

Level of the Cognitive Domain	Definition	Illustrative Behavioral Verbs
6. Evaluation	<p>Evaluation is concerned with the ability to judge the value of material for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose) and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all the other categories, plus conscious value judgments based on clearly defined criteria.</p>	<p>appraise; compare &amp; contrast; conclude; criticize; critique; decide; defend; evaluate; judge; justify.</p>
5. Synthesis	<p>Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication, a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structure.</p>	<p>adapt; anticipate; collaborate; combine; compile; compose; create; design; develop; devise; facilitate; generate; incorporate; integrate; modify; plan; reconstruct; reorganize; revise; structure.</p>
4. Analysis	<p>Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of parts, analysis of the relationship between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.</p>	<p>analyze; break down; correlate; differentiate; discriminate; distinguish; formulate; illustrate; infer; organize, outline; prioritize; separate; subdivide.</p>
3. Application	<p>Application refers to the ability to use learned material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.</p>	<p>administer; apply; articulate; calculate; chart; compute; contribute; determine; demonstrate; establish; implement; prepare; provide; relate; report; show; solve; use.</p>
2. Comprehension	<p>Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.</p>	<p>classify; cite; convert; describe; discuss; estimate; explain; generalize; give examples; paraphrase; restate (in own words); summarize.</p>
1. Knowledge	<p>Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.</p>	<p>define; describe; enumerate; identify; label; list; match; name; reproduce; select; state.</p>

Outcome	Level 1: KNOWLEDGE						Level 2: COMPREHENSION						Level 3: APPLICATION						Level 4: ANALYSIS						Level 5: SYNTHESIS						Level 6: EVALUATION																																									
	Outcome 1 Math and science						Outcome 2 Experiments						Outcome 1 Math and science						Outcome 2 Experiments						Outcome 1 Math and science						Outcome 2 Experiments						Outcome 1 Math and science						Outcome 2 Experiments																													
	Graduates can <b>define</b> key factual information related to mathematics through differential equations, calculus-based physics, chemistry, and one additional area of science.												Graduates can <b>explain</b> key concepts and problem-solving processes in mathematics through differential equations, calculus-based physics, chemistry, and one additional area of science.												Graduates can <b>solve</b> problems in mathematics through differential equations, calculus-based physics, chemistry, and one additional area of science.												Graduates can <b>analyze</b> a complex problem to determine the relevant mathematical and scientific principles; and then apply that knowledge to solve the problem.												Graduates can <b>create</b> new mathematical or scientific knowledge.												Graduates can <b>evaluate</b> the validity of newly created mathematical or scientific knowledge.											
	Graduates can <b>identify</b> the procedures and equipment necessary to conduct engineering experiments.												Graduates can <b>explain</b> the purpose, procedures, and practical applications of engineering experiments.												Graduates can <b>conduct</b> engineering experiments according to established procedures, and <b>report</b> the results.												Graduates can <b>conduct</b> engineering experiments according to established procedures, and <b>analyze</b> and <b>interpret</b> the results.												Graduates can <b>design</b> a engineering experiment to meet a need; <b>conduct</b> the experiment, and <b>analyze</b> and <b>interpret</b> the resulting data.												Graduates can <b>evaluate</b> the effectiveness of a designed experiment in meeting an ill-defined real world need.											