

# C.S.J.M. UNIVERSITY, KANPUR

## OTUCOME BASED EDUCATION (OBE) POLICY

C.S.J.M. University, Kanpur follows an approach of outcome-based education (OBE) system which inculcates the student centred learning and teaching methodology. OBE is an educational model that forms the base of a quality education system. The Programme Educational Objectives (PEOs) Programme Outcomes (POs), Course Outcomes (Cos) are carefully drafted and aligned with the national goals and institutional vision and mission on higher education. 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.

The Key aspects in Outcome-Based Education (OBE) are the assessment of Course Outcomes. At the initial stage of OBE implementation, the Course Outcomes (COs) for each course are defined based on the Program Outcomes (POs) and other requirements. At the end of each course, the COs need to be assessed and evaluated to check whether they have been attained or not. 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.

### **What is Outcome Based Education (OBE)?**

Institutions adopting OBE try to bring changes to the curriculum by dynamically adapting to the requirements of the different stakeholders like Students, Parents, Industry Personnel and Recruiters. OBE is all about feedback and outcomes.

### **Benefits of OBE**

**Clarity:** The focus on outcome creates a clear expectation of what needs to be accomplished by the end 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's involvement allows them to feel responsible for their own learning, and they should learn more through this individual learning.

- Teaching will become a far more creative and innovative career
- Faculty members will no longer feel the pressure of having to be the “source of all knowledge”.
- Faculty members shape the thinking and vision of students towards a course.

The National Assessment and Accreditation Council (NAAC) is an autonomous body for promoting global quality standards of education in India. The National Assessment and Accreditation Council (NAAC) mandates establishing a culture of outcome-based education in institutions. Reports of outcome analysis help to find gaps and carry out continuous improvements in the education system of an Institute, which is very essential.

## **Some important aspects of the Outcome Based Education:**

**Course** is defined as a theory, practical or theory cum practical subject studied in a semester. For Eg. Social Psychology.

**Programme** is defined as the specialization or discipline of a Degree. It is the interconnected arrangement of courses, co-curricular and extracurricular activities to award a degree. For Example: B.Tech., Computer Science, BA (H) Economics etc.

**Program Educational Objectives (PEO):** These are broad statements that describe the career and professional accomplishments in four to five years after graduation that the program is preparing the graduates to achieve.

**Course Outcome (CO):** Course outcomes are the statements of what a student should know, understand and/or be able to demonstrate after completion of a course. While writing COs for a course, CO should be written using action verbs which are specific, measurable and can be demonstrated by students on completion of the course. Generally six or more course outcomes may be specified for each course based on its weightage. Course outcomes are the measurable parameters which evaluate each student's performance for each course that the student undertakes in every semester. Course Outcome statement may be broken down into two main components:

- **An action word** that identifies the performance to be demonstrated;
- **Learning statement** that specifies what learning will be demonstrated in the performance.

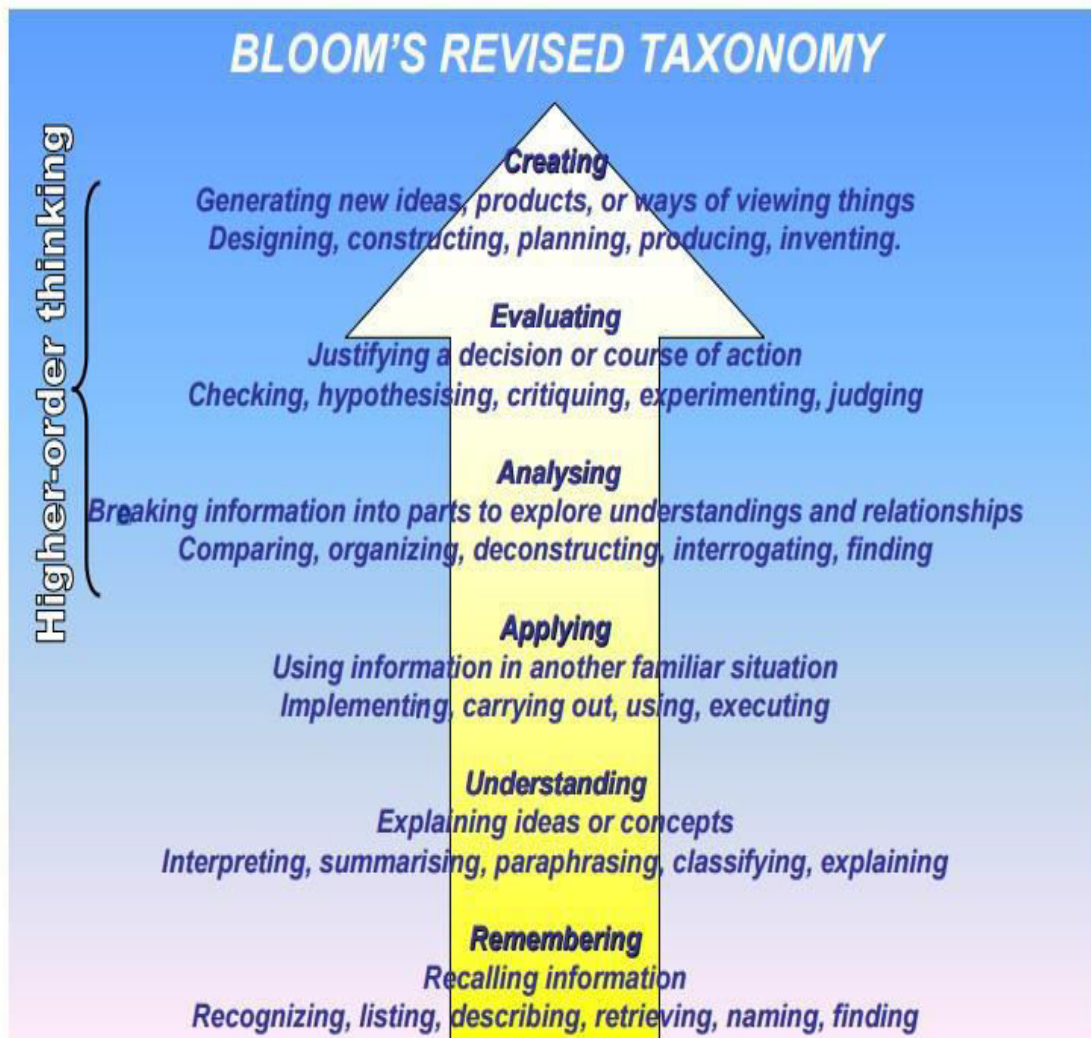
**Programme Specific Outcomes (PSO):** Programme Specific Outcomes are statements that describe what the graduates of a specific engineering program should be able to do.

**Programme Outcomes:** Programme outcomes are defined as the objectives achieved at the end of any specialization or discipline. These attributes are mapped while a student is doing graduation and

determined when they get a degree. Course Outcomes (CO) are defined for all courses and Program Outcomes (PO)/Program Specific Outcomes (PSO) are measured for all programs in the institution.

## **BLOOM'S TAXONOMY**

Bloom's Taxonomy was created in 1956 under the leadership of educational psychologist Dr Benjamin Bloom in order to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts. It is most often used when designing educational, training, and learning processes.



Retrieved from: <http://www.kurwongbss.qld.edu.au/thinking/Bloom/blooms.htm>

<b>The cognitive process dimensions- categories</b>					
<b>Lower Order of Thinking (LOT)</b>			<b>Higher Order of Thinking (HOT)</b>		
<b>Remember</b>	<b>Understand</b>	<b>Apply</b>	<b>Analyze</b>	<b>Evaluate</b>	<b>Create</b>
Recognizing (identifying)	Interpreting	Executing	Differentiating	Checking (coordinating, detecting, testing, monitoring)	Planning
Recalling (retrieving)	Illustrating	Implementing	Organizing	Critiquing (judging)	Generating
	Classifying		Attributing		Producing (constructing)
	Summarizing				
	Inferring (concluding)				
	Comparing				
	Explaining				

### **Action Verbs for Course Outcomes**

**Sample Action verbs:**

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

The process of attainment of COs, POs and PSOs starts from writing appropriate COs for each course of the program from first year to fourth year in a four-year engineering degree program. The course outcomes are written by the respective faculty member using action verbs of learning levels suggested by Bloom and Anderson. Then, a correlation is established between COs and POs in the scale of 1 to 3, 1 being the slight (low), 2 being moderate (medium) and 3 being substantial (high). A mapping matrix is prepared in this regard for every course in the program including the elective subjects. The course outcomes written and their mapping with POs are reviewed frequently by a committee of senior faculty members before they are finalized.

Attainment of the COs can be measured directly and indirectly. Direct attainment displays the student's knowledge and skills from their performance. It can be determined from the performance of the students in all the relevant assessment instruments like internal assessments, assignments, quiz and final examinations. These methods provide a sampling of what students know and/or can do and provide strong evidence of student learning.

Indirect methods such as Course End Surveys ask the students to reflect on their learning. They access opinions or thoughts about the graduate's knowledge or skills. Indirect measures can provide information about graduate's perception of their learning and how this learning is valued by different stakeholders.

### **Mapping Factor (Correlation Level)**

It indicates to what extent a certain component (either assessment method to CO or CO to PO or PO to PEO & PSO

- 3-indicates Substantial (high) mapping (high contribution towards attainment)
- 2-indicates Moderate (medium) mapping (medium contribution towards attainment)
- 1-indicates Slight (low) mapping (some contribution towards attainment)

# CO attainment Computation:

## CO – PO/ PSO Mapping

STEP-1 : For every subject 4-7 course outcomes (CO) are defined and mapped to Program outcomes (PO) on a scale of 0 to 3. Highest correlation is 3. For example,

<b>Program :</b>	B.Tech	<b>Branch :</b>				ECE	<b>Specilization :</b>									
<b>Session :</b>	2021-2022	<b>Sem :</b>				V										
<b>Course Code :</b>	ECE-S302	<b>Course Code :</b>				ECE-S302										
<b>Faculty Name :</b>		<b>Dept :</b>				ECE										
<b>PO Mapping Correlation</b> →	Blank = No Correlation				1 = Low				2 = Moderate				3 = High			
<b>Course Outcomes</b>		P O-1	P O-2	P O-3	P O-4	P O-5	P O-6	PO-7	P O-8	PO-9	PO-10		PS O-1	PS O-2	PS O-3	
<b>Statement of Course Outcome</b>	<b>COx</b>	Engineering knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The Engineer and Society	Environment and sustainability	Ethics	Individual and team work	Communications		Circuit Design Concepts	Signal Processing Domain	Communication Theory and Practice	
Understand mathematical description and representation of continuous and discrete time signals and systems	CO-1	2	3	2	2	3	2	1	1	1	2		2	2	2	
Analyze CT and DT systems in Time domain	CO-2	2	3	2	2	2	2	1	1	1	3		2	3	2	
Represent CT and DT systems in the Frequency domain	CO-3	2	3	2	2	3	2	1	1	1	2		2	2	2	
.sampling a CT signal.probability, random variables & random signals	CO-4	2	3	2	3	3	2	1	1	1	3		2	2	2	

Analyze systems using Laplace transforms and Z Transforms	CO-5	2	3	2	2	2	2	1	1	1	2		2	2	2
Subject_Code_CO_Mapping	Average	2	3	2	2.2	2.6	2	1	1	1	2.4		2	2.2	2

**Step 2 :** Maximum marks allotted to each question, mapped to a corresponding CO.

**College Name: School of Basic Sciences, UIET**

**Program, Branch, Specilization, Odd / Even Sem, Session, Section / Group**

**Computation of Course Outcomes (COs)**

Subject Code : CHM-S101

Program : B.TECH Specilization :

Subject Name : Basic Chemistry

Branch : CSE-AI Session :

2021-2022

S. No.	University Roll No	Student Name	Data of Direct (Internal) Assessment		Data of Direct (External) Assessment		Remarks, if any
			MM =	40	MM =	60	
			Marks Obt.	Per cent	Marks Obt.	Per cent	
1	CSJMA21001390133	ABHISAR SINGH RAGHUVANSHI	32	80	46	76.67	
2	CSJMA21001390134	ADARSH SAHU	30	75	53	88.33	
3	CSJMA21001390135	AMAN TYAGI	33	82.5	36	60	
4	CSJMA21001390136	ANKUR SINGH	38	95	55	91.67	
5	CSJMA21001390137	ANSHIKA SHARMA	38	95	48	80	
6	CSJMA21001390138	ASHWANI CHAUHAN	35	87.5	50	83.33	
7	CSJMA21001390139	ATUL KUMAR GUPTA	0	0	0	0	
33	CSJMA21001390165	NISHANT GUPTA	27	67.5	42	70	

**Computation of Course Outcome :**

	Int.	Ext
Total Students	33	33
Target Marks	40	60
No of Students securing Target Marks	31	32
Percent of Students securing Target Marks	93.9	97.0
Attainment Level	3	3

Weightage	CO-Attainment	
1	Direct	Direct (Internal) 3
0	Indirect	Direct (External) 3
0.2	Direct (Internal)	Indirect
0.8	Direct (External)	<b>CO-Attainment Value 3.00</b>
Green Cells - Input Value		

**Step 3 :** CO attainment value will be calculated on the basis of mapping and assessment.

<b>Institute Name:School of Basic Sciences, UIET</b>																
<b>Program :</b>	B.Tech				<b>Branch :</b>	CSE-AI				<b>Specilization :</b>						
<b>Session :</b>	2021-22				<b>Sem :</b>	I										
<b>Course Code :</b>	CHM-101				<b>Course Name :</b>	Basic Chemistry										
<b>Faculty Name :</b>	Dr. P.S. Niranjana				<b>Dept :</b>	Chemistry										
<b>PO Mapping Correlationè</b>	Blank = No Correlation				1 = Low				2 = Moderate				3 = High			
<b>PO Attainment</b>																
PO-Attainment of Course Code =>		P O-1	P O-2	P O-3	P O-4	P O-5	P O-6	P O-7	P O-8	PO -9	PO -10	P O -11	P O -12	PS O-1	PS O-2	
CO-PO Mapping Value (Average)		2.6	3	3	3	3	2.75	3		3				2.75		
CO-Attainment Value	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00		3.00				3.00		



**Step 4 : Program attainment will be calculated on the basis of Course attainment.**

**Institute Name**

**PO - Attainment : B Tech - ME Year 2020-21**

S. No.	All courses of the program, from I year to final year. For a batch / studied by the student			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	
	Subject Code	Subject Name	CO Attainment Value	Put same value of CO-attainment in all the CO-PO mapped cells - for each course.												
				Engineering knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The Engineer and Society	Environment and sustainability	Ethics	Individual and team work	Communications	Project management and finance	Life Long Learning	
1	KAS 101T / 201T	Engg Physics	2.00	2.00	2.00				2.00							2.00
2	KAS 151P / 251P	Engg Physics Lab	2.00	2.00	2.00						2.00	2.00				2.00
3	KAS 102T / 202T	Engg Chemistry	3.00	3.00	3.00				3.00	3.00						
19	KNC 101	Soft Skill-I	2.00			2.00	2.00		2.00		2.00	2.00	2.00	2.00	2.00	2.00
20	KNC 201	Soft Skill-II	2.00		2.00	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00		2.00
<b>PO Attainment</b>			<b>Value (3)</b>	<b>2.06</b>	<b>2.06</b>	<b>2.08</b>	<b>2.00</b>	<b>2.00</b>	<b>2.11</b>	<b>2.33</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>
			<b>Per cent</b>	<b>68.6</b>	<b>68.6</b>	<b>69.2</b>	<b>66.7</b>	<b>66.7</b>	<b>70.4</b>	<b>77.8</b>	<b>66.7</b>	<b>66.7</b>	<b>66.7</b>	<b>66.7</b>	<b>66.7</b>	<b>66.7</b>

**PO Indirect Attainment**

The perception of stakeholders are considered as part of the indirect assessment of PO and PSO attainment to a quantum of 20% towards overall calculation. Following are surveys and feedback collected

- Alumni Survey
- Graduate Exit Survey
- Parent Survey
- Employer Survey