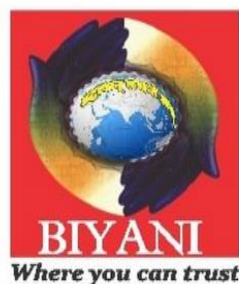


INTERNAL QUALITY ASSURANCE CELL

**Guidelines for Attainments
of CO's and PO's**



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Process Document to Attain Course Outcomes, Program Outcomes

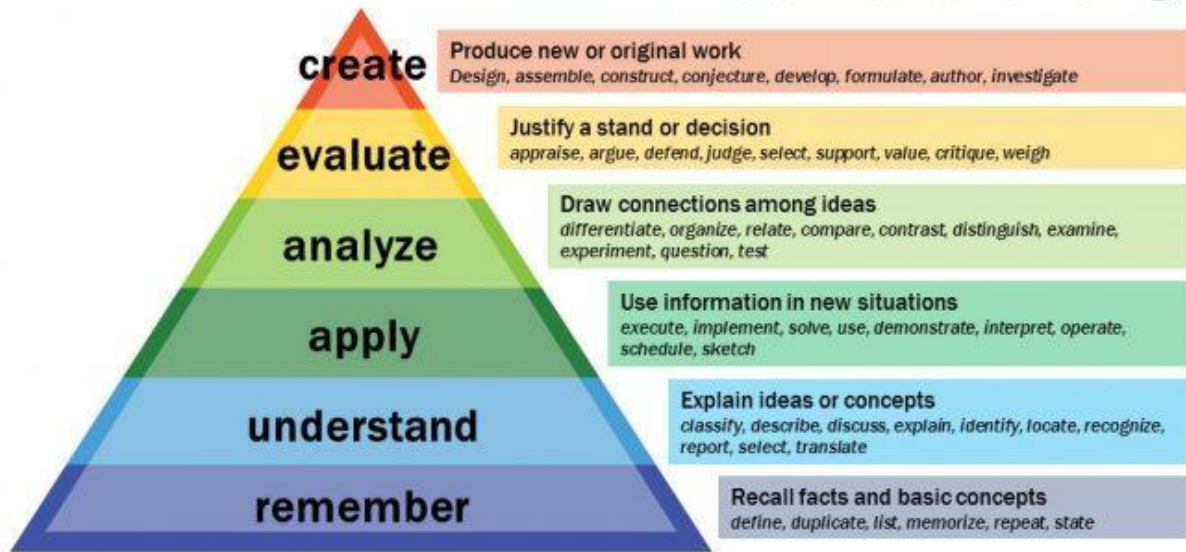
Step#1 Framing/Designing Course Outcomes using Bloom's Taxonomy:

Five Cos were framed for each course considering the cognitive level as per the Bloom's Taxonomy.

<u>Course Outcomes</u>		
Students completing this course will be able to		
CO1	Examine the various functional system and their functioning	Analyze
CO2	Identify the utility of impulse turbine and an assortment of design aspects	Understand
CO3	Investigate the functioning of reaction turbine and its design aspects.	Create
CO4	Analyze the working nomenclature of reciprocating pumps and fluid systems.	Analyze
CO5	Identify the cause and effect of hydro power stations.	Understand

In the process to map COs with POs and PSOs, the Course Outcomes are designed to match and fulfil the requirements of Program Outcomes and Program Specific Outcomes. The keywords used to identify COs were as per those defined in bloom's taxonomy in conjunction with the course syllabus. The Course Outcomes are designed by Course Faculty and approved by Quality Improvement Committee (QIC).

Bloom's Taxonomy



The following steps are used to formulate course outcome:

- Detail study of Program Outcomes and Program Specific Outcomes.
- Selection of keywords from the Program Outcomes and Program Specific Outcomes.
- Selection of keywords from Bloom's Taxonomy which can be mapped with key words selected from Program Outcomes.
- Conjunction of keywords with the course curriculum.
- The course outcomes for each of the courses in the curriculum are mapped according to Program Outcome using Bloom's Taxonomy.
- The questions are selected to assess the Course Outcome and fulfil the requirements of Program Outcomes.
- Evaluation of question based on two parameters:
 - Does CO reflect the intended measurement from specific PO?
 - Does the assessment correlates well with the CO?
- Based on the above parameters, the COs are finalized along with their mapping with POs.
- Develop course outcomes for each of the courses in the curriculum.

Sample CO-PO Mapping

Cos	PO	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO1	PO1
CO1	3	2	1	1	-	-	-	-	-	-	-	-
CO2	3	2	1	1	-	-	-	-	-	-	-	-
CO3	3	2	2	1	-	-	-	-	-	-	-	-
CO4	2	3	1	1	-	-	-	-	-	-	-	-
CO5	3	2	2	1	-	-	-	-	-	-	-	-
Average	2.8	2.2	1.4	1	-	-	-	-	-	-	-	-

Step#2: Assessment tools to calculate the attainment of COs

Category	Assessment Tool	Weightage
Internal	Mid Term Examinations (CIE-I, MSE and CIE –II)	20%
External	University Examination	80%

Step#3: Assessment tools to calculate the attainment of POs

Category	Assessment Tool	Parts	Weightage
Direct	Course Attainment	Internal (CIE-I, MSE and CIE – II)	100%

Step#4: Assessment tools to calculate the attainment of POs

4.1: The formula used to calculation of POs attainment based on Course Attainment:

$$PO \text{ Attainment} = \frac{\text{Course Attainment} \times \text{Average Actual mapping strength}}{\text{Maximum possible mapping strength}}$$