

BLOOM'S TAXONOMY

KNOWLEDGE (MEMORIZATION)

- Facts, conventions, definitions, jargon, classifications, criteria
- Recall of methods, procedures, abstractions, principles, theories
- Correlates with memorization skills but not problem-solving skills
- Necessary but not sufficient for solving engineering problems

COMPREHENSION (UNDERSTANDING)

- Understand and grasp the meaning of knowledge
- Speak or write about knowledge in alternative ways (paraphrase)
- Articulate connections between different items of knowledge
- Interpretation of information, such as extrapolation of trends
- Necessary but not sufficient for solving engineering problems

APPLICATION (USING)

- Use of abstract ideas in particular concrete situations
- Remembering and applying technical ideas, principles, theories
- Solving engineering homework problems with single solutions

ANALYSIS (TAKING APART)

- Breaking down a complex problem into parts
- Solving each part using engineering principles, theories, etc.
- Determining connections and interactions between parts
- Analyzing an engineering system or product

SYNTHESIS (PUTTING TOGETHER)

- Putting many parts together to make a new whole
- A professional activity referred to as design
- An open-ended process with more than a single correct answer
- Engineering design of a new product or process

EVALUATION (JUDGING)

- Making a judgment about a solution, design, report, material
- May involve internal or external criteria
- Internal criteria: best models, logical, free of errors
- External criteria: environmental, legal, economic, sociological
- Selection among engineering designs for implementation
- Evaluation of old engineering systems for upgrade