
27.	BP307P	Pharmaceutical microbiology practical	100	3
28.	BP308P	Pharmaceutical engineering practical	93	3
29.	BP401T	Pharmaceutical organic chemistry III	87	3



30.	BP402T	Medicinal chemistry I	89	3
31.	BP403T	Physical pharmaceutics II	100	3
32.	BP404T	Pharmacology I	68	2
33.	BP405T	Pharmacognosy and phytochemistry I	95	3
34.	BP406P	Medicinal chemistry I Practical	95	3
35.	BP407P	Physical pharmaceutics II Practical	100	3
36.	BP408P	Pharmacology I practical	100	3



37.	BP409P	Pharmacognosy and phytochemistry I practical	100		3
38.	C301	Pharmaceutics III (Pharmaceutical	59		1
39.	C302	Pharmaceutical Chemistry IV	46	-	
40.	C303	Pharmacology – I	35	-	
41.	C304	Pharmaceutics- IV	67		2
42.	C305	Pharmaceutical Jurisprudence	40	-	
43.	C306	Pharmacognosy -II	59		1



44.	C307	Pharmaceutical Management	58	1
45.	C308	Pharmaceutics III (Pharmaceutical	98	3
46.	C309	Pharmaceutical Chemistry IV	98	3
47.	C310	Pharmacology – I Practicals	100	3
48.	C311	Pharmaceutics IV (BIOPHARM	100	3
49.	C312	Pharmacognosy -II Practicals	95	3



50.	C401	Pharmaceutical chemistry –V	49	-
51.	C402	Pharmaceutical Analysis –II	66	2
52.	C403	Pharmacognosy-III	54	1
53.	C404	Pharmaceutics VI (Formulative &	59	-
54.	C405	Pharmacology –II	58	1
55.	C406	Pharmacy Practice	20	-
56.	C407	Pharmaceutical chemistry –V	98	3



57.	C408	Pharmaceutical Analysis –II Practicals	91	3
58.	C409	Pharmacognosy-III Practical	100	3
59.	C410	Pharmaceutics VI (Formulative &	98	3
60.	C411	Pharmacology –II Practical	100	3
61.	C412	Pharmacy Practice Practical	100	3



62.	C413	Project work		NA
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The levels of CO attainment of individual subjects from university theory and practical examinations and internal practical examinations are calculated as per the different levels mentioned in Table

2.2 (a) Attainment Levels of COs.

Note: * Indicates C205 and C413 is not having University Examination, so it is not included for calculation of CO attainment.

Measuring CO attainment through Internal Assessments:

The overall CO attainment from sessional examinations are calculated by taking the average of individual CO attainment from each sessional examination.

Measuring CO attainment through University examinations:

Note: * Indicates subjects not having University Examination, so it is not included for calculation of CO attainment.



Measuring CO attainment through Internal Assessments:

For calculation of CO attainment from internal examinations, all sessional examinations are taken into account. The overall CO attainment from three sessional examinations are calculated by taking the average of individual co attainment from each sessional examination.

#NAME?	Subject code	Subject Name		Attainment
1.	BP101T	Human anatomy and physiology I	75	3
2.	BP102T	Pharmaceutical analysis I	97	3
3.	BP103T	Pharmaceutics I	90	3
4.	BP104T	Pharmaceutical inorganic chemistry	90	3



5.	BP105T	Communication skills	95	3
6.	BP107P	Human anatomy and physiology I practical	93	3
7.	BP108P	Pharmaceutical analysis I practical	95	3
8.	BP109P	Pharmaceutics I practical	95	3
9.	BP110P	Pharmaceutical inorganic chemistry practical	88	3
10.	BP111P	Communication skills practical	92	3



11.	BP201T	Human anatomy and physiology II	85	3
12.	BP202T	Pharmaceutical organic chemistry I	85	3
13.	BP203T	Biochemistry	97	3
14.	BP204T	Pathophysiology	92	3
15.	BP205T	Computer applications in pharmacy	95	3
16.	BP206T	Environmental sciences	90	3



17.	BP207P	Human anatomy and physiology II practical	95	3
18.	BP208P	Pharmaceutical organic chemistry I practical	98	3
19.	BP209P	Biochemistry practical	95	3
20.	BP210P	Computer applications in pharmacy practical	92	3
21.	BP301T	Pharmaceutical organic chemistry II	81	3



22.	BP302T	Physical Pharmaceutics I	89	3
23.	BP303T	Pharmaceutical microbiology	97	3
24.	BP304T	Pharmaceutical engineering	81	3
25.	BP305P	Pharmaceutical organic chemistry II practical	66	2
26.	BP306P	Physical Pharmaceutics I practical	98	3
27.	BP307P	Pharmaceutical microbiology practical	98	3



28.	BP308P	Pharmaceutical engineering practical	93	3
29.	BP401T	Pharmaceutical organic chemistry III	88	3
30.	BP402T	Medicinal chemistry I	92	3
31.	BP403T	Physical pharmaceutics II	83	3
32.	BP404T	Pharmacology I	79	3
33.	BP405T	Pharmacognosy and phytochemistry I	68	2
34.	BP406P	Medicinal chemistry I Practical	92	3



35.	BP407P	Physical pharmaceutics II Practical	98	3
36.	BP408P	Pharmacology I practical	100	3
37.	BP409P	Pharmacognosy and phytochemistry I practical	100	3
38.	C301	Pharmaceutics III (Pharmaceutical	59	1
39.	C302	Pharmaceutical Chemistry IV	65	2
40.	C303	Pharmacology – I	89	3
41.	C304	Pharmaceutics- IV	89	3



42.	C305	Pharmaceutical Jurisprudence	93	3
43.	C306	Pharmacognosy –II	68	2
44.	C307	Pharmaceutical Management	80	3
45.	C308	Pharmaceutics III (Pharmaceutical microbiology)	92	3
46.	C309	Pharmaceutical Chemistry IV	98	3
47.	C310	Pharmacology – I Practicals	95	3



48.	C311	Pharmaceutics IV (Biopharmaceutics and pharmacokinetics)	89	3
49.	C312	Pharmacognosy -II Practicals	90	3
50.	C401	Pharmaceutical chemistry –V	78	3
51.	C402	Pharmaceutical Analysis –II	71	3
52.	C403	Pharmacognosy-III	78	3
53.	C404	Pharmaceutics VI (Formulative & industrial pharmacy)	68	2



54.	C405	Pharmacology –II	100	3
55.	C406	Pharmacy Practice	51	1
56.	C407	Pharmaceutical chemistry –V	95	3
57.	C408	Pharmaceutical Analysis –II Practicals	90	3
58.	C409	Pharmacognosy-III Practicals	97	3
59.	C410	Pharmaceutics VI (Formulative &	100	3



60.	C411	Pharmacology –II Practicals	100	3
61.	C412	Pharmacy Practice Practicals	97	3
62.	C413	Project work		3

Course Outcome Attainment:

n o	Subject code	Subject Name	30% of internal	70% of External	SUM of 70%+30 %
	BP101T	Human anatomy and physiology I	0.9	2.1	3
	BP102T	Pharmaceutical analysis I	0.9	2.1	3
	BP103T	Pharmaceutics I	0.9	2.1	3
	BP104T	Pharmaceutical inorganic chemistry	0.9	2.1	3



BP105T	Communication skills	0.9	na	3
BP107P	Human anatomy and physiology I practical	0.9	2.1	3
BP108P	Pharmaceutical analysis I practical	0.9	2.1	3
BP109P	Pharmaceutics I practical	0.9	2.1	3
BP110P	Pharmaceutical inorganic chemistry practical	0.9	2.1	3
BP111P	Communication skills practical	3	0	3
BP201T	Human anatomy and physiology II	0.9	2.1	3
BP202T	Pharmaceutical organic chemistry I	0.9	1.4	2.3
BP203T	Biochemistry	0.9	2.1	3
BP204T	Pathophysiology	0.9	2.1	3
BP205T	Computer applications in pharmacy	3	NA	3
BP206T	Environmental sciences	3	NA	3



BP207P	Human anatomy and physiology II practical		0.9	2.1	3
BP208P	Pharmaceutical organic chemistry I practical		0.9	2.1	3
BP209P	Biochemistry practical 0.9	0.9		2.1	3
BP210P	Computer applications in pharmacy practical	3		NA	3
BP301T	Pharmaceutical organic chemistry II		0.9	2.1	3
BP302T	Physical Pharmaceutics I		0.9	2.1	3
BP303T	Pharmaceutical microbiology		0.9	2.1	3
BP304T	Pharmaceutical engineering		0.9	0.7	1.6
BP305P	Pharmaceutical organic chemistry II practical		0.6	2.1	2.7
BP306P	Physical Pharmaceutics I practical		0.9	2.1	3
BP307P	Pharmaceutical microbiology practical		0.9	2.1	3



BP308P	Pharmaceutical engineering practical	0.9	2.1	3
BP401T	Pharmaceutical organic chemistry III	0.9	2.1	3
BP402T	Medicinal chemistry I	0.9	2.1	3
BP403T	Physical pharmaceutics II	0.9	2.1	3
BP404T	Pharmacology I	0.9	1.4	2.3
BP405T	Pharmacognosy and phytochemistry I	0.6	2.1	2.7
BP406P	Medicinal chemistry I Practical	0.9	2.1	3
BP407P	Physical pharmaceutics II Practical	0.9	2.1	3
BP408P	Pharmacology I practical	0.9	2.1	3
BP409P	Pharmacognosy and phytochemistry I practical	0.9	2.1	3
C301	Pharmaceutics III (Pharmaceutical	0.3	0.7	1
C302	Pharmaceutical Chemistry IV	0.6	0	0.6



C303	Pharmacology – I	0.9	0	0.9
C304	Pharmaceutics- IV	0.9	1.4	2.3
C305	Pharmaceutical Jurisprudence	0.9	0	0.9
C306	Pharmacognosy –II	0.6	0.7	1.3
C307	Pharmaceutical Management	0.9	0.7	1.6
C308	Pharmaceutics III (Pharmaceutical	0.9	2.1	3
C309	Pharmaceutical Chemistry IV	0.9	2.1	3
C310	Pharmacology – I Practicals	0.9	2.1	3
C311	Pharmaceutics IV (BIOPHARM	0.9	2.1	3
C312	Pharmacognosy -II Practicals	0.9	2.1	3
C401	Pharmaceutical chemistry – V	0.9	0	0.9
C402	Pharmaceutical Analysis –II	0.9	1.4	2.3
C403	Pharmacognosy-III	0.9	0.7	1.6

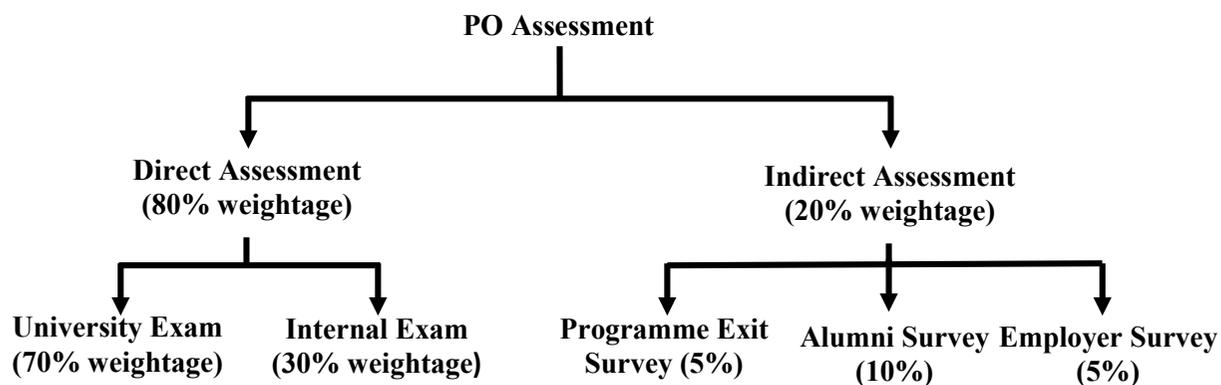


C404	Pharmaceutics VI (Formulative & industrial pharmacy)	0.6	0	0.6
C405	Pharmacology –II	0.9	0.7	1.6
C406	Pharmacy Practice	0.3	0	0.3
C407	Pharmaceutical chemistry – V	0.9	2.1	3
C408	Pharmaceutical Analysis –II Practicals	0.9	2.1	3
C409	Pharmacognosy-III Practicals	0.9	2.1	3
C410	Pharmaceutics VI (Formulative &	0.9	2.1	3
C411	Pharmacology –II Practicals	0.9	2.1	3
C412	Pharmacy Practice Practicals	0.9	2.1	3
C413	Project work	3	0	3



3. Attainment of Program Outcomes

3.1. Describe assessment tools and processes used for assessing the attainment of each PO



(I) PO Assessment Rubrics:

PO assessment is done by giving 80% weightage to direct assessment and 20% weightage to indirect assessment. Direct assessment is based on CO attainment through examinations, where 70% weightage is given to attainment through university exam and 30% weightage is given to attainment through internal examinations. Indirect assessment is done through Graduate exit survey, Alumni feedback survey and Employer feedback survey giving percentage weightage of 5%, 10% and 5% respectively.

(II) PO Assessment Tools:

The various direct and indirect assessment tools used to evaluate POs and the frequency with which the assessment processes are carried out are listed in Table 3.1 and 3.2



Table 3.1 Direct Assessment Tools

DIRECT ASSESSMENT TOOLS			
Course Type	Assessment Tools	Minimum Frequency	
Theory	Continuous assessment	Continuous	
	Sessional exams	Thrice per course	
	University Exam	Once per course	
Practical	Daily Performance & viva	Every lab session	
	Sessional Lab exam	Once per course	
	University Exam	Once per course	
Project	Phase I	Review	Once per course
	Phase II	Presentation	Once per course
		Evaluation by Guide	Continuous evaluation

Table 3.2 Indirect Assessment Tools:



III EXIT SURVEY ON PROGRAM OUTCOMES:

Exit Survey of the graduated students on program outcomes are a means to understand the attainment of course outcomes. An exit survey is conducted for students who have completed their B. Pharm course. A Relevant questionnaire regarding the program outcomes is prepared to evaluate attainment of Program Outcomes. The students are directed to choose the score levels depending on the extent which they are benefited by the graduate program. It also serves as an assessment tool to understand the areas of the curriculum which are to be improved. The exit survey form is given below as **III (A)** and details of calculations of program outcomes are given in **III (B)** and relation of POs with questionnaire and attainment of POs are mentioned in **III (C)**.

III (A) QUESTIONNAIRE FORMAT

EXIT SURVEY ON PROGRAM OUTCOMES

Choose Score level →3-Excellent; 2-Good; 1-Average.

Sl. No.	Program outcomes (PO'S)	Score Level
1	Pharmacy Knowledge:	
2	Planning Abilities:	
3	Problem analysis:	
4	Modern tool usage:	
5	Leadership skills:	
6	Professional Identity:	



7	Pharmaceutical Ethics:	
8	Communication:	
9	The Pharmacist and society:	
10	Environment and sustainability:	
11	Life-long learning:	

III (B) CALCULATION OF STUDENTS EXIT SURVEY ON POs

- PROGRAMME :B. Pharm
- NUMBER OF FEEDBACK FORMS COLLECTED : 50
- BATCH : 2015-2019
- ACADEMIC YEAR: 2018-2019

Questions	Excellent (3)	Good (2)	Average (1)	Total Weightage	Percentage	Weightage Based On 3 Scale
1	09	40	01	108	72	2.16
2	20	30	00	120	80	2.40
3	15	28	07	108	72	2.16
4	17	31	02	115	76	2.28
5	19	30	01	118	78	2.34
6	19	31	00	119	79	2.37
7	22	27	01	121	80	2.40



8	20	28	02	118	78	2.34
9	20	28	02	118	78	2.34
10	19	30	01	118	78	2.34
11	22	27	01	121	80	2.40

III (C) RELATION OF POS WITH QUESTIONNAIRE AND PO ATTAINMENT SCORES

Sl.No.	Program Outcomes	Questions involved	PO attainment
1	PO1	1	2.16
2	PO2	2	2.40
3	PO3	3	2.16
4	PO4	4	2.28
5	PO5	5	2.34
6	PO6	6	2.37
7	PO7	7	2.40
8	PO8	8	2.34
9	PO9	9	2.34
10	PO10	10	2.34
11	PO11	11	2.40

20% INDIRECT ASSESSEMENT SURVEY (WEIGHTAGE WISE)

PO'S	EMPLOYER SURVEY	5%(A)	ALUMINI SURVEY	10%(B)	PO EXIT SURVEY	5%(C)	20%(A+B+C)
PO1					2.16	0.108	
PO2					2.40	0.120	
PO3					2.16	0.108	
PO4					2.28	0.114	
PO5					2.34	0.117	



PO6					2.37	0.119	
PO7					2.40	0.120	
PO8					2.34	0.117	
PO9					2.34	0.117	
PO10					2.34	0.117	
PO11					2.40	0.120	

II) EMPLOYER/TRAINING SURVEY:

One of the best measures whether the program outcomes are achieved is to analyse the opinion of the employer/trainer about the competency and professionalism exhibited by the graduates in their professional field. For this the employers/trainers are requested to fill up the questionnaire. The knowledge, attitude, skills, professionalism, competency, abilities and other attributes can be evaluated by the response of employers. Moreover, the questions are related to the program outcomes. The feedback is taken after one year of their joining date. The questionnaire in employer survey form to evaluate attainment of P.O is given in **II (A)** and details of calculations are mentioned **II (B)** and relation of P.O with questionnaire and individual P.O attainments are given in section **II (C)**.

II (A) QUESTIONNAIRE FORMAT

EMPLOYERS/TRAINING FEEDBACK FORM



NOTE: Please tick as appropriate for the following questions with respect to BPharm graduate program.

Sl. No	Question/Parameter for evaluation	Excellent	Very good	Good	Fair	Poor
1	How competent are graduates in the application of the basic pharmaceutical sciences and its concepts?					
2	How do you rate the graduate's fundamental pharmacy related knowledge?					
3	How do you rate the graduate's knowledge in the various subjects of pharmaceutical sciences?					
4	How do you rate the graduate's ability to apply the principles learned from various pharmaceutical sciences?					
5	How do you rate the graduate's ability to analyse problems, interpret them and make use of his/her knowledge to solve them?					
6	How good is the graduate's ability in identifying and solving pharmaceutical problems?					
7	How can you rate the graduate's oral communication and presentation skills?					
8	How effective is the graduate's written communication skills? (Ability to write effectively).					
9	How do you rate the graduate's ability to function in teams?					



10	How do you rate the graduate's understanding of his/her ethical and professional responsibilities?					
11	How do you rate the graduate's understanding of the social and global issues that have to be considered while providing solutions to various problems?					
12	How do you rate the graduate's understanding of the need for and the ability to engage in life-long learning?					
13	How do you rate the structure of the curriculum in providing in-depth education in the area of pharmaceutical sciences?					
14	How well the university curriculum has prepared the graduates for their academic/professional career?					
15	Overall rating of the Institute (academic, cocurricular, extra-curricular activities)?					

**II (B) CALCULATION OF P.O ATTAINMENT FROM EMPLOYER/TRAINING
FEEDBACK FORM**

- **PROGRAM: BPHARM**
- **NUMBER OF EMPLOYER FEEDBACK FORMS COLLECTED: 63**
- **ACADEMIC YEAR COLLECTED: 2018-2019**



- Each question is answered by the employer on a scale where the employer can give the grades - Excellent, very good, good, fair and poor which are assigned the marks 4, 3, 2, 1 and 0 respectively.
- For example; 63 employer feedbacks are taken for calculation. In the feedback forms, for the first question the following was the grading obtained from among 63 employer feedback forms.

Q.NO	EXCLLENT	V.GOOD	GOOD	FAIR	POOR
1	3	5	5	0	0

So, $(6 \times 4) + (30 \times 3) + (27 \times 2) = 24 + 90 + 54 = 168$ (Total weightage)

Number of feedback forms collected = 63

The maximum possible score will be $63 \times 4 = 252$

The score attained for first question = $(168/252) \times 100 = 67\%$

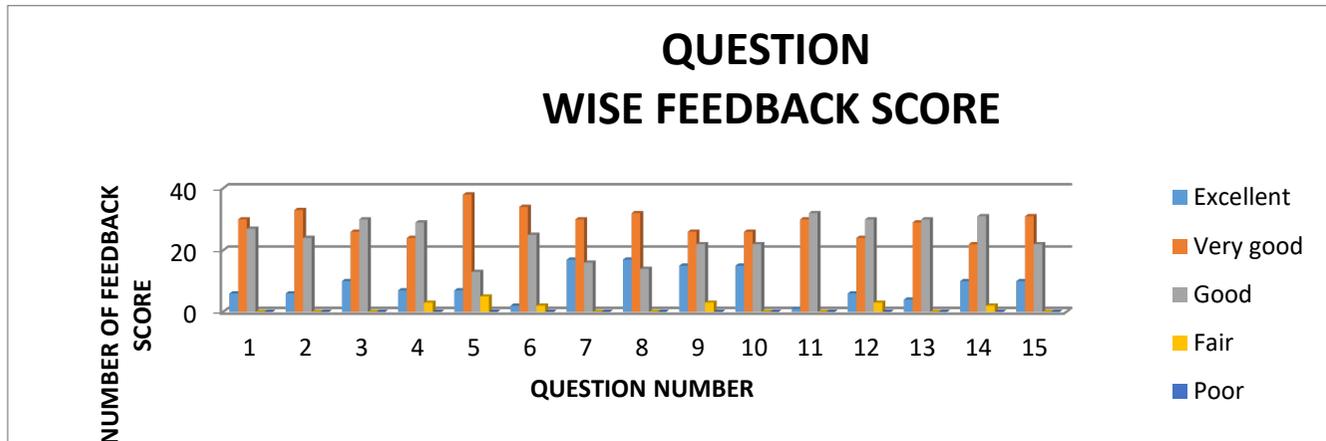
The score is to be converted to 3 scale i.e., $(7 \times 3) / 100 = 2.01$

Question Number	Excellent (4)	Very good (3)	Good (2)	Fair (1)	Poor (0)	Total Weightage	Percentage	Score in 3 scale
1	6	30	27	0	0	168	67	2
2	6	33	24	0	0	171	68	2.04
3	10	26	30	0	0	178	71	2.12
4	7	24	29	3	0	161	64	1.92
5	7	38	13	5	0	173	69	2.06
6	2	34	25	2	0	162	64	1.93
7	17	30	16	0	0	190	75	2.26
8	17	32	14	0	0	192	76	2.29
9	15	26	22	3	0	185	73	2.2



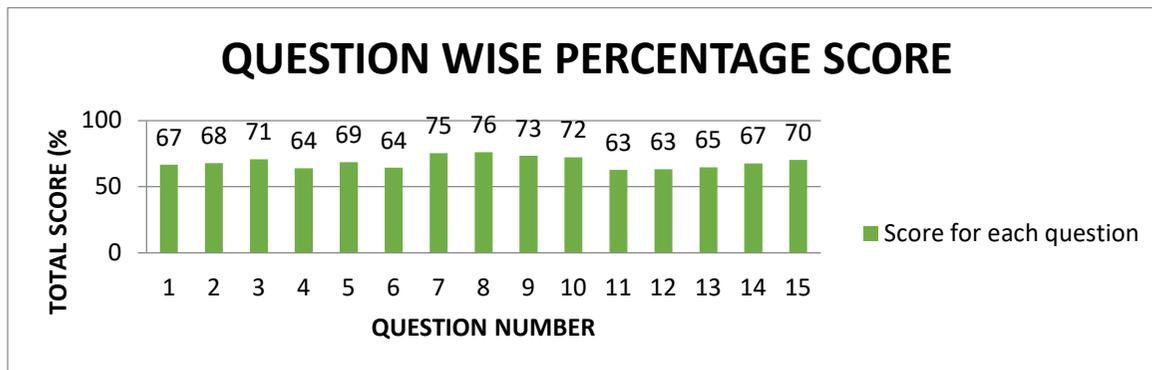
10	15	26	22	0	0	182	72	2.17
11	1	30	32	0	0	158	63	1.88
12	6	24	30	3	0	159	63	1.89
13	4	29	30	0	0	163	65	1.94
14	10	22	31	2	0	170	67	2.02
15	10	31	22	0	0	177	70	2.11

Score attained for each feedback question:



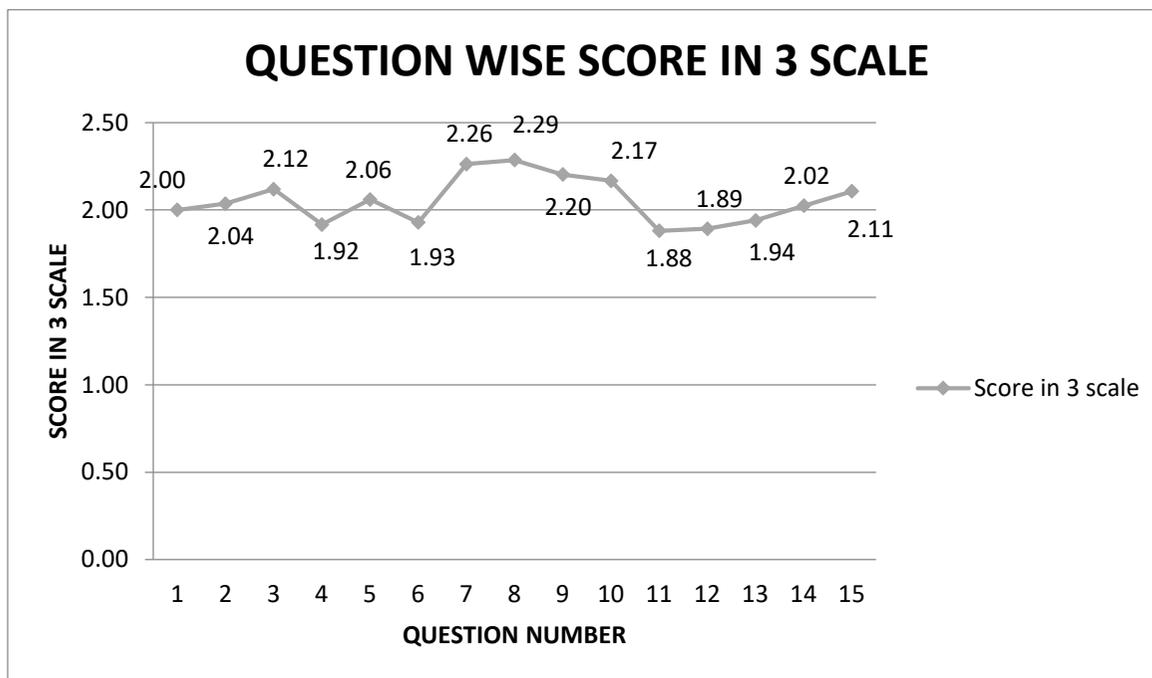
Percentage score for each question:





Three scale score for each question:

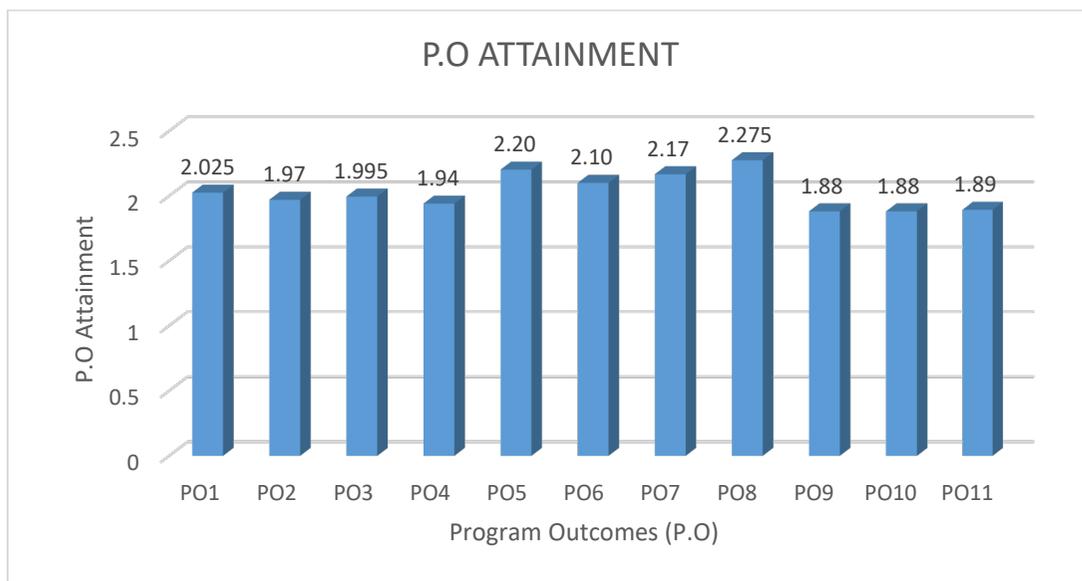




II C) RELATION OF P.O WITH QUESTIONNAIRE AND P.O ATTAINMENT SCORES

Sl. No.	Program Outcomes (P.O)	Questions involved	P.O attainment
1	PO1	1,2,3,13	2.025
2	PO2	4,14	1.97
3	PO3	5,6	1.995
4	PO4	13	1.94
5	PO5	9	2.20

6	PO6	10,14,15	2.10
7	PO7	10	2.17
8	PO8	7,8	2.275
9	PO9	11	1.88
10	PO10	11	1.88
11	PO11	12	1.89



- If one Program outcome is matching only with one question the attainment value of that question is assigned for that particular P.O
- For example, in case of P.O 5, the relevant question is Question no. 9 and hence the attainment of P.O 5 is 2.20.



- Certain POs will be related with more than one question, so the average score of those three questions will be taken
- For example, P.O 1 is related with 4 questions 1,2,3 and 13, so the average of those four scores 2.00, 2.04, 2.12 and 1.94 is taken. So, the attainment of Program outcome, P.O-1 is 2.025.

III) ALUMNI SURVEY:

Alumni particularly those who have completed one year after graduation are able to respond whether the practiced curriculum have given orientation towards the emerging changes in the field. For calculation of Program Outcomes, feedback is taken from alumni. For that purpose relevant questionnaire in the form of alumni survey form is given during the alumni meet to evaluate attainment of P.Os. The relevant questionnaire is given in section II (A) and details of calculations of program outcomes are given in II (B) and relation of POs with questionnaire and attainment of P.Os are mentioned in II (C).

III (A) QUESTIONNAIRE FORMAT

ALUMNI FEEDBACK FORM

NOTE: Please tick as appropriate for the following questions with respect to B.Pharm graduate program.

Sl. No	Question/Parameter for evaluation	Excellent	Good	Fair	Poor
1	How competent are you in the application of the basic pharmaceutical sciences and its concepts?				



2	How do you rate your fundamental pharmacy related knowledge?				
3	How do you rate your knowledge in the various subjects of pharmaceutical sciences?				
4	How do you rate your ability to apply the principles learned from various pharmaceutical sciences?				
5	How do you rate your ability to analyze problems, interpret them and make use of your knowledge to solve them?				
6	How good is your ability in identifying, formulating and solving pharmaceutical problems?				
7	How can you rate your oral communication and presentation skills?				
8	How effective is your written communication skills? (Ability to write effectively).				
9	How do you rate your ability to function in teams?				
10	How do you rate your understanding of your ethical and professional responsibilities?				
11	How do you rate your understanding of the social and global issues that have to be considered while providing solutions to various pharmaceutical problems?				



12	How do you rate your understanding of the need for and the ability to engage in life-long learning?				
13	How do you rate the structure of the curriculum in providing in-depth education in the area of pharmaceutical sciences?				
14	How well as the university curriculum prepared you for your academic/professional career?				
15	Overall rating of your college/institute (academic, co-curricular, extra-curricular activities)?				

II (B) CALCULATION OF PROGRAM OUTCOMES FROM ALUMNI FEEDBACK FORM

- **PROGRAM: B.Pharm**
- **NUMBER OF ALUMNI FEEDBACK FORMS COLLECTED: 80**
- **ACADEMIC YEAR COLLECTED: 2019-2020**

The calculation for obtaining the PO attainment is calculated is as follows. Each question is answered by the alumni on a scale where the alumni can give the grades - Excellent, Good, Fair and Poor which are assigned the marks 3, 2, 1 and 0 respectively.

For example **80** alumni feed backs are taken for calculation. In the feed back forms, for the first question the following was the grading obtained from among 80 alumni feed back forms.

Excellent	Good	Fair	Poor
6 response	55 response	18 response	0 response



So, $(6 \times 3) + (55 \times 2) + (18 \times 1) = 18 + 60 + 8 = 146$ (Total weightage)

Number of feedback forms collected = 80

The maximum possible score will be $80 \times 3 = 240$

The score attained for first question = $(146/240) \times 100 = 60.8\%$

The score is to be converted to 3 scale i.e., $(60.8 \times 3) / 100 = 1.824$

Question s	Excellent (3)	Good (2)	Fair (1)	Poor (0)	Total Weightage	Percentage	Weightage Based On 3 Scale
1	6 7.5%	55 68.8 %	18 22.5 %	0.8 1%	146	60.8	1.82
2	11.3% 9	71.3 % 57	16.2 % 13	2% 2	154	64.16	1.9248
3	8.8% 7	77.5 % 62	13.7 % 11	-	156	65	1.95
4	12.5% 10	65% 52	21.3 % 17		151	62.9	1.887
5	11.3% 9	63.7 % 51	25% 20	-	149	62.08	1.8624
6	10% 8	70% 56	18.8 % 15		151	62.91	1.8873



7	21.3% 17	65% 52	12.5% 10		165	68.75	2.0625
8	27.5% 22	62.5% 50	10% 8	-	174	72.5	2.175
9	37.5% 30	56.3% 45	6.2% 5	-	185	77.08	2.3124
10	36.3% 29	56.3% 45	7.5% 6	-	183	76.25	2.2875
11	11.3% 9	65% 52	23.8% 19	-	150	62.5	1.875
12	18.8% 15	70% 56	11.3% 9	-	166	69.1	2.073
13	15% 12	53.8% 43	26.2% 21		143	59.5	1.785
14	12.7% 10	58.2% 47	26.6% 21		145	60.4	1.812
15	47.5% 38	45% 36	7.5% 6	-	192	80	2.640

I II (C) RELATION OF POS WITH QUESTIONNAIRE AND PO ATTAINMENT SCORES



Sl.No.	Program Outcomes	Questions involved	PO attainment
1	PO1	1,2,3,13	1.86995
2	PO2	4,14	1.8495
3	PO3	5,6	1.87485
4	PO4	13	1.785
5	PO5	09	2.3124
6	PO6	10,14,15	2.2465
7	PO7	10	2.2875
8	PO8	7,8	2.11875
9	PO9	11	1.875
10	PO10	11	1.875
11	PO11	12	2.073

INDIRECT ASSESMENT TOOLS: ATTAINMENT OF PROGRAM OUTCOMES

FINAL RESULTS: INDIRECT ASSESSEMENT SURVEY (WEIGHTAGE WISE: 20%)



PO'S	EMPLOYER SURVEY	5%(A)	ALUMINI SURVEY	10%(B)	PO EXIT SURVEY	5%(C)	20%(A+B+C)
PO1	2.025	0.10	1.87	0.19	2.16	0.108	0.079
PO2	1.97	0.10	1.85	0.18	2.4	0.12	0.081
PO3	1.995	0.10	1.87	0.19	2.16	0.108	0.079
PO4	1.94	0.10	1.79	0.18	2.28	0.114	0.078
PO5	2.2	0.11	2.31	0.23	2.34	0.117	0.092
PO6	2.1	0.11	2.25	0.22	2.37	0.1185	0.090
PO7	2.17	0.11	2.29	0.23	2.4	0.12	0.091
PO8	2.275	0.11	2.12	0.21	2.34	0.117	0.089
PO9	1.88	0.09	1.88	0.19	2.34	0.117	0.080
PO10	1.88	0.09	1.88	0.19	2.34	0.117	0.080
PO11	1.89	0.09	2.07	0.21	2.4	0.12	0.084

3.2 Provide results of evaluation of each PO

PO DIRECT ASSESSMENT PROCESSES:

The CO attainment level calculation of university theory and practical examinations and internal practical examinations are mentioned in 2.2.

PO CALCULATION TEMPLATE



Model for Calculation of Final PO Attainment level eg:C105

Set or target CO-PO matrix average level (by teacher)

Subject code	Subject Name	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
BP102T (Average)	PHARMA CEUTICA L ANALYSI S	3	2.4	2.5	2.3	1.8	2.2	1.5	2.2	1.5	1	2.2

CO Level Attained from Examination Result

Subject code	Subject Name	30% of internal	70% of External	SUM of 70%+30%
BP102T (Average)	PHARMACEUTICAL ANALYSIS	0.59	2.1	2.7

For calculating the attainment of individual POs the following equation is used

(Set PO level x CO level attained in result)/Maximum score level

For example, for calculation of PO6

- Set PO level for PO6 is 2.2
 - CO level attained in exams result is 2.7
 - Maximum score level which can be attained is 3
- So the attainment of PO6= $(2.2 \times 2.7) / 3 = 1.98$



- Attainment of that PO in terms of % is $(1.98 \times 100) / 3 = 66$
- Gap for that PO is $100 - 66$ ie, 34

RESULTS OF EVALUATION OF EACH PO FOR THE ACADEMIC YEAR 2018-2019

SNO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP101T	3	1	1	2.8	1	2.8	3	1.8	3	1	3
BP102T	3	3	2.8	2.3	2.4	2.4	2.5	2.8	2.2	3	2.6
BP103T	3	2.6	2	1.8	1.8	3	2	2	1	1	2.2
BP104T	2.6	2	2	1.5	1.8	1.7	2	1.4	1.5	2.2	2
BP105	1	2.6	2.8	2	2.6	2.2	2	3	2.8	1.7	2
BP107P	3	1.6	1.8	1.8	1	2	1.6	1.8	1	1.8	2
BP108P	3	3	2.8	2.4	2.3	2.6	2.6	2.8	2.8	2.5	3
BP109P	3	2.6	3	2.6	2.8	3	2.2	3	2.6	1.2	2.6
BP110P	2	2.2	2	2.2	2	2.4	1.8	2	1.8	2.4	1.8
BP111P	1	2.2	2	2.6	2.4	2.8	2.2	3	3	2.2	1.8
BP201T	3	1	1	2.8	1	2.8	2.6	1.8	3	1	3
BP202T	3	1	2	2	1	2	1	2.4	1.8	1.8	3
BP203T	3	2.5	2.8	3	3	2.4	3	-	2.4	3	3



BP204T	3	2.8	2.6	3	2	2	1	3	3	3	2
BP205T	2.4	2.4	2.6	3	2	3	2.5	1.6	2	-	3
BP206T	3	3	3	2	3	3	3	3	3	3	3
BP207P	3	3	2.5	3	1.7	2	2.8	2	2	1	3
BP208P	3	2.4	2.8	2	1	1.2	1.2	1.6	2	1.8	3
BP209P	2	2.2	2	2.2	2	2.4	1.8	2	1.8	2.4	1.8
BP210P	2	-	-	-	-	-	2	1	-	-	1.6
BP301T	2.8	1.4	2.2	1.8	0.8	0.6	0.4	1	1.2	1.6	2.4
BP302T	3	2.6	2.6	2.5	2	2.4	-	2	1.6	-	2.8
BP303T	3	2	2	1	1	2	1.2	2	2	1.4	1
BP304T	2.4	1.2	1.2	2.6	1.2	2	0.4	1.8	0.6	0.4	1.4
BP305P	3	2.6	2.8	2.4	1.2	1.8	1.6	2	2.4	2.2	3
BP306P	3	3	3	1	2	3	-	3	1.4	-	3
BP307P	3	2	1.8	1	1.2	1.8	1.2	2	1.6	1.8	2
BP308P	3	2.4	3	3	2.2	1.8	-	1.8	0.6	1.2	3
BP401T	3	2	3	2.8	1.6	1.4	1.2	1.4	1.8	2.4	3
BP402T	3	2.2	2.6	2	1.2	1.8	1	2	2	1.6	2.8
BP403T	3	2.6	2.6	2.5	2	2.4	3	2	1.6	-	2.8
BP404T	3	1.6	1.8	1.8	1.3	1.8	1.8	1.6	2	1.2	2.8
BP405T	3	2.4	2.6	1.4	1.4	2.4	1.8	1.8	2.2	2.8	2.6
BP406P	2.8	3	2.4	1.4	2	2.6	1.8	2.4	2	1.3	3
BP407P	3	3	3	1	2	3	2	3	1.4	-	3
BP408P	3	2	2	2	1	1.8	2	1.8	1.4	1.6	2.4
BP409P	2.4	2.8	2.8	1.6	2.2	2.6	2.4	2.6	2.8	2.8	2.8
C301	3	3	3	1	2.6	2.4	1.8	2	2	2	1.8
C302	3	2.8	2.8	3	3	3	2.5	2.8	2.4	3	2.4



C303	3	1.6	1.8	1.8	1.3	1.8	1.8	1.6	2	1.2	2.8
C304	3	3	3	2.8	3	3	2	3	2.8	2.2	3
C305	3	2	2	2.8	3	3	2	2	2.8	2.2	3
C306	3	3	3	1	1.5	2.8	2	2	2.6	3	2.8
C307	2.8	2.4	2.5	2.6	2	2.2	2.8	2	1.8	2	2.8
C308	3	2	2	1	1	2	1	2	2	2	1
C309	2.8	2.6	2.8	2.6	2.6	3	2.8	3	2.4	2	3
C310	3	2	2	2	1	1.8	2	1.8	1.4	1.6	2.4
C311	3	2	3	2.8	2	2.4	2.8	2.8	2.6	3	3
C312	3	3	3	1.6	2	2	2.6	2.2	1.8	2.2	2.8
C401	3	2.2	2.6	2.2	1.4	1.8	1	1.8	2	1.8	2.8
C402	3	2.4	2.6	2.6	1.8	2.4	1.5	1.6	1.3	1.5	2.8
C403	2.6	2.4	2.2	2.4	1.8	2.4	2.6	2.4	2.4	2.4	2.6
C404	3	1.6	1.6	1.8	2	2.2	2	1.8	2	1	1.6
C405	3	2	2.4	2.4	2	2.2	2.4	2.4	2.4	1.5	3
C406	3	2	2.6	2.6	2	2.6	2.4	2.6	2.6	1.6	2
C407	2.8	2	2	2.4	1.6	1.4	1	1.6	1.8	2.2	2.8
C408	3	2.6	2.2	2.8	1.6	2	1.3	1.8	1.3	1.3	2.8
C409	2.4	2.8	2.8	1.6	2.2	2.6	2.4	2.6	2.8	2.8	2.8
C410	3	2	1.8	2	1	2.6	2	1.4	1.8	1	2
C411	3	2.2	2.2	2.2	1	2.4	1.8	1.8	2	1	2.6
C412	3	2	2.6	2.8	2	2.6	2.6	2.8	2.8	1.6	2



C413	3	2	3	2.2	2.2	2.6	2	3	3	1	3
DA	2.82	2.29	2.40	2.16	1.81	2.30	1.96	2.15	2.07	1.88	2.53
80% OF DA	2.26	1.83	1.92	1.73	1.45	1.84	1.57	1.72	1.65	1.51	2.02
20% OF IA	0.398	0.4	0.398	0.394	0.457	0.448	0.46	0.437	0.397	0.397	0.42
TOTAL PO ATTAINMENT (80% OF DA+ 20% OF IA)	2.658	2.23	2.318	2.124	1.907	2.288	2.03	2.157	2.047	1.907	2.44

