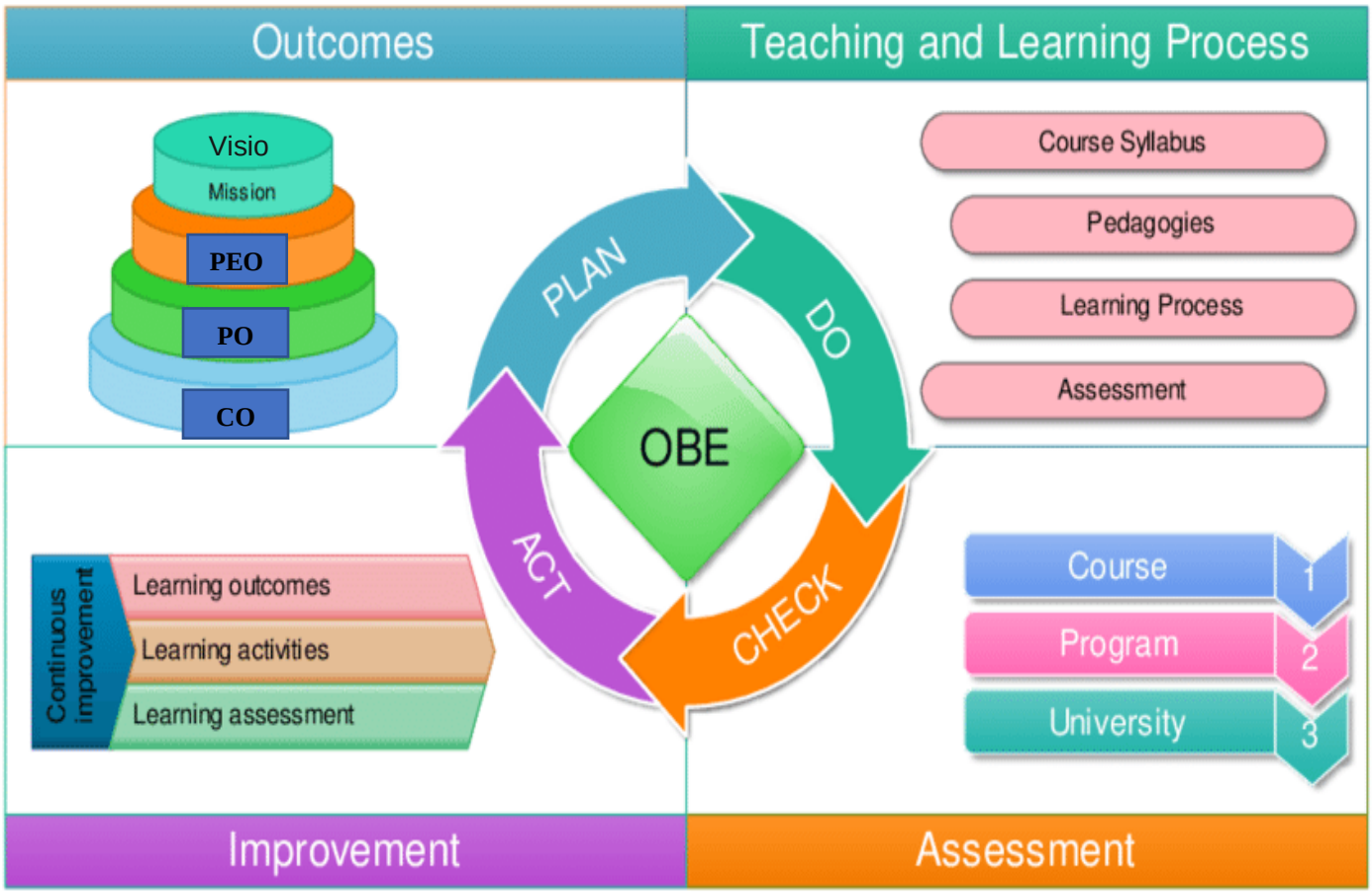
NANDHA COLLEGE OF PHARMACY
Koorapalayam Pirivu, Perundurai Main Road, Erode-52. | www.nandhapharmacy.org
(Approved by AICTE, PCI, New Delhi & Affiliated to The TN. Dr.M.G.R. Medical University, Chennai)
(Awarded 2F Status by UGC, New Delhi, NBA Accreditation - B.Pharm)

Manual of

Outcome Based Education (OBE)


Outcomes
Teaching and Learning Process
Visio
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PEO
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CO
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DO
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OBE
Course Syllabus
Pedagogies
Learning Process
Assessment
Continuous improvement
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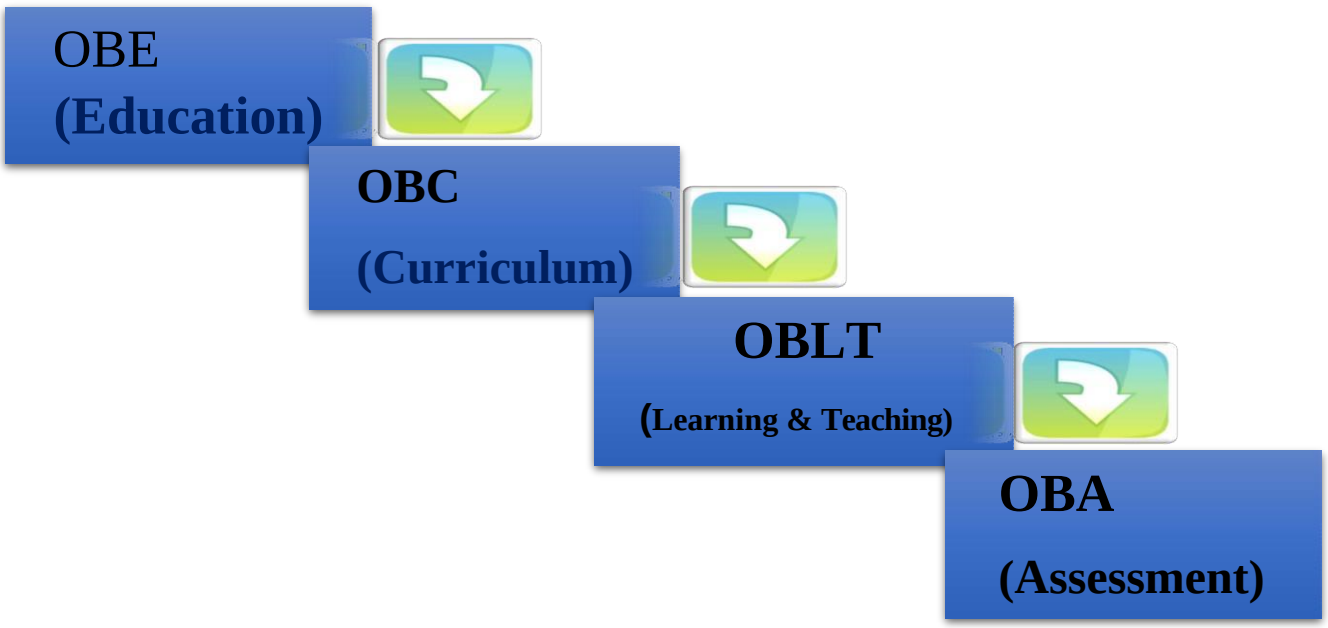
OBE
(Education)
OBC
(Curriculum)
OBLT
(Learning & Teaching)
OBA
(Assessment)

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Abbreviations:

OBE	Outcome Based Education	**BTL**	Bloom's Taxonomy Level
LOT	Lower Order Thinking	**HOT**	Higher Order Thinking
PEO	Program Educational Objectives	**PO**	Program Outcome
CO	Course Outcome	**PSO**	Program Specific Outcome
ESE	End Semester Examination	**CIA**	Continuous Internal Assessment

Definition of Abbreviations

Lower order Thinking: The lower-order thinking skills include Remembering, Understanding and Applying.

Higher order Thinking: refer to skills that go beyond memorizing information.

Programme Educational Objective: PEOs are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve. Knowledge, Skill and Attitude are the three behavioral elements based on which PEOs are constructed.

Course Outcomes: It is a detailed description of what a student must be able to do at the conclusion of a course.

Programme Outcome: Program outcomes are statements that describe what students are expected to know and be able to do upon graduating from the program. These relate to the skills, knowledge, analytical ability, attitude and behavior that students acquire through the program.

Programme Specific Outcomes: Program Specific Outcomes are statements that describe what the graduates of a specific pharmacy program should be able to do.

Semester End Examination: SEE means the examinations to be held at the end of each semester separately for theory & practical part by the University

Continuous Internal Assessment: Continuous Internal assessment is a form of educational examination that evaluates a student's progress throughout a prescribed course.

Bloom's Taxonomy Level: There are six levels of cognitive learning according to the revised version of Bloom's Taxonomy. Each level is conceptually different. The six levels are remembering, understanding, applying, analyzing, evaluating, and creating.

Course Objective: A course objective describes what a faculty member will cover in a course. They are generally less broad that goals and broader than student learning outcomes. Objectives focus on content and skills within the classroom or program.

Preamble

Outcome Based Education (OBE) is an educational model that forms the base of a quality education system. There is no single specified style of teaching or assessment in OBE. All educational activities carried out in OBE should help the students to achieve the set goals. The faculty may adapt the role of instructor, trainer, facilitator, and/or mentor, based on the outcomes targeted. OBE enhances the traditional methods and focuses on what the Institute provides to students. It shows the success by making or demonstrating outcomes using statements "able to do" in favor of students. OBE provides clear standards for observable and measurable outcomes.

Benefits of OBE

Clarity: The focus on outcome creates a clear expectation of what needs to be accomplished by theend of the course.

Flexibility: With a clear sense of what needs to be accomplished, instructors will be able to structure their lessons around the students' needs.

Comparison: OBE can be compared across the individual, class, batch, program and institute levels.

Involvement: Students are expected to do their own learning. Increased student involvement allows them to feel responsible for their own learning, and they should learn more through this individual learning.

India, OBE and Accreditation

From 13th June 2014, India has become the permanent signatory member of the Washington Accord. Implementation of OBE in higher technical education also started in India. The National Assessment and Accreditation Council (NAAC) and National Board of Accreditation (NBA) are the autonomous bodies for promoting global quality standards for technical education in India. NBA has started accrediting only the programs running with OBE from 2013.

The National Board of Accreditation mandates establishing a culture of outcome-based education in institutions that offer Engineering, Pharmacy, Management program. Reportsof outcome analysis help to find gaps and carryout continuous improvements in the education system of an Institute, which is very essential.

Features of OBE:

OBE is an educational process that focuses on what students can do or the qualities they should develop after they are taught.

OBE involves the restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of higher order learning and mastery rather than accumulation of course credits.

• Both structures and curricula are designed to achieve those capabilities or qualities.

• Discourages traditional education approaches based on direct instruction of facts and standard methods.

• It requires that the students demonstrate that they have learnt the required skills and content.

Deficiencies in Traditional education

- Provides students with a learning environment with little attention to whether or not students ever learn the material.
- Students are given grades and rankings compared to each other – students become exam oriented or CGPA driven. Graduates are not completely prepared for the workforce.
- Lack of emphasis on soft skills needed in jobs e.g. communication skills, interpersonal skills, analytical skills, working attitude etc.

Expectations of students under OBE – the outcome

• Students are expected to be able to do more challenging tasks other than memorize and reproduce what was taught.

• Students should be able to: write project proposals, complete projects, analyze case studies, give case presentations, show their abilities to think, question, research, and make decisions based on the findings.

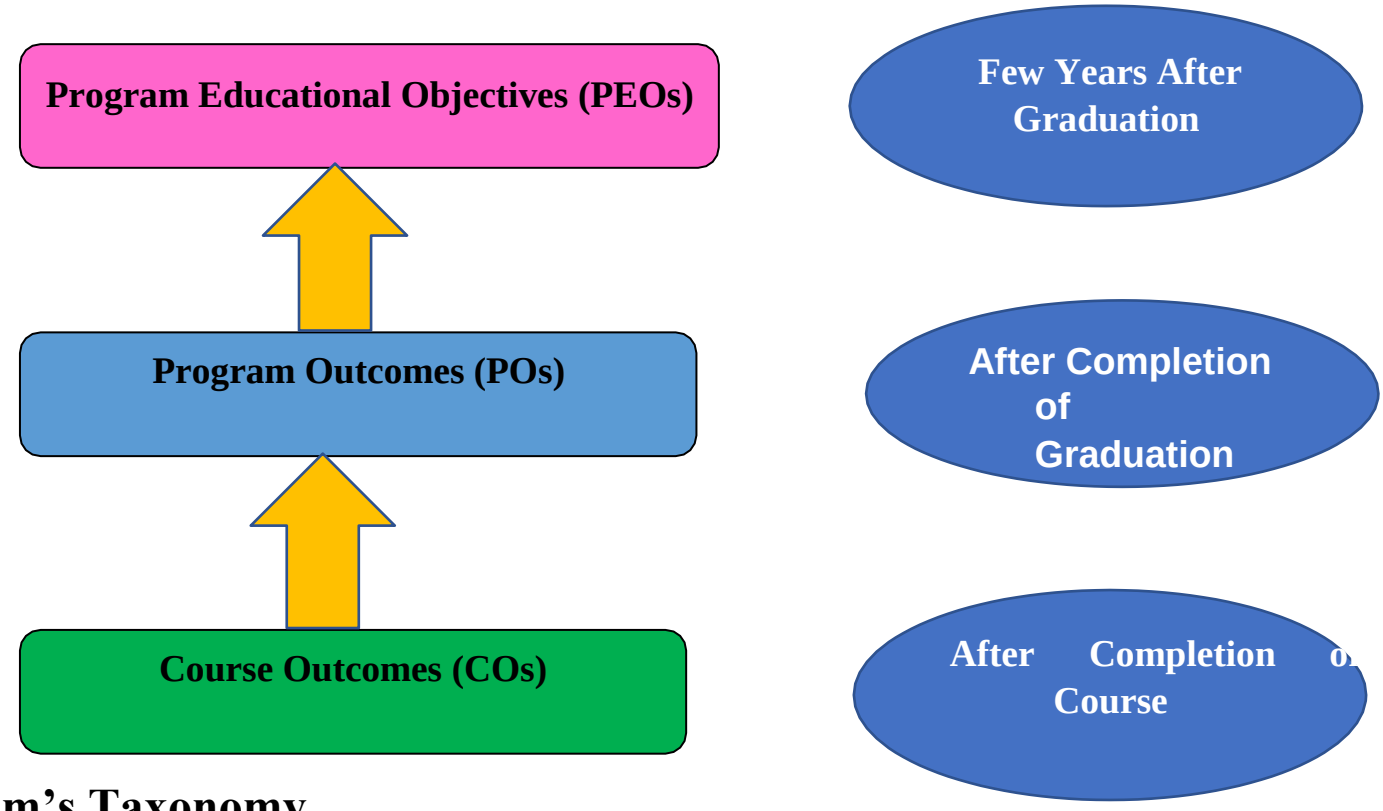
• Be more creative, able to analyze and synthesize information.

• Able to plan and organize tasks, able to work in a team as a community or in entrepreneurial service teams to propose solutions to problems and market their solutions.

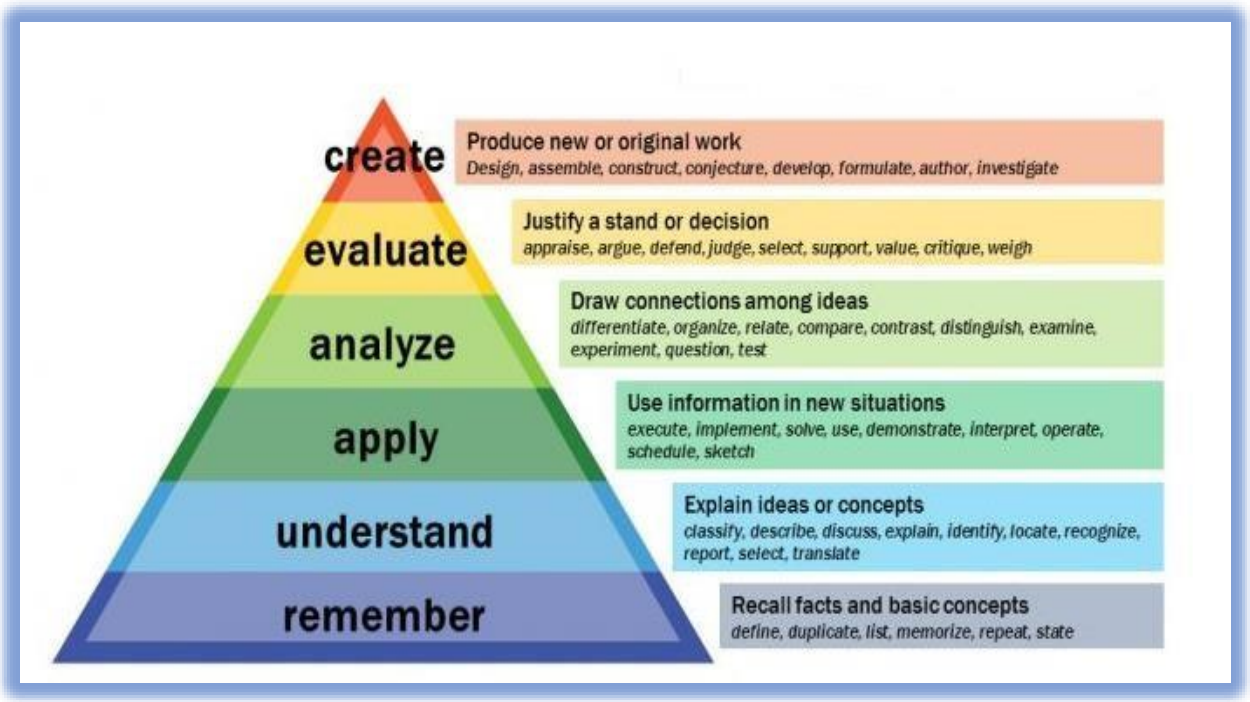
• Students should be enriched on three dimensional scales of knowledge, skill and attitude throughout the course.

The OBE model measures the progress of the graduate in three parameters

- Program Educational Objectives (PEO)
- Program Outcomes (PO)
- Course Outcomes (CO)



Bloom's Taxonomy



Vision & Mission of the University

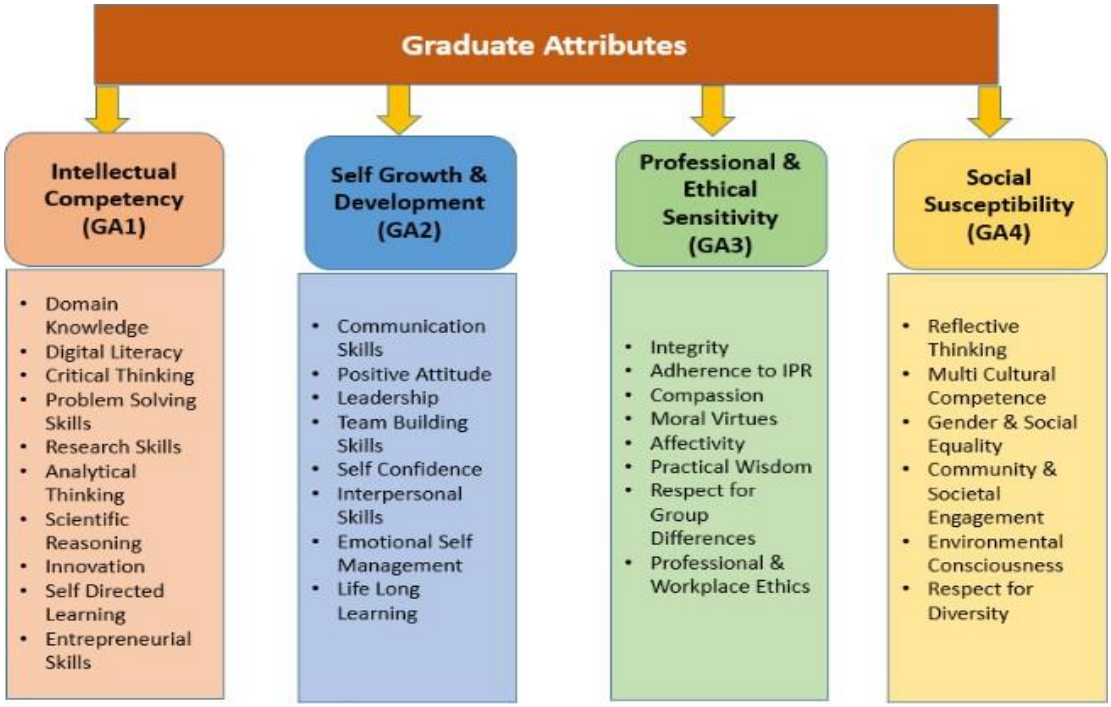
VISION:

To enhance the employability of our students and impart the necessary skills to meet the expectations of the industry and hospitals. To be a globally respected institution, striving continuously for excellence in technical education and research.

MISSION:

To make the students acquire technical knowledge and earn to apply it professionally with due consideration for ethical, ecological and economic issues and also to provide knowledge based technological services according to the need of the society, industry and Hospitals

Graduate Attributes



Program Educational Objective & Outcomes (PEO & PO)

Bachelor of Pharmacy(B.Pharm)

Programme Educational Objective

PEO 1: To develop conceptual and practical knowledge in the various fields of pharmaceutical sciences in order to build technical skill for analytical aspects in research and design of pharmaceutical products.

PEO 2: To prepare the students to enter careers in the pharmaceutical industries, clinical research companies, government sectors, community and hospital Pharmacy in the field of pharmaceutical sciences, pharmaceutics, pharmaceutical chemistry, pharmacology, pharmacovigilance & pharmacognosy.

PEO 3: To develop professional ethics and moral values amongst the students in context to social pharmacy and health sciences.

PEO 4: To inculcate high order thinking to realise the market potential and explore entrepreneurship skills to grab the opportunities.

PEO 5: To create enthusiasm among graduates to upgrade themselves in the context of technological advancement in the field of pharmaceutical sciences seeking higher studies.

PEO 6: To develop communication, team spirit, leadership skills, analytical skills and shall be self-motivated for lifelong learning to achieve excellence in all spheres of pharmacy.

Programme Outcomes

PO 1: Pharmacy knowledge: Apply the knowledge of basic molecular biology, drug mechanism, science of various systems of human body, fundamental principles of analytical chemistry, preparation of different dosage forms, natural drugs and monographs of inorganic drugs in pharmacy.

PO 2: Planning abilities: Demonstrate effective planning abilities in pharmaceutical industry through resource& time management, delegation skills and organizational skills to achieve goal.

PO 3: Problem analysis: Develop ability for in-depth analytical and critical thinking in order to identify, formulate, solve the issues related to Pharmaceutical Industry, Regulatory Agencies, Hospital and Community Pharmacy.

PO 4: Modern tool usage: Apply the foundation of pharmaceutical science in formulation technology, synthetic knowledge of modern pharmacy computing tools uses as per the requirement of pharmaceutical sectors within the constraints.

PO 5: Leadership skills: Exhibit leadership quality, team spirit with motivational capability when planning for fulfilment of professional and social responsibilities to facilitate improvement in health and wellbeing.

PO 6: Professional identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, educators, managers, employers, employees).

PO 7: Pharmaceutical ethics: Demonstrate behaviour that recognizes cultural and personal variability in values, communication and lifestyles. Honour personal values and apply ethical principles in professional and social contexts. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions. **PO 8: Communication:** Demonstrate effective communication with the pharmacy community and with society at large such as being able to comprehend and write effective reports, make effective presentations and documentation to give and receive clear instructions. **PO 9: The Pharmacist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.

PO 10: Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 11: Entrepreneurial skill: Exhibit effective entrepreneurial skills in the field of pharmacy to analyse the market potential and grab opportunities**.**

PO 12: Lifelong learning: Develop an aptitude for lifelong learning in the broadest context of technological change. Develop the decision-making ability for selection of higher studies in pharmaceutical sciences and allied fields.

OBE Framework of the University

Before Start of Semester

- Competency Matrix
- Course Allotment by HoD (Based on Competency)
- Subject confirmation by Faculty
- Develop curriculum & course file

During Semester

- Refine Course file/Plan
- Updation & Tracking of course File
- Identifying student competency & Action taken
- Execution of all other Activities

End of Semester

- Implementation & Verification of Course file in Lectures/Practical's
- Assessment & evaluation of CO -PO Attainment
- Submit Attainment analysis to Process owner/HoD

The Cognitive Process Dimensions-Categories					
Lower Order Thinking(LOT)			**Higher Order Thinking(HOT)**		
Remember	**Understand**	**Apply**	**Analyse**	**Evaluate**	**Create**
Recognizing (identifying) Recalling (retrieving)	Interpreting Illustrating Classifying Summarizing Inferring (concluding) Comparing Explaining	Executing Implementing	Differentiating Organizing Attributing	Checking (coordinating, detecting, testing, monitoring) Critiquing (judging)	Planning Generating Producing (constructing)

Action Verbs for Course Outcomes

Lower Order Thinking(LOT)			**Higher Order Thinking (HOT)**		
Remember	**Understand**	**Apply**	**Analyse**	**Evaluate**	**Create**
Define	Explain	Solve	Analyse	Reframe	Design
Describe	Describe	Apply	Compare	Criticize	Create
List	Interpret	Illustrate	Classify	Judge	Plan
State	Summarise	Calculate	Distinguish	Recommend	Formulate
Match	Compare	Sketch	Explain	Grade	Invent
Tabulate	Discuss	Prepare	Differentiate	Measure	Develop
Record	Estimate	Chart	Appraise	Test	Organize
Label	Express	Choose	Conclude	Evaluate	Produce

Guidelines for writing Course Outcome Statements

Well-written course outcomes involve the following parts:

1. Action verb
2. Subject content
3. Level of achievement as per BTL
4. Modes of performing task (if applicable)

For Example:

Students are able to

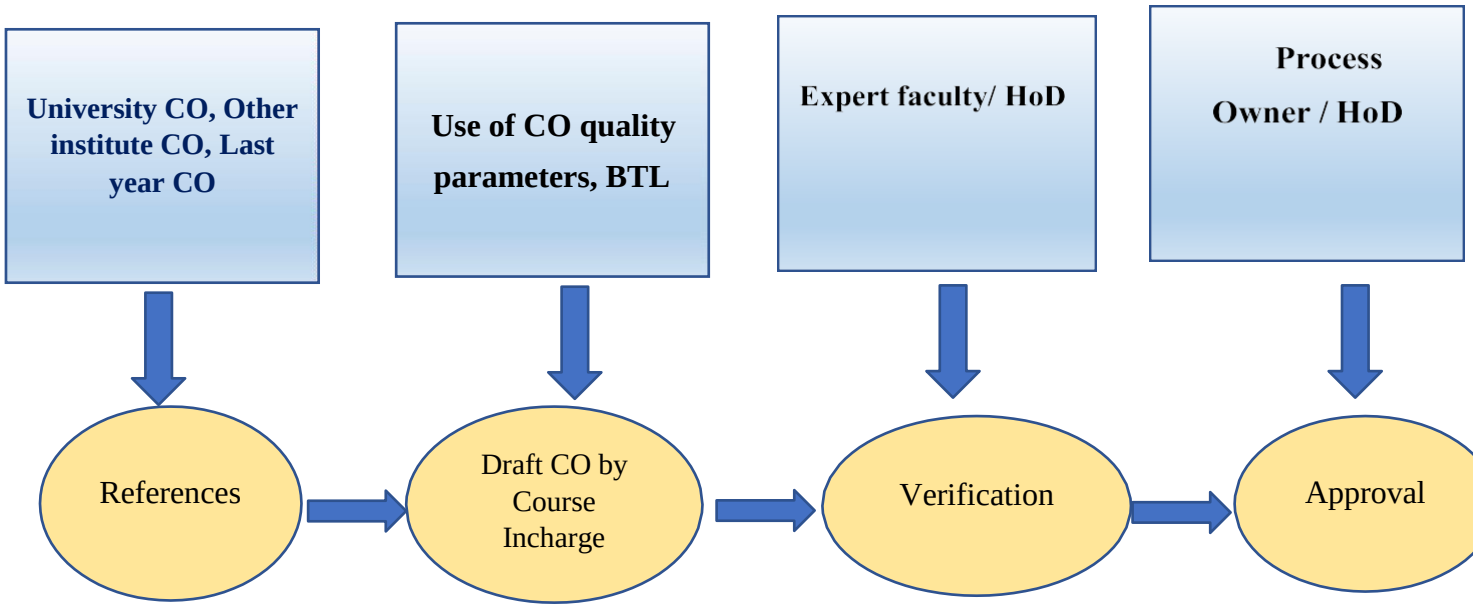
1) Design Derivative controller for the Plant. → Action verb (underlined)
2) Determine Gain of an operational Amplifier. → Subject content
3) Use structural analysis software to a competent Level. → Level of achievement.
4) Present seminar on real life problems. → Modes of performing task with action verb (underlined)

While writing Cos the following questions/points must be addressed properly.

Specific	Is there a description of precise behavior and the situation it will be performed in ? Is it concrete, detailed, focused and defined?
Measurable	Can the performance of the outcome be observed and measured?
Achievable	With a reasonable amount of efforts and application can the outcome be achieved? Are you attempting too much?
Relevant	Is the outcome important or worthwhile to the learner or stakeholder? Isit possible to achieve this outcome?
Time-Bound	Is there a time limit, rate, number, percentage or frequency clearly stated? When will this outcome be accomplished?

Note: If Laboratory is given as separate course (with course code) then there should be separate course outcomes for Laboratory.

Quality of Course Outcome:



Guidelines/Checklist for Cos:

Number of COs	Two to Six
CO essentials	Action Verb, Subject Content, Level of Achievement, Modes of Performing task(If Applicable)
Based on BTL	Understand, Remember, Apply, Analyse, Evaluate, Create
Number of BTL Considered in one course	Minimum 3
Technical Content/ point of curriculum	All curriculum contents are covered
Curriculum gap	Additional CO for gap identified/filling. Adds more weightage

Consider two minimum criteria for CO-PO Mapping Justification

Course Outcome statement may be broken down into two main components:

I. **An action word** that identifies the performance to be demonstrated

II. **Learning statement** that specifies what learning will be demonstrated in the performance

CO – PO Mapping Criteria

Following two criteria should be used for CO PO Mapping justifications

1. **Contact Hours: Lecture, Tutorial and Practical**
2. **Assessment Tools**

1. CO – PO Mapping by Contact Hours

S.NO	Level of Correlation	Contact hours in Percentage (Lecture, tutorial & Practical)
1	No Mapping	Less than 5% of total Hours
2	Low	(05 – 15) % of total Hours
3	Medium	(15 – 25) % of total Hours
4	High	Greater than 25 % of total Hours

Description

Assume Number of Lectures = 3Hr /week x 12 weeks = 36 Hours

Tutorial = 1Hr/Week x 12 Weeks = 12 Hours

Practical = 2Hr/Week x 12 Week = 24 Hours

Total Hours = 36+12+24 = 72 Hours

Example: Let, CO1 related points are engaged in 10 lectures + 1 Tutorial and 2 practical Hours

Then contact hours = 10+1+2x2 = 15 Hours

Therefore, contact hours in percentage = (15/72) x 100 = 20.8 %. Medium mapping (2)

2. CO – PO Mapping by Assessment Tools

S.NO	Level of Correlation	Assessment tools used to assess the CO
1	No Mapping	Zero Assessment tools used
2	Low	1 or 2 Assessment tools used
3	Medium	3 Assessment tools used
4	High	4 or More Assessment tools used

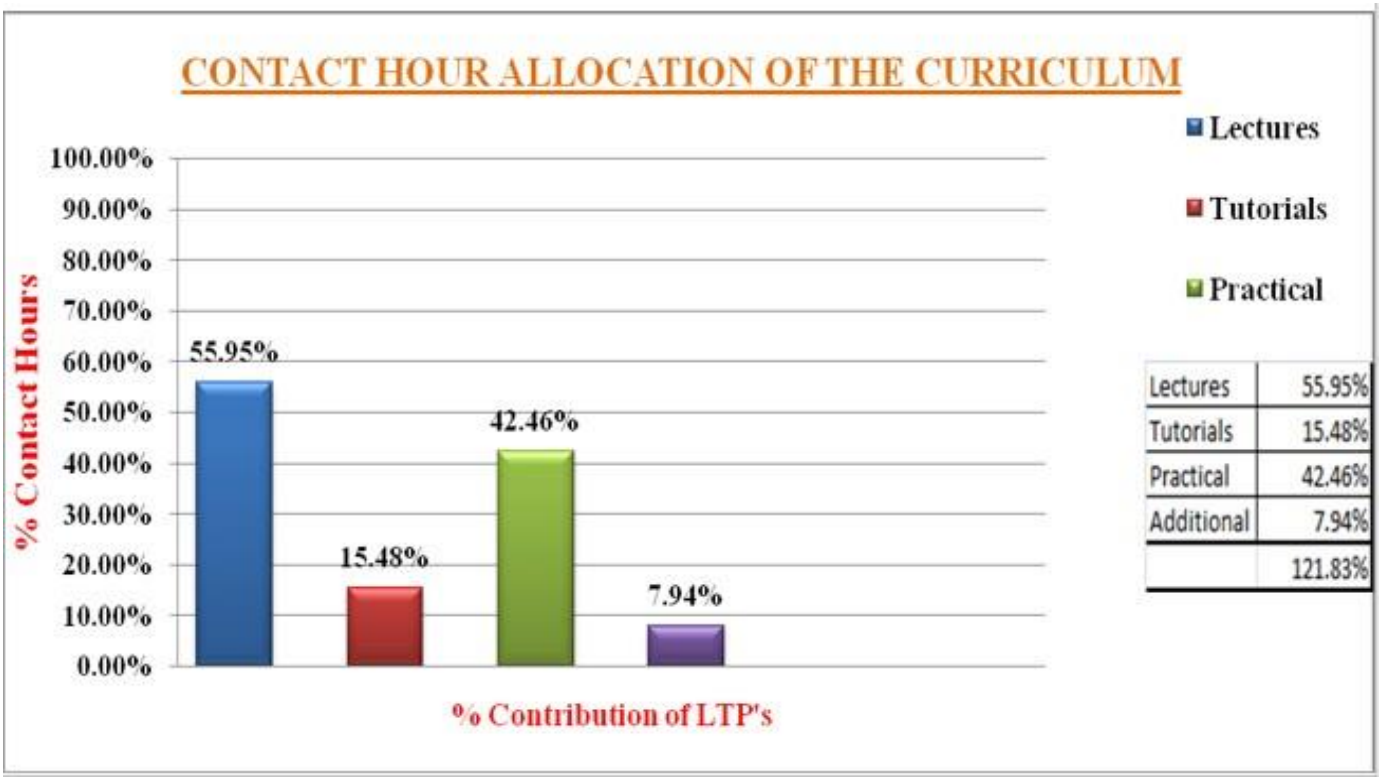
Sample Assessment Tools for CO – PO Mapping		
End Semester Exam	End Semester Exam	Q1, Q2A
Assignment & Quiz	Assignment 1	Q1, Q2, Q3, Q4
	Assignment 2	Nil
	Quiz	Q1, Q2, Q3, Q4
Mid Semester &	Mid Test 1	Q1
Teacher Assessment	GD	Nil
	Seminar	Nil
	Brainstorming	Nil
	Project	Q2

Correlation of course components with POs & PEOs

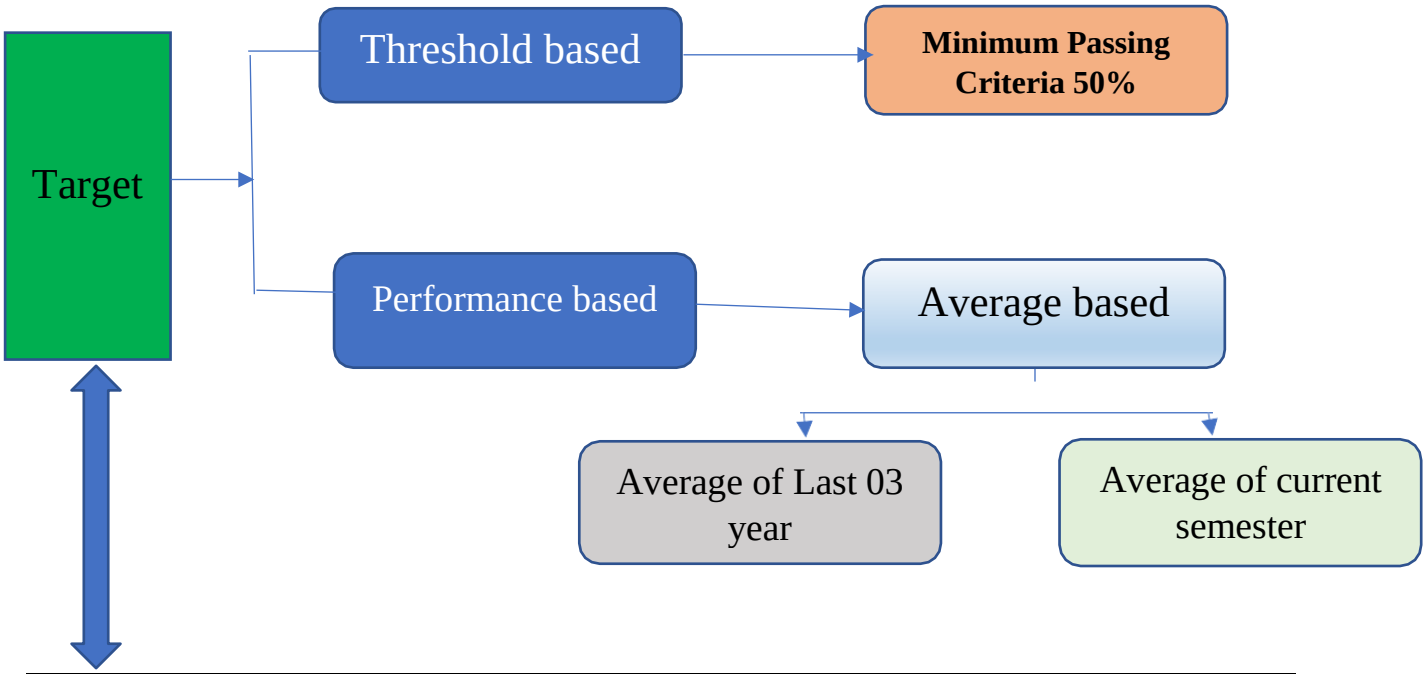
Sample Correlation

Course Component	Curriculum Content (% of total no. of credits of the programme	Total No. of Contact Hour	Total No. of Credits	PEO'S	PO's
Mathematics & Basic Science	9.52%	336	24	PEO 1 & PEO 2	PO 1
Humanities & Social Sciences	6.35%	224	16	PEO 1 , PEO 2 & PEO 3	PO 7, PO 8, PO 9, PO 11
Basic Engineering Science Core Courses	12.70%	448	32	PEO 1 & PEO 2	PO 1, PO 2
Professional Core	65.08%	2296	164	PEO 1 & PEO 2	PO 2, PO 3, PO 4, PO 5,PO 9, PO 10, PO 11
Electives	6.35%	224	16	PEO 1 & PEO 2	PO 2, PO 6, PO 7, PO 8, PO 9

Sample Allocation of Course Curriculum

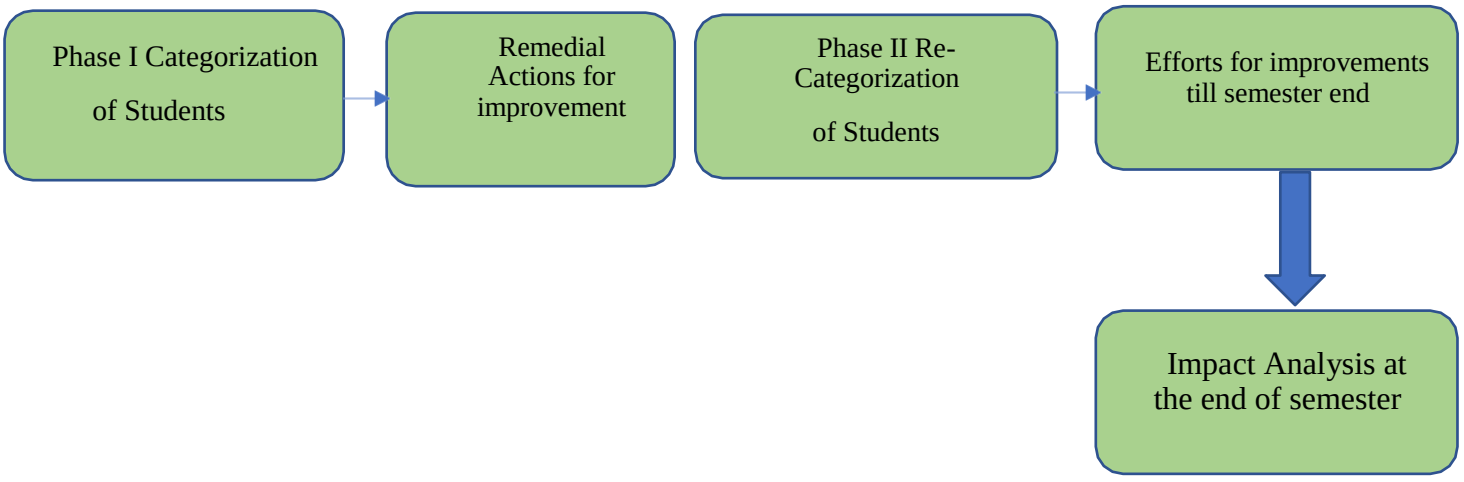


Target/Attainment



Threshold % for attainment	50
Degree of Attainment	
3 ≥ 70%	High
2 ≥60%	Med
1 ≥ 50%	Low

Student competency



Guidelines for First semester

Phase I- Categorization (Commencement of Semester)	Phase II- Re-categorization(After 30 Days)
Last Qualifying Exam	Assignment/Mid Term Result
Roots Exam	Timely Completion/Submission of work
Attendance & Soft Skills	Attendance & Soft Skills
Technical Knowledge	Lab Performance

Guidelines for Intermediate semester

Phase I- Categorization (Commencement of Semester)	Phase II- Re-categorization(After 30 Days)
Last End Semester Examination	Assignment/Mid Term Result
Attendance & Soft skills	Attendance & Soft skills
Assessment	Assessment
Technical Knowledge	Lab Performance

Strategies for Slow, Average and Advanced Learners

For Slowlearners

- Document/record of remedial classes with timetable & attendance
- Specially designed assignment/ task
- Student study group for peer-to-peerlearning
- Individual Mentoring (Tutor Guardian)

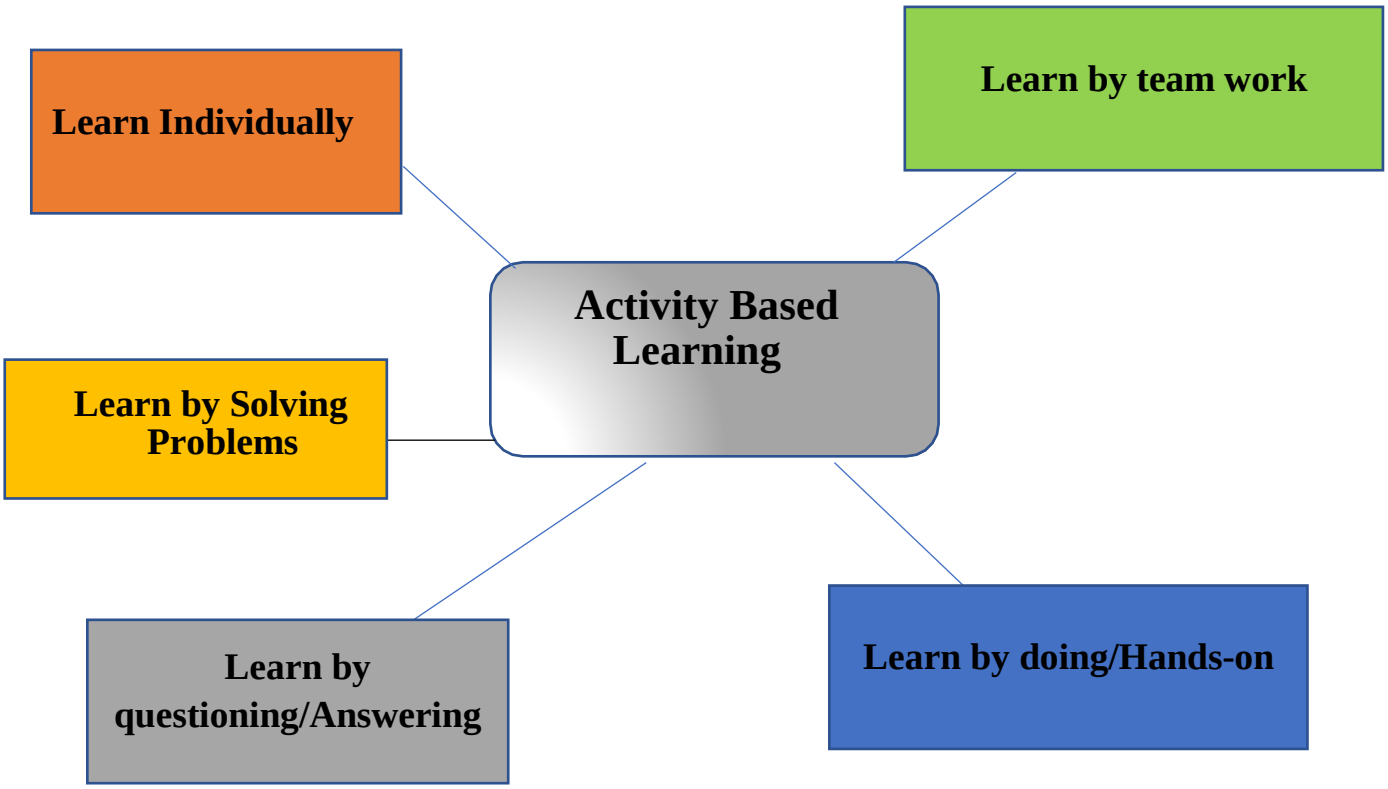
For Average Learners

- Additional assignment/ task
- Encouraging for timely and effective completion of work
- Conduction of quiz, orals etc.
- Solving previous year University question papers and test papers
- Presentation on technical topics/ case studies/mini projects

For Advanced Learners

- Encouraging to present & publish papers in journals/conferences/competitions
- Guidance for GPAT/competitive Examination
- Encouraging to participate in professional activities.
- Specially designed activities to improve the portfolio of students.
- Individual guidance for career building.

Activity Based Learning



List of Assessment Tools

All (Direct + Indirect) CO Assessment Tools = PO Direct Assessment Tools

Sample CO Assessment Tools

- Mid Term Test/Sessional
- End Term Test
- Quiz
- Assignment
- Practical/ Lab work
- Industrial Visit, Workshop
- Other Task/Activity
- End Semester Exam
- Oral
- Course Exit Survey

- External Feedback (External Examiner/Trainer, Campus Placement Technical Expert)

Direct Tools: (Measurable in terms of marks and w.r.t. CO) Assessment done by faculty at Institute level

Indirect Tools: (Non measurable in terms of marks and w.r.t. CO) Assessment done at University level.

Assessment Pattern

CIA- Continuous Internal Assessment (30 Marks)

Assessment Parameters	Assessment Tools	Marks	Percentage (%)	Bloom's Taxonomy Category	Bloom's Taxonomy Level LOT/HOT

Assignment 1	Assignment consisting of minimum 5 Questions	10	20	Remember, Understand, Apply	LOT
Assignment 2	Assignment consisting of minimum 2 Questions	10	20	Analyze, Evaluate, Create	HOT
Teacher Assessment/ Class Participation					
Teacher Assessment 1	Quiz, Case Studies, Presentations, Group Discussion, Lab work, Project or any other activity	10	20	Remember, Understand, Apply	LOT
Teacher Assessment 2	Quiz, Case Studies, Presentations, Group Discussion, Lab work, Project or any other activity	10	20	Analyze, Evaluate, Create	HOT
Class Participation	Brainstorming, Discussion, Attendance, Extempore or any other activity	10	20		

ESE- End Semester Examination (70 Marks)

Bloom's Taxonomy Category	ESE Question Paper Section	Percentage (%)	Bloom's Taxonomy Level LOT/HOT
Remember	A	30	LOT
Understand	A		
Apply	B	40	LOT/ HOT
Analyze	B		
Evaluate & Create	C	30	HOT

CO & PO Attainment Calculation:

I. Marks Distribution for both CIA & ESE

Sample academic regulations

Semester End Exam	Assignment I/Mid Sem	Assignment II	Teacher Assessment
70	10	10	10

II. Mapping of Course Outcomes and Program Outcomes:

Sample CO-PO Mapping

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	1				3							
CO 2			2		3							
CO 3		2	2									
CO 4					3							1

(Level of Correlation: 3-High, 2-Medium, 1-Low)

Sample correlation of Blooms Taxonomy level with Assessment Tools

Course Outcome (CO)	Program Outcome (PO)	Bloom's Taxonomy Level	Assessing Tools can be used to measure CO	Contact Hour Total 36 Hours	Level of Correlation
CO1	PO 1	Understand	Assignment 1, ESE	08 hours	Low [1]
	PO 5	Understand, Analyze	Assignment 1, Assessment 1, Brainstorming		Medium [2]
CO2	PO 3	Understand	Assignment 2 ESE, Assessment 3	11 Hours	Medium [2]
	PO 5	Understand, Analyze	Assignment 2 Assessment 1, Assessment 3, ESE		High [3]
CO3	PO 2	Understand, Apply	Assessment 2, Assignment 2, ESE	08 Hours	Medium [2]
	PO3	Understand	Assessment 2, ESE, Assignment 2		Medium [2]
CO4	PO5	Understand, Analyze	Assignment 2, Assessment 4, ESE, QUIZ	09 Hours	High (3)
	PO12	Analyze	Assessment 4, ESE		Low [1]

III. Develop list of Assessment Tools for each course outcomes

Sample Mapping of Assessment Tools & Course Outcomes

Course Outcome	Assessment Tool
CO1	Final exam, Assignment, quiz, midterm, test, Lab assignment, Lab quiz, lab performance
CO2	Final exam, Assignment, quiz, midterm, test, brainstorming, Lab assignment, Lab quiz, lab performance
CO3	Final exam, Assignment, test, quiz, midterm, Lab assignment, lab end exam, Lab quiz, lab performance, end sem practical
CO4	Final exam, Assignment, quiz, midterm, test, Lab assignment, Lab quiz, lab performance

Distribution of questions of Continuous Internal Assessment & Semester End Examination as per CO

Course outcome	Assignment					Test			Mid term		End sem exam	quiz	GD/ Seminar/ Brainstorming/ class performance/ Project	end sessional	Lab quiz	lab assignment	Lab performance
	A1	A2	A3	A4	A5	T1	T2	T3	MT1	MT2							
CO1	q1, q2, q3, q4					q1, q2				q8	q1, q2(a)	q6, q7, q10, q11			V1, v2	PA1, PA2	P1, P2
CO2		q1, q2		q2, q3					q3, q7		q3	q13	1		V3	PA3	P3
CO3		q3, q4	q1, q2, q3, q4				q1, q2		q1, q2, q4, q5, q6		q4, q5	q1, q2, q3, q4, q5		1	V$,V5, V6	PA4, PA5, PA6	P4, P5, P6
CO4				q1, q4						q1, q2	q6	q7, q8, q9			V7, V8	PA7, PA8	P7, P8
CO5					q1, q2, q3, q4			q1, q2		q3, q4, q5, q6	q7, q8	q15, q16, q17, q18, q19, q20			V9, V10	PA9, PA10	P9, P10

IV. Define threshold value for Attainment:

Threshold % for attainment	50
	Degree of Attainment
3 ≥ 70%	High
2 ≥60%	Med
1 ≥ 50%	Low

Sample calculation of OBE Attainment

Part: A Continuous Internal Assessment (CIA)

Assignment 1 is from CO 1

SL.NO.	ROLL NO	Status (Present/Absent)	Marks Obtained in Assignment 1	Marks in Percentage	Degree of Correlation
1	1001	PRESENT	8.00	80.00	3.00
2	1002	PRESENT	9.00	90.00	3.00
3	1003	PRESENT	9.00	90.00	3.00
4	1004	PRESENT	9.00	90.00	3.00
5	1005	PRESENT	9.00	90.00	3.00
6	1006	PRESENT	8.50	85.00	3.00
7	1007	PRESENT	9.00	90.00	3.00
8	1008	PRESENT	8.50	85.00	3.00
9	1009	PRESENT	8.00	80.00	3.00
10	1010	PRESENT	7.50	75.00	3.00
			AVERAGE OF DEGREE		3.00

Student Wise Continuous Internal Assessment (CIA) - CO ATTAINMENT							
SL.NO.	ROLL NO	Status (Present/Absent)	CO 1	CO2	CO 3	CO 4	AVG
1	1001	PRESENT	3.00	3.00	3.00	3.00	3.00
2	1002	PRESENT	3.00	3.00	3.00	3.00	3.00
3	1003	PRESENT	3.00	3.00	3.00	3.00	3.00
4	1004	PRESENT	3.00	3.00	3.00	3.00	3.00
5	1005	PRESENT	3.00	3.00	3.00	3.00	3.00
6	1006	PRESENT	3.00	3.00	3.00	3.00	3.00
7	1007	PRESENT	3.00	3.00	3.00	3.00	3.00
8	1008	PRESENT	3.00	3.00	3.00	3.00	3.00
9	1009	PRESENT	3.00	3.00	3.00	3.00	3.00
10	1010	PRESENT	3.00	3.00	3.00	3.00	3.00
			3.00	3.00	3.00	3.00	3.00

CO INTERNAL ATTAINMENT	
CO AVERAGE CORRELATION	
CO 1	3.00
CO 2	3.00

CO 3	**3.00**
CO 4	**3.00**

PO attainment Formula = [Deg of Correlation of mapped PO -CO * Avg. Deg of Correlation of mapped CO] / [Deg of Correlation of mapped PO -CO]

PO Attainment: Continuous Internal Assessment	
PO1	3.00
PO2	3.00
PO3	3.00
PO5	3.00
PO12	3.00

Part: B End Semester Examination (ESE)
Question No. 2 & Question No. 4 is from CO 1

SL.NO.	ROLL NO	Status (Present/Absent)	Marks Obtained in Question No 2	Marks in Percentage	Degree of Correlation	Marks Obtained in Question No 4	Marks in Percentage	Degree of Correlation	AVG
1	1001	PRESENT	8	80.00	3.00				3.00
2	1002	PRESENT	8	80.00	3.00				3.00
3	1003	PRESENT							
4	1004	PRESENT							
5	1005	PRESENT							
6	1006	PRESENT							
7	1007	PRESENT							
8	1008	PRESENT				7	70.00	3.00	3.00
9	1009	PRESENT	6	60.00	2.00				2.00
10	1010	PRESENT	7	70.00	3.00	6	60.00	2.00	2.50
			Average Degree for Q.No 02		2.75	Average Degree for Q.No 04		2.50	**2.70**

Student Wise End Semester Examination (ESE) CO Attainment							
SL.NO.	ROLL NO	Status (Present/Absent)	CO 1	CO2	CO 3	CO4	Average
1	1001	PRESENT	3.00	2.50		3.00	2.83
2	1002	PRESENT	3.00	3.00	3.00	3.00	3.00
3	1003	PRESENT		3.00	3.00	3.00	3.00
4	1004	PRESENT		3.00	3.00	3.00	3.00
5	1005	PRESENT		3.00	3.00	3.00	3.00
6	1006	PRESENT		3.00	3.00	3.00	3.00
7	1007	PRESENT		3.00	3.00	3.00	3.00
8	1008	PRESENT	3.00	3.00	2.50	3.00	2.88

9	1009	PRESENT	2.00	1.50	0.00	1.00	1.13
10	1010	PRESENT	2.50	2.50	0.00		1.67
			2.70	**2.75**	**2.28**	**2.78**	2.65

Attainment CO: End Semester Examination (ESE)	
COURSE OUTCOME CORRELATION	AVERAGE
CO 1	2.70
CO 2	2.75
CO 3	2.28
CO 4	2.78

Attainment PO: End Semester Examination (ESE)	
PO1	2.70
PO2	2.28
PO3	2.51
PO5	2.74
PO12	2.78

Part: C CO-PO Attainment

CO - PO MAPPING												
	PO 1	PO 2	PO 3	PO4	PO 5	PO6	PO7	PO8	PO9	PO10	PO11	PO1 2
CO1	1				3							
CO2			2		3							
CO3		2	2									
CO4					3							1
Wt Avg	1	2	2		3							1
										Overall Mapping of Subject		1.8

	Overall CO Attainment			
	CO1	CO2	CO 3	CO 4
CIA	3.00	3.00	3.00	3.00
Weightage (50%)	1.50	1.50	1.50	1.50
End Sem	2.70	2.75	2.28	2.78
Weightage (50%)	1.35	1.37	1.14	1.39
Final Attainment	2.85	2.87	2.64	2.89

	PO1	PO2	PO3	PO4	PO 5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	Attn (CO/3)
CO1	0.95				2.85								0.95
CO2			1.89		2.83								0.94
CO3		1.74	1.74										0.87
CO4					2.69							0.90	0.90
Wt Avg	0.95	1.74	1.81		2.79							0.90	
						Overall Attainment of Course						1.64	

PO Attainment

PO1	PO 2	PO3	PO4	PO 5	PO6	PO7	PO8	PO9	PO10	PO11	PO1 2
2.85	2.64	2.75		2.87							2.89

Overall Attainment (ESE & CIA) of course

Total % attainment of course	90.87

Continuous Improvement

I. Contribution of CO in PO attainment and Continuous Improvement (Faculty Level)

Outcome	Action to be taken by faculty
High attainment of all CO-PO (>2.5 out of 3)	Set new higher targets or attainment levels for next Academic Year (A.Y.).
Moderate attainment of all CO-PO (1.8 to 2.49 out of 3)	Record observations, Continue action plan of last A.Y. with plan for improvements.
Low attainment of all CO-PO(0.9 to 1.79 out of 3)	Record observations, assess the target set, revise/improve action plan of last A.Y. to achieve the attainment with plan for improvements.
CO-PO not attained, poor performance (<0.9 out of 3)	Record observations, Critical assessment of target with Program Assessment Committee (PAC), Revise action plan of last A.Y. at faculty/department level.

II. POattainment and Continuous Improvement (PC and HoD Level)

Category	Outcome	Action by PO and HoD
Course Related	PO attainedhighly	Include activities with HOT.
	PO not attained highly	Identify concerned courses, plan for immediate improvements, guide, support and monitor its execution.
Activity Related	Activities Conducted	Critical assessment, impact analysis to be done and revise as per the need for improvements.