Quality Manual
Outcome Based Education

with effect from
2017-18

Vision and Mission

Assessment Tools

Programme Outcomes

Outcome Based Education

Curriculum Coherence

Learning Outcomes

Curriculum Mind Map

Programme Education Objective

Dr. NGPASC
COIMBATORE | INDIA

CONTENT

	Dr. N.G.P. ARTS AND SCIENCE COLLEGE	
	(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)	**OBE MANUAL**
	Approved by Government of Tamil Nadu and Accredited by NAAC with 'A' Grade (2nd Cycle)	
	Dr. N.G.P. – Kalapatti Road, Coimbatore-641048, Tamil Nadu, India	
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PREFACE

Outcome Based Education is a student-centric instruction model that focuses on measuring student performance through outcomes. Outcomes include knowledge, skills and attitudes. Its focus remains on evaluation of outcomes of the program by stating the knowledge, skill and behavior a graduate is expected to attain upon completion of a programme. OBE is aperformance-based approach, offers a powerful and appealing way of reforming and managing education. The emphasis is on the product, what sort of graduates would be produced, rather than on the educational process. In OBE, the educational outcomes are clearly and definitely specified. Itdetermines the curriculum content and its organization, courses offered, teaching methods and strategies and the assessment processes.

Outcome based education should have a broader perspective of grooming students as good citizens and strengthening democracy. And, this would come only with the cooperation of all teachers when they played an active role. OBE is moving from teacher centric learning to learner centric learning. The teacher and learner both need to be engaged. The teacher has to be an active agency of teaching, which has to deeply engage the learner by allowing space for questions, arguments and making the teaching - learning process lively.Our college graduate should have the combination of different kinds of knowledge, skills and attitudes.

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OBE MANUAL

1. COLLEGE VISION

To instill Character in the minds of the students by providing value Based Education to manifest the perfection already in them and to enable them to excel by providing Quality Higher Education and Research opportunities on par with International Standards.

2. COLLEGE MISSION

To provide Quality Education, Training and Research facilities to the students of our nation and the world. To inculcate ethical, moral and social values in the minds of educators and students and also to motivate and nurture co-operation, tolerance and mutual respect in our nation of diversity.

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3.OBE PROCESS AND FRAMEWORK

There are four levels of outcomes are considered in OBE Processes such as Course Outcomes (CO), Program Outcomes (PO), Program Specific Outcomes (PSO) and Program Educational Objectives (PEO).

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO refers to specific goals consistent with the institutions mission and vision that are responsive to the expressed interest of programme stakeholders, in particular the requirements of professional bodies. PEOs describe the expected achievements of graduates in their career and professional life a few years after graduation.

PROGRAMME OUTCOMES (POs)

PO refers to the statements that describe what students are expected to know and be able to perform or attain by the time of graduation. These relate to the skills, knowledge, and behavior that students acquire through the programme. It is vital for lecturers and students to visualize the relevance of POs in achieving the overarching PEOs of their programme.

PROGRAM SPECIFIC OUTCOMES (PSOs)

Program Specific Outcomes are the statements that assert what the grandaunts of a specific programme should do what they can able to do.

COURSE OUTCOMES (COs)

Course Outcome is a statement that describes what students are expected to know and be able to perform or attain upon completion of a course. Each CO contributes to the achievement of PO via curriculum design, course delivery and assessment tasks that are most appropriate to attain that CO.

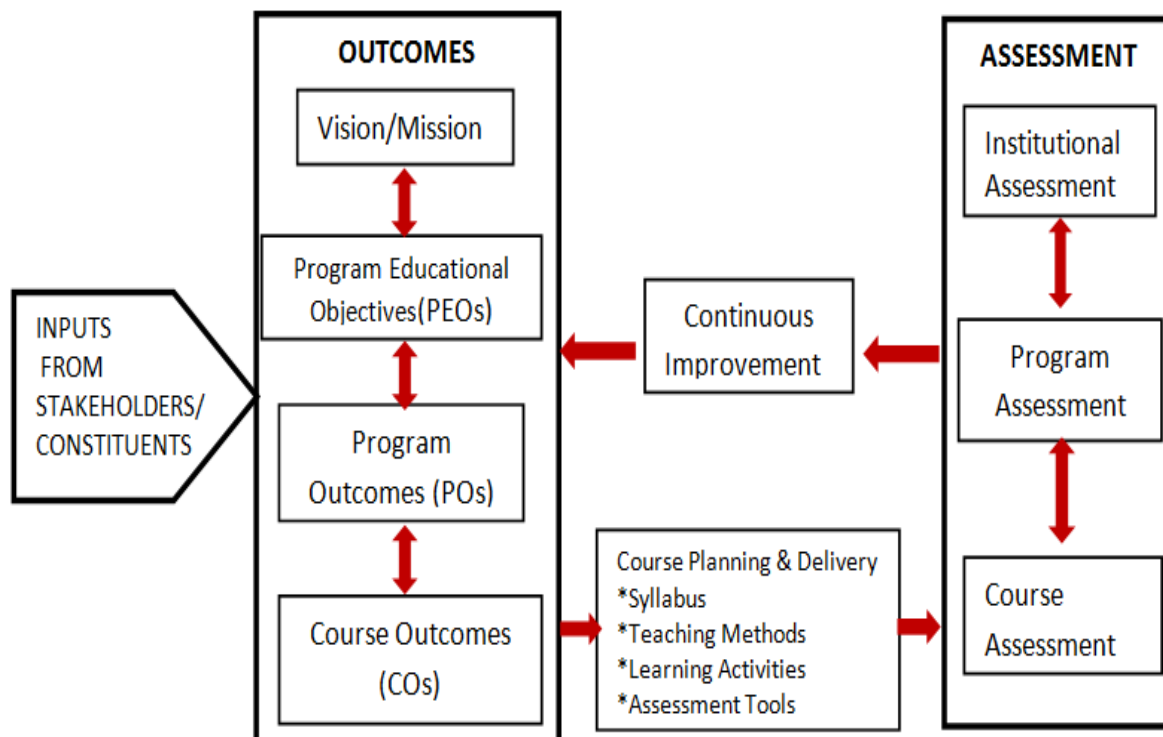|	**Dr. N.G.P. ARTS AND SCIENCE COLLEGE**	
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Figure 1: OBE Framework

OBE ADDRESSES THE FOLLOWING

• What the students should be able to do? – **OBE(Education)**

• How to align outcomes with the syllabus? – **OBC(Curriculum)**

• How to make the students to achieve the outcomes? – **OBLT (Learning and Teaching)**

• How to measure the students' success? – **OBA(Assessment)**

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3.1. OUTCOME BASED CURRICULUM

Outcome-based education approaches the curriculum decision making based on the competencies students should demonstrate at the end of their educational program, thus the outcomes or competencies dictate the curriculum content and organization, the teaching methods and strategies, the course offered, the educational environment and the assessment strategies. All curriculum and teaching decisions are made based on how best to facilitate the desired final outcome.

Steps for planning and implementing outcome based curriculum:

1. **Deciding on the outcomes:**

    The educational outcomes are clearly identified and unambiguously specified regarding the content, context and competence.

2. **Demonstrating outcomes:**

    The expected outcome should be defined by setting benchmarks for each level of the program. Each benchmark is a skill that must be demonstrated by the student. Benchmarks should tackle and define specifically the goals of the curriculum and verify ways to assess whether students have reached these goals at that level of study.

3. **Deciding on contents and teaching strategies:**

    OBE can be implemented as a whole class models which aim to bring all learners in a classroom up to high levels of learning before proceeding further or by the Flexible models which use flexible grouping, continuous progress, technological approaches and instructional management.

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4. Assessments in OBE:

OBE is driven by assessments that focus on well-defined learning outcomes and not by other factors such as what is taught, the duration taken by the 10 students to achieve the outcomes or which path the students take to achieve their targets.

The outcome-based curriculum is based on following levels,

1. **Institution Level**
   - Vision and Mission of the Institution and Department
   - Framework of curriculum

2. **Programme Level**
   - PEOs, POs, PSOs

3. **Course Level**
   - Course Design (COs)
   - Content Delivery (Theory, Practical, Project, Assignment, Tutorial etc….)

3.2. OUTCOME BASED LEARNING AND TEACHING

Outcome-based Teaching and Learning (OBTL) is a student-centered education approach where the programmes intended learning outcomes are explicitly defined for students to achieve. Teaching and learning activities are then carefully designed to facilitate students to achieve these outcomes. The success of OBTL is based on evidences from the assessment results and student learning experience. Periodic reviews of these evidences will lead to continuous improvement of programme quality.

The Outcome based Teaching and learning approach focuses on:

- The alignment of the desired graduate attributes, programme intended learning outcomes and module intended learning outcomes.
- The development of teaching and learning activities in enhancing student learning experiences.
- The design of assessment processes to monitor students' learning progress and the achievement of the desired outcomes and attributes.

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- The collection of stakeholders' feedback for continuous improvement.

Delivery of an Outcome Based Curriculum to the students by providing the,

- Syllabus
- Course Plan
- Lecture Notes
- Learning Styles

3.3. OUTCOME BASED ASSESSMENT

Assessment is one or more processes which is carried out by the institution, that identify, collect and prepare data to evaluate the achievement of course outcomes and program outcomes.

Attainment is the action of achieving a standard result towards accomplishment of desired goals. Primarily attainment is the standard of academic attainment as observed by test and examination result.

Two types of CO assessment methods are employed in Outcome Based Assessment,

1. **Direct Assessment**

2. **Indirect Assessment**

The direct methods **(Mark based Assessments)** display the student's knowledge and skills from their performance in the continuous internal assessment tests, semester examinations and supporting activities such as seminars, assignments, case study, group discussion, online quiz, mini project etc., These methods provide a sampling of what students know and can do and provide strong evidence of student learning.

The indirect method **(Survey based Assessments)** done through surveys and interviews, it asks the stakeholders to reflect their views on student's learning. The institute assesses opinions or thoughts about graduate's knowledge or skills by different stakeholders

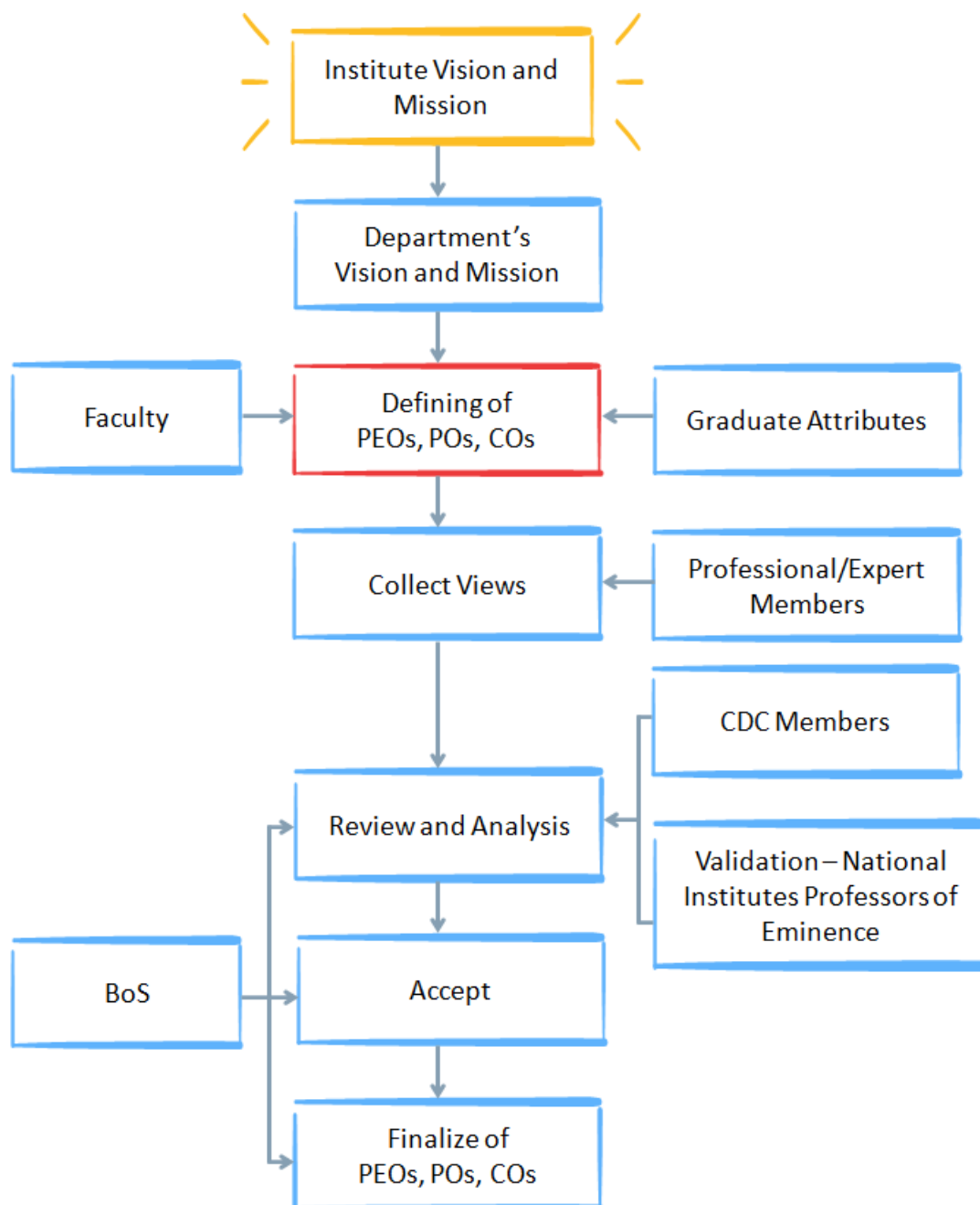|	**Dr. N.G.P. ARTS AND SCIENCE COLLEGE**	
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4. GRADUATE ATTRIBUTES (GAs)

On the successful completion of the programme, the following are the Graduate Attributes.

1. **Domain Knowledge**: Apply the knowledge in the relevant areas of arts, science and Management fields.
2. **Problem Analysis:** Identify and analyze the complex problems using the knowledge acquired in various domains.
3. **Design/Development of solutions:** Define solutions for complex problems with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Develop competency to carry out the research with their ability to design and execute the experiment.
5. **Society and ethics:** Apply contextual knowledge for societal welfare and commit to professional ethics.
6. **Environment and sustainability:** Understand the Environmental factors and focus towards sustainable development.
7. **Project management and team work:** Demonstrate knowledge and understanding the principles of Project management in various domains to lead effectively and work as team
8. **Communication:** Demonstrate the effective communication skills for interaction with personnel as well as presentation in appropriate forums.
9. **Inculcate innovative thinking:** To identify the sources of business opportunity and develop entrepreneurial skills for entrepreneurship development.
10. **Lifelong learning:** Recognize the needs to engage in lifelong learning with moral values.

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5. PROCESS TO DEPICT PEOs, POs AND COs OF THE DEPARTMENT

The process steps followed for establishing the Vision, Mission, PEOs, POs and Cos for programmes are illustrated in the flow chart

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5. BLOOM'S KNOWLEDGE LEVELS& ACTION VERBS

Action Verbs to be used for different knowledge level while framing the question paper

Knowledge level		Action Verbs
K1	**Remembering**	Choose • Define • Find • How • Label • List • Match • Name • Omit • Recall • Relate • Select• Show • Tell • What • When • Where • Which • Who • Why
K2	**Understanding**	Classify • Compare • Contrast • Demonstrate • Explain • Extend • Illustrate • Infer • Interpret • Outline • Relate • Rephrase • Show • Summarize • Translate • Journalize
K3	**Applying**	Apply • Build • Choose • Construct • Develop • Experiment with • Identify • Make use of • Model • Organize • Plan • Select • Solve • Utilize •Prepare
K4	**Analyzing**	Analyze • Assume • Categorize • Classify • Compare • Conclusion • Contrast • Discover •Dissect • Distinguish • Divide • Examine • Function • Inference • Inspect • List • Motive •Relationships • Simplify • Survey • Take part in • Test for • Theme •Journalize
K5	**Evaluating**	Agree • Appraise • Assess • Award • Choose • Compare • Conclude • Criteria • Criticize •Decide • Deduct • Defend • Determine • Disprove • Estimate • Evaluate • Explain •Importance • Influence • Interpret • Judge • Justify • Mark • Measure • Opinion • Perceive • Prioritize • Prove • Rate • Recommend • Rule on • Select • Support • Solve •Value •Journalize •Prepare • Solve
K6	**Creating**	Adapt • Build • Change • Choose • Combine • Compile • Compose • Construct • Create •Delete • Design • Develop • Discuss • Elaborate • Estimate • Formulate • Happen • Imagine •Improve • Invent • Make up • Maximize • Minimize • Modify • Original • Originate • Plan •Predict • Propose • Solution • Solve • Suppose • Test • Theory

Table 1: Action Verbs

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7. RUBRICS

Rubric means "a scoring guide used to evaluate the quality of students' constructed responses". It is a set of criteria for grading assignments, seminar, and class participation and so on.

RUBRICS ASSESSMENT

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Department of _____

Continuous Assessment OBE Rubrics Score Sheet

Degree: _____   Branch: _____   Semester: _____

Subject Code: _____   Subject: _____

Max. Marks: Internal:_____   External: _____   Total: _____

S. No.	REG. NO	THEORY / PRACTICAL& LIBRARY CLASS PARTICIPATION (15) (Compulsory)				RUBRICS ASSESSMENT (SELECT ANY ONE)									Total Marks out of : 30	Total Marks out of : 16 / 10 / 08 /04
						PAPERS / REPORTS (15)			ASSIGNMENTS (15)			CLASS PRESENTATION (15)				
		Library	Integration of Knowledge	Interaction& Participation	Demonstration of Knowledge	Organization& Knowledge	Format & Spelling	Reference / Experiments	Demonstration of Knowledge	Format & Spelling	Reference	Content & Coherence	Creativity and Speaking Skills	Duration of Presentation		
		6	3	3	3	5	5	5	5	5	5	5	5	5		
1																
2																
3																

Table 2: Rubric Assessment

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8. KNOWLEDGE LEVELS IN QUESTION PAPER

Question paper pattern for UG Courses

Section	Knowledge level
Section A	K1 level only
Section B	K 1 & K2 level
Section C	K 2 & K3 level

Mark Allotted 50	Pattern	Knowledge Level
(Environmental Studies/ Human Rights/Women's Rights	10 Q open choice for 5 Q x 10M =50 Marks	K1 and K2 only
General awareness	100 MCQs x 0.5 M= 50 Marks	
Advanced Tamil	10 MCQs x 1M = 10 Marks 5 Q x 3 M = 15 Marks 5 Q x 5 M = 25 Marks	
Basic Tamil	5 MCQs x 2M = 10 Marks 5 fill in the blanks x 2M = 10 Marks	
	3 Q x 5 M = 15 Marks	

Question paper pattern for PG Courses

Section	Knowledge Level
Section A	K2
Section B	K2, K3
Section C	K4

Table 3: Knowledge levels in question paper

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End Semester Pattern

Section	Marks allotted	Pattern	Knowledge level
Section A	30	5 Q x 6M = 30 Marks (Internal Choice)	K2
Section B	50	5 Q x 10 M = 50 Marks (Internal Choice)	K2, K3
Section C	20	1 Q x 20 M=20 Marks (One Compulsory question from any of the 5 units)	K4

Table 4: Knowledge levels in End Semester question paper

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9. PROGRAMME OUTCOMES ASSESSMENT

Assessment of POs is done in two different methods as given in table.

Assessment Type	Weightage (%)	Tool
Direct	80%	Assignment, Seminar, Unit Test, CIA, ESE, Online Written test
Indirect	20%	Course End Survey, Stakeholder feedback, Program Exit Survey, Alumni Survey

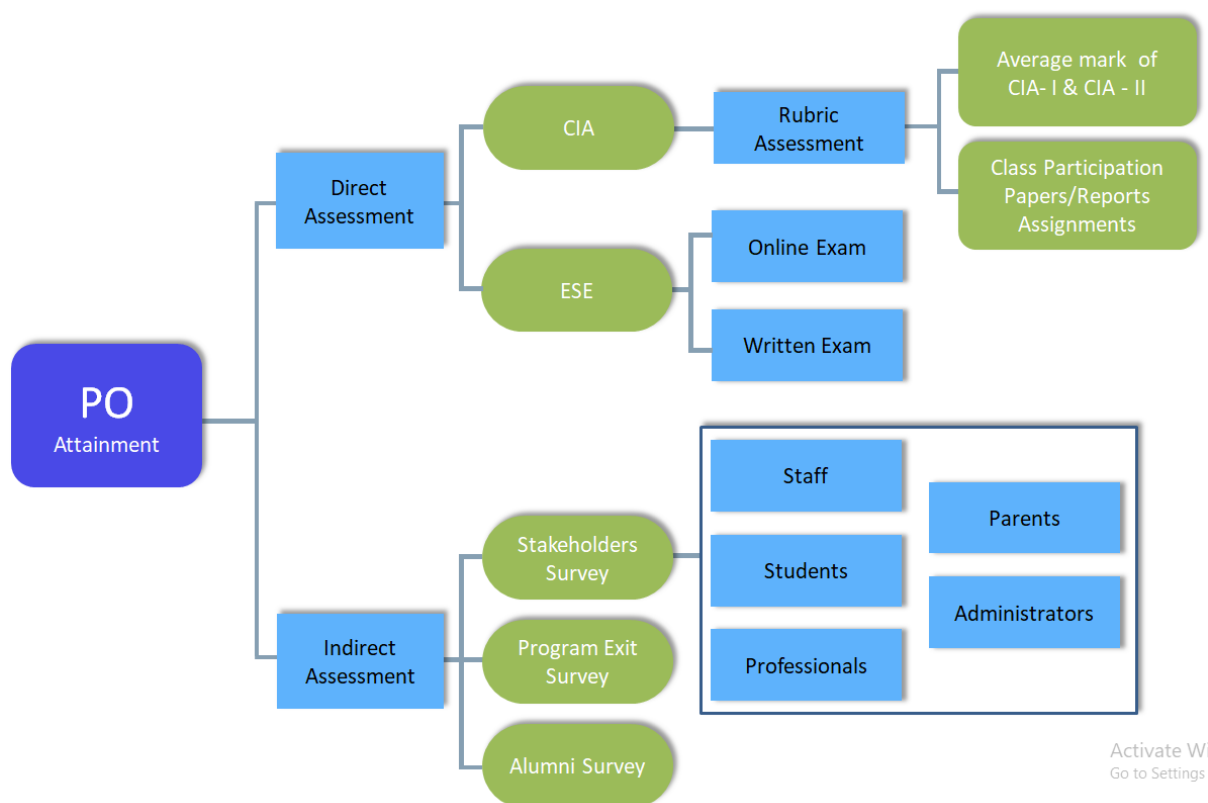Table 5: Methodology adopted for the calculation of PO Assessment

Figure 3: Assessment Process

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10. CO - PO ASSESSMENT TOOLS

The various direct and indirect assessment tools used to evaluate COs & POs and the frequency with which the assessment processes are carried out are detailed in Table.

Direct Assessment Tools Used For the Evaluation of CO and PO Assessment

CO and PO ASSESSMENT TOOLS					
		Course Type	**Assessment Tools**		**Minimum Frequency**
Direct (80% Weightage)	**CO Assessment**	**Theory**	Regular Class Evaluation	Class Test, Group Discussion, MCQ	Minimum of four
			Internal Evaluation	Average Mark of CIA-I & CIA -II	CIA Two per course
				Seminar/ Assignments	One per course
			End Semester Exam		One per course
		Practical	Internal Evaluation	During Practical Days	Every practical Class
				Model Practical Exam	One per course
			End Semester Exam		One per course
		Project	Internal Evaluation - Reviews		Twice per program
			End Semester Viva- Voce		One per program
		Internship Program/ Industrial Training	End Semester Viva		One per program
		Lab on Project	Group Project		One per program

Table 6: CO-PO Assessment Tools

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11. RECOMMENDATIONS BY PO CO COMMITTEE

The attainment of the Programme Outcome is a combined with the outcome of two components, the direct and indirect method of assessment. In most cases, the direct method is given more weightage (about 80%) and the indirect methods (about 20%) are given less weightage. The indirect method involves the 'Exit Survey' filled by the students. The survey may contain questions that are directly related to the Programme Outcomes. In direct method the attainment of the course outcomes, which are already mapped with the Programme Outcomes are cumulated and the average is calculated which in turn contributes to the calculation of the attainment of the Programme Outcome. This may alternatively be simplified by earmarking a few courses as culminating courses and the others as enabling courses.

The attainment of the course outcome of the culminating courses alone can be considered as direct component for the calculation of the Programme Outcome. But this requires a detailed mapping of the questions to the course outcomes. Only with a detailed mapping of the questions to the course outcomes and knowledge level, it may not be possible to calculate the attainment of the Programme Outcome effectively using the direct method. Since the implementation of Outcome-based Education is in a rudimentary stage, it is recommended to consider both direct and the indirect methods (Exit Survey) to calculate the attainment of the Programme Outcome. Further, it is recommended that the process of micro-level mapping of the questions with the course outcomes, calculation of attainment of the course outcomes and classification of culminating courses shall be done in the forthcoming academic year i.e. 2020 – 2021.

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12. CO – PO ATTAINMENT METHODOLOGY

CO Attainment - Course Level

Direct Method of CO Assessment (Mark Based) Weightage: 80%

Rubrics for Attainment of COs through CIA & ESE (For the Batches 2017- 2020 & 2018 -2021)

Attainment Level - 1:

50 % students scoring more than (40% for UG) and (50% for PG) marks out of the relevant maximum marks is considered to be attainment of "1"

Attainment Level - 2:

60 % students scoring more than (40% for UG) and (50% for PG) marks out of the relevant maximum marks is considered to be attainment of "2"

Attainment Level - 3:

70 % students scoring more than (40% for UG) and (50% for PG) marks out of the relevant maximum marks is considered to be attainment of "3"

Table 1 shows sample process of computing CO attainment in Direct Method for the CIA & ESE

S. No	Register No	Name	Course	Course Code 1			Course Code 2			Course Code 3		
			COs	CO1 – CO5								
			Target	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**
			Marks	Int	Ext	Total	Int	Ext	Total	Int	Ext	Total
1												
2												
.												
60												
Attainment Calculation (Direct Method)												
No. of students registered for the				60		60	60		60	60		60
No. of students attended				60		60	60		60	60		60
No. of student got >= 40%				45		52	48		50	40		39
% of student got>=40%				75%		87%	80%		83%	67%		65%
CO Attainment in CIA & ESE				3		3	3		3	2		2
weightage				**25**		**75**	**25**		**75**	**25**		**75**
CO attainment as weightage				0.75		2.25	0.75		2.25	0.5		1.5
CO Attainment for the course				**3**			**3**			**2**		

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Indirect Method of CO Assessment: (Survey Based) - Weightage: 20%)

Rubrics for Attainment of COs through Course End Survey

Attainment Level - 1:

50% students giving more than 3 is considered to be attainment of "1"

Attainment Level - 2:

60% students giving more than 3 is considered to be attainment of "2"

Attainment Level - 3:

70% students giving more than 3 is considered to be attainment of "3"

Table 2 shows sample process of computing CO attainment in Indirect Method

S. No	Course Code	Course Name	CO Average from Course Exit Survey	**CO Target**	CO Attainment through course end survey
1			81	**3**	3
2			72	**3**	2
3			76	**3**	2
4			80	**3**	3

Table 3 shows sample process of computing CO attainment
(Direct Assessment 80% + Indirect Assessment 20%)

S. No	Course Code	Course Name	CO Attained through Direct Assessment (From Table1)	CO Attained through Indirect Method (From Table2)	Direct Assessment (80%)	Indirect Assessment (20%)	Overall CO Attainment	Whether CO Attained / Not attained = overall
1			3	3	2.4	0.6	3	Attained
2			3	2	2.4	0.4	2.8	Attained
3			2	2	1.6	0.4	2.0	Attained
4			2	3	1.6	0.6	2.2	Attained

Over all Attainment of CO = (0.8*3) + (0.2*3) = 2.4 + 0.6 = 3

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PO Attainment – Programme Level

Overall PO Attainment (Overall PO calculation = 80%weightage for direct attainment and 20% weightage for indirect attainment)

Master Table - PO Attainment

Semester	Course Code and Name	CO Attainment from Table 3	PO1	PO2	PO3	PO4	PO5
		Target	**3**	**3**	**3**	**3**	**3**
I		**3**	3				
		2.8	2.8				
		2.0	2.0				
		2.2	2.2				
II							
	Direct Attainment		2.5				
	Indirect Attainment (Program Exit Survey)		3				
	Overall Attainment		2.6				
	PO Attainment(A/NA)		A				

Direct attainment of PO1= (3+2.8+2.0+2.2)/4 = 2.5

Over all Attainment of PO1 = (0.8*2.5) + (0.2*3) = 2. 6.

Note:

> **CO – PO Attainment Calculation Based on CO-PO Articulation Matrix**
>
> 1. **High correlation (S – Strong) = CO Attained * 1**
> 2. **Medium Correlation(M) = CO Attained *0.67**
> 3. **Low Correlation (L)= CO Attained*0.33**

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13. Action Taken Report (ATR)

Actions taken based on the results of evaluation of each of the POs

Faculty		Department	
Batch		Academic Year	

POs	Target Level	Attainment Level	Observations
PO1	**3**	**2.9**	**PO Attained**
PO1: Actions/Suggestions:			
PO2	**3**	**2.8**	**PO Attained**
PO2: Actions/Suggestions:			
PO3	**3**	**2.5**	**PO Attained**
PO3: Actions/Suggestions:			
PO4	**3**	**2.7**	**PO Attained**
PO4: Actions/Suggestions:			
PO5	**3**	**2.7**	**PO Attained**
PO5: Actions/Suggestions:			

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14. COURSE END SURVEY
SAMPLE

Degree & Branch		Regulation	
Course Name		Course Code	
Course Instructor		Semester &Class	
Designation		Academic Year	

Course Outcome:

CO1: Understand basics of PHP

CO2: Learn functions and objects in PHP.

CO3: Understand working with MySQL database using PHP.

CO4: Learn fundamental concepts of Python language

CO5: Remember the core functions and techniques used in Python

Rate the understanding level of the following (Tick the appropriate box)

S. No	CO	Questions	Excellent (4)	Good (3)	Moderate (2)	Fair (1)
1	CO1.1					
2	CO1.2					
3	CO2.1					
4	CO2.2					
5	CO3.1					
6	CO3.2					
7	CO4.1					
8	CO4.2					
9	CO5.1					
10	CO5.2					
Any other feedback/Suggestions						

CO1.1	CO1.2	CO2.1	CO2.2	CO3.1	CO3.2	CO4.1	CO4.2	CO5.1	CO5.2

CO1Average:	CO2Average:	CO3Average:	CO4 Average:	CO5Average:

Date:　　　　　　　　　**Name of Student**　　　　　　　**Signature of the Student**

COURSE END SURVEY (INDIRECT ANALYSIS)

Degree & Branch		Regulation	
Course Name		Course Code	
Course Instructor		Semester &Class	
Designation		Academic Year	

S. No.	Register No	Name	CO1	CO2	CO3	CO4	CO5
		SUM					
		AVERAGE					
		PERCENTAGE OF COURSE OUTCOME					

Course Instructor Signature   **HOD**

Note:

- **SUM = Total marks given by all students for CO1**
- **Average = SUM / Total No. Of students**
- **Percentage of CO = (SUM/ (Total No. of students*4)) *100**

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15. PO ATTAINMENT THROUGH PROGRAMME EXIT SURVEY
Sample

PROGRAMME EXIT SURVEY FORM
(To assess POs)

Student Name		Roll/Reg. No	
Programme	Commerce Banking and Insurance	**Batch**	**2017-2020**

Please tick (√) Appropriately

SI. No.	To what extent do you feel have learnt and will be able to do the following (which are the POs and PSO of the Program)	Very Good (4)	Good (3)	Average (2)	Poor (1)
1	Question related to PO 1				
2	Question related to PO 2				
3	Question related to PO 3				
4	Question related to PO 4				
5	Question related to PO 5				
Any other feedback/Suggestions					

Date   **Signature of the Student**

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Program Exit Survey – (Indirect Analysis)

Faculty		Academic Year	
Degree & Branch		Batch	

Roll No.	Name of the Student	POs				
		PO1	**PO2**	**PO3**	**PO4**	**PO5**
1		4	3	3	3	3
2		3	4	3	3	4
3		4	3	2	2	3
.		3	3	4	3	4
.		3	3	3	3	3
.		4	2	3	2	2
.		1	1	1	1	1
62		2	3	3	4	3
Count of Survey Scale Values	**2**	**11**	**15**	**7**	**16**	**9**
	3	**17**	**27**	**19**	**25**	**31**
	4	**27**	**10**	**23**	**4**	**7**
(a) Target Values of PO	*** Target Attainment level is 2 and above** ***Only Survey Scale values of 2, 3 and 4 will be considered.**					
(b) No. of Survey scale values 2,3		55	52	49	45	47
PO Attainment value in %= (b)/Total Students		93	88	83	76	80
PO Attainment through Program		3	3	3	3	3

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