



Shailabala Women's Autonomous College, Cuttack

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सत्यमेव जयते नानृतं सत्येन पन्था विततो देवयानः।

"Oldest Women's College of Odisha!"

Manual for CO-PO-PSO Attainment and Assessment Process

**Internal Quality Assurance Cell
Shailabala Women's Autonomous College, Cuttack**

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PREAMBLE

A very important objective of curriculum delivery is the attainment of Course Outcomes (COs), Programme Outcomes (POs), and Programme Specific Outcomes (PSOs) among students. The attainment helps to get an idea about the success of the teaching-learning process of the HEI. It gives an overview of the strong areas as well as areas that require further improvement. The attainment levels can be evaluated by a suitably designed software framework for all departments/subjects.

VISION

“Meritum Ethics”

Merit and Ethics refer to the duties of beneficence that we are required to perform in our individual and institutional lives. The institution contributes to the process of acquisition of knowledge as an active and continuous development of human reason in the direction of universal happiness.

MISSION

“Learning for Leadership”

Our mission is to provide quality education through academic, cultural and physical activities and prepare the talented youth as responsible and useful citizens for effective participation in all areas of developmental

STATEMENT OF OBE

Outcome-Based Education (OBE) is a student-centric teaching and learning methodology in which the course delivery and assessment are planned to achieve stated objectives and outcomes. It focuses on measuring student performance i.e. outcomes at different levels.

Outcome-based education (OBE) is an educational delivery model that focuses on mapping, measuring, and achieving predetermined educational goals to help students learn, develop, and nurture skills that would help them grow in their professional as well as personal lives.

We usually follow the 'constructive alignment' process for building the curriculum for OBE. This term was given by Professor John Biggs in 1999. It means the process of creating a learning environment that encourages various learning activities to achieve the desired learning outcomes.

PROGRAM LEARNING OUTCOME:

The programme learning outcomes should be determined based on the graduate attributes or skills. These Programme Learning Outcomes should be mapped against the Programme Educational Objectives and Bloom's Taxonomy of verbs. It is the abilities (Cognitive, Psychomotor and Affective) that a student should be able to demonstrate at the time of graduation. The Programme learning outcomes are the description of a student's knowledge, competencies, and value a student displayed at the time of completion of graduation.

Graduate Attributes

Graduate attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. GAs form a set of individually assessable outcomes of the programme as mentioned below.

Subject Knowledge

Problem Analysis

Design and Development of the Solution

Usage of Technology

Application of Knowledge in Society

Environment and Sustainability

Ethics and Values

Individual and Team Work

Effective Communication

Life Long Learning Ability

Culture, Patriotism and International Outlook

Positive Attitude and Open Mindedness

STATEMENT OF CO, PO, PSO

Course Outcomes (COs):

COs are the attributes and qualities the students should be able to do at the end of successful completion of a course. Each course leads to some COs which are stated considering the course content of different units and numbered as CO1, CO2, CO3, CO4 Three to five COs are given in each course. Bloom's taxonomy is followed while designing COs. COs are miniature of POs and PSOs and collectively contribute in achieving the POs and PSOs.

Bloom's Taxonomy



Programme Outcomes (POs):

POs are statements conveying the intent of a programme of study. POs are statements that describe key competencies, and capabilities (knowledge, skills, behaviours and attributes) students can demonstrate at the end of the intended programme. It also provides direction to the HEI for improvement. POs are numbered as PO1, PO2, PO3, The generalised POs are outlined below.

P01	Disciplinary Knowledge	Able to show thorough knowledge and grasp more academic subjects
P02	Communication Skills	Able to communicate ideas and concepts clearly both orally and in writing
P03	Critical Thinking	Being able to apply analytical thought to a body of information using different approaches
P04	Problem-Solving	Ability to extrapolate from what has been learned and apply one's competencies to solve various types of challenges /real-world circumstances.
P05	Research related Skills	Ability to recognize cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyze, interpret, and draw conclusions from data
P06	Team Work/ Cooperation	The ability to facilitate cooperative or coordinated effort on the part of a group, act together as a group or a team in the interests of a common cause, and work effectively as a member of a team
P07	Digital Literacy Skills	Capability to use ICT in a range of learning scenarios
P08	Self-directed Learning	Capacity to manage a project from start to finish determines the right resources needed for the project and operates independently.
P09	Moral & Ethical Awareness	Ability to uphold moral/ethical ideals in how one lives, to articulate a viewpoint or argument on an ethical topic from several angles, and to employ ethical practices in all aspects of one's job.
P010	Leadership Qualities/ Readiness	Ability to plan out the responsibilities of a team or organization, to define direction, to create a team that can help realize the vision, to inspire and motivate team members to connect with that vision

Programme Specific Outcomes (PSOs):

PSOs define the expertise expected from the student by the end of any course. It is different for every course based on what field of expertise the students are studying, over the course duration. The courses are preparing the students to accomplish those goals before graduating. They are expected to be aligned with the graduate attributes.

Program Educational Objectives (PEOs)

Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing the graduates to achieve during the first few years after graduation.

COs, POs, AND PSOs MAPPING OF EACH COURSE AND PROGRAMME

The process of attainment of COs, and POs starts with appropriate COs for each course of the programme from the first year to the last year of the programme. A correlation is established between COs and POs on a scale of 1 to 3 where 1 being a slight correlation (low), 2 being a moderate correlation (medium), and 3 being a substantial correlation (high). If there is no correlation then assign zero (0). A mapping matrix is prepared in this regard for every course in the programme including the elective subjects.

Once the COs, POs, and PSOs mapping of each course is over, the average of COs, POs, and PSOs mapping of all courses in a programme was evaluated. All these works have to be done under the guidance of the Internal Quality Assurance Cell (IQAC).

Attainment of Programme Outcomes (POs):

Mapping Factor (Correlation Level): It indicates to what extent a certain Course Outcome is related to the Programme Outcome i.e. the importance of a CO in fulfilling a PO.

Three (3) indicates Substantial (high) mapping (high contribution of CO towards PO)

Two (2) indicates Moderate (medium) mapping (medium contribution of CO towards PO)

One (1) indicates Slight (low) mapping (some contribution of CO towards PO)

Mapping level	Remark
3	Highly correlated
2	Moderately correlated
1	Poorly Correlated

Sample of CO Attainment

UG (CHEMISTRY) No. of Students = 25

Table 1: CO attainment

% of marks	Attainment value
75-100	3
50-74.99	2
25-49.99	1
0-24.99	0

Table 2: Course Outcomes and Midsem Mapping

Group	Question No.	Full marks	CO1	CO2	CO3	CO4
A 2*2.5	Q1	2.5	2.5	0	0	0
	Q2	2.5	2.5	0	0	0
	Q3	2.5	0	2.5	0	0
	Q4	2.5	0	2.5	0	0
B 1*10	Q1	10	10	0	0	0
	Q2	10	0	10	0	0

Table 3: CO Attainment Calculation of Mid sem

Course Outcomes	No. of Students	Total marks allotted to CO	Total marks obtained by all students for CO	Percentage Marks	Attainment
CO1	14	210	170	80.95	3
CO2	11	165	130	78.78	3
CO3					
CO4					

Table 4: Course Outcomes and End Sem Question Mapping

Group	Question No.	Full marks	CO1	CO2	CO3	CO4
A 1*8	Q1	1	1	0	0	0
	Q2	1	1	0	0	0
	Q3	1	0	1	0	0
	Q4	1	0	1	0	0
	Q5	1	0	0	1	0
	Q6	1	0	0	1	0
	Q7	1	0	0	0	1
	Q8	1	0	0	0	1
B 1.5*8	Q1	1.5	1.5	0	0	0
	Q2	1.5	1.5	0	0	0
	Q3	1.5	0	1.5	0	0
	Q4	1.5	0	1.5	0	0
	Q5	1.5	0	1.5	0	0
	Q6	1.5	0	0	1.5	0
	Q7	1.5	0	0	1.5	0
	Q8	1.5	0	0	0	1.5
	Q9	1.5	0	0	0	1.5
	Q10	1.5	0	0	0	1.5

C 2*8	Q1	2	2	0	0	0
	Q2	2	2	0	0	0
	Q3	2	2	0	0	0
	Q4	2	0	2	0	0
	Q5	2	0	2	0	0
	Q6	2	0	0	2	0
	Q7	2	0	0	2	0
	Q8	2	0	0	2	0
	Q9	2	0	0	0	2
	Q10	2	0	0	0	2
D 6*4	Q1	6	6	0	0	0
	Q2	6	0	6	0	0
	Q3	6	0	0	6	0
	Q4	6	0	0	0	6

Table 5: CO Attainment Calculation of End Sem

Course Outcomes	Total marks allotted to CO	Total marks obtained by all students for CO	Percentage Marks	Attainment
CO1 2,3,6,6	17*25= 425	395	92.94	3
CO2 2,3,2,6	13*25=325	288	88.61	3
CO3 2,3,4,6	15*25=375	325	86.66	3
CO4 2,3,4,6	15*25=375	334	89.06	3

Table 6 : Course Outcomes and LAB Experiment Mapping

Activity	Full marks	LAB
Experiment	15	15
Viva-voce	6	6
Lab Record	4	4

Table 7: CO Attainment Calculation of End Sem

Course Outcomes	Total marks allotted to CO	Total marks obtained by all students for CO	Percentage Marks	Attainment
LAB	25*25= 625	583	93.28	3

Table 8: Overall CO Attainment Calculation

Course Outcome No	Mid Sem	End sem	LAB	Overall CO outcome
CO1	3	3	-	2.25
CO2	3	3	-	2.25
CO3	-	3	-	1.8
CO4	-	3	-	1.8
LAB	-	-	3	0.75

CO, PO, PSO MAPPING (UG CHEMISTRY)

Core Course XIII

OUTCOMES		PO										PSO					Sum of COs With PSOs & POs
CO	1	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	31
		3	2	2	2	1	2	1	1	3	3	3	2	2	3	1	
	2	2	3	3	2	1	1	1	2	2	3	2	2	2	3	3	34
	3	2	3	2	3	2	2	1	-	3	2	2	3	3	3	2	33
	4	3	2	3	2	1	1	2	2	3	3	3	2	3	2	2	34
Grand total of COs With PSOs & POs																	132
Mean value of COs With PSOs & POs = 132/59																	2.23

Mapping Scale	1	2	3
Relation	0.01-1.0	1.01-2.0	2.01-3.0
Quality	Low	Medium	High
Mean value of COs with POs & PSO			2.23
Observation	COs of Core Course XIII are strongly related with PSOs and POs		