# Learning Outcomes

MITS Internal Quality Assurance Cell

## WHAT IS IT?

Learning outcomes are specific and clear statements that students are expected to learn and be able to demonstrate at the completion of their course of study . They are typically expressed in terms of knowledge, skills and attitudes to be acquired to satisfy the educational need for which the course has been developed. Learning outcomes are written to guide that student is expected to do and achieve in the course aiming for a student- centred perspective.

## WHY USE IT?

- Guide for the design of course (activities and assessment)
- Remind students how a topic or a concept relates to the bigger picture
- Provide a link to ensuring alignment with graduate outcomes that focus on higher order thinking such as critical thinking and problem solving.
- Learning outcomes need to be assessable; ie. observe an action or be able to measure or evaluate the learners' performance to determine whether the knowledge, skill or attitude has been attained.

## HOW DO I DO IT?

Bloom's Taxonomy provides an important framework to not only design curriculum and teaching methodologies but also to design appropriate examination questions belonging to various cognitive levels. In 2001, Anderson and Krathwohl modified Bloom's taxonomy to make it relevant to the present-day requirements. It attempts to divide learning into three types of domains (cognitive, affective, and behavioural) and then defines the level of performance for each domain. Conscious efforts to map the curriculum and assessment to these levels can help the programs to aim for higher-level abilities which go beyond remembering or understanding, and require application, analysis, evaluation or creation. Revised Bloom's taxonomy in the cognitive domain includes thinking, knowledge, and application of knowledge. It is a popular framework in engineering education to structure the assessment as it characterizes complexity and higher-order abilities. It identifies six levels of competencies within the cognitive domain which are appropriate for the purposes of engineering educators.

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## WHAT SHOULD I CONSIDER?

| Level | Skill Demonstrated | Question Cues/verbs for tests |
|---|---|---|
| 1. Remember | Ability to recall of information like facts, conventions, definitions, jargon, technical terms, classifications, categories, and criteria<br>ability to recall methodology and procedures, abstractions, principles, and theories in the field<br>knowledge of dates, events, places mastery of subject matter | list, define, tell, describe, recite, recall, identify, show, label, tabulate, quote, name, who, when, where |
| 2.Understand | understanding information<br>grasp meaning<br>translate knowledge into new context<br>interpret facts, compare, contrast<br>order, group, infer causes<br>predict consequences | describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate, interpret, discuss |
| 3.Apply | use information<br>use methods, concepts, laws, theories in new situations<br>solve problems using required skills or knowledge<br>Demonstrating correct usage of a method or procedure | calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, experiment, show, examine, modify |
| 4.Analyze | break down a complex problem into parts<br>Identify the relationships and interaction between the different parts of a complex problem<br>identify the missing information, sometimes the redundant information and the contradictory information, if any | classify, outline, break down, categorize, analyze, diagram, illustrate, infer, select |
| 5. Evaluate | compare and discriminate between ideas<br>assess value of theories, presentations<br>make choices based on reasoned argument<br>verify value of evidence<br>recognize subjectivity<br>use of definite criteria for judgments | assess, decide, choose, rank, grade, test, measure, defend, recommend, convince, select, judge, support, conclude, argue, justify, compare, summarize, evaluate |
| 6.Create | use old ideas to create new ones<br>Combine parts to make (new) whole,<br>generalize from given facts<br>relate knowledge from several areas<br>predict, draw conclusions | design, formulate, build, invent, create, compose, generate, derive, modify, develop, integrate |
| Psychomotor | Perform Skill fully | Perform skilfully Assemble, build, calibrate, construct, dismantle, display, dissect, fasten, fixes, grind heat, manipulate, measure, mend , mix, organise, sketch |

# Learning Outcomes

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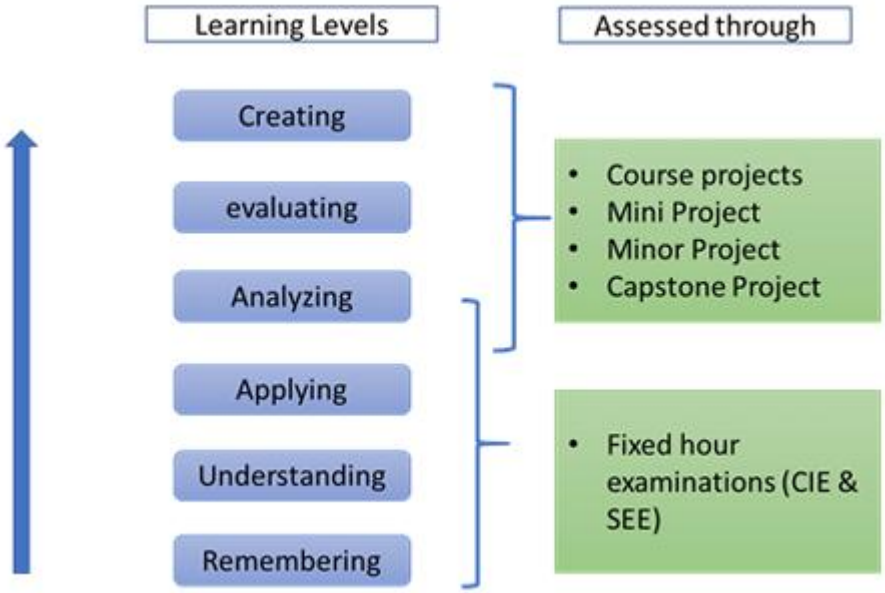
|---|---|---|
| | Adapt | Solve, adapt, alter, combine, revise, reorganise, rearrange integrate, develop, formulate, modify, master |
| | Originate | Construct, compose, create, design, initiate, specify, manage, invent, project-manage |
| Affective | Value | Complete, describe, differentiate, explain, follow, form, initiate, invite, join, justify, propose,read, report, select, share, study |
| | Organise values | Adhere, alter, arrange, combine, compare, complete, defend, explain, generalise, identify,integrate, modify, order, organise, prepare, relate, synthesise |
| | Internalise values | Act, discriminate, display, influence, , modify, perform, practise, propose, qualify, question,revise, serve, solve, verify |

## WHAT COULD I USE?




## WHAT IF I WANT MORE?


- Anderson, L., & Krathwohl, D. (2001). A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy of educational objectives. New York: Longman.
- Bloom, B. (1956). Taxonomy of educational objectives: The classification of educational goals. In B. S. Bloom (Ed.) Susan Fauer Company, Inc. , pp. 201-207
- Ramsden, P. (2003). Learning to Teach in Higher Education. London, UK: Kogan Page.