

UC San Diego - WASC Exhibit 7.1 Inventory of Educational Effectiveness Indicators

Academic Program	(2a) What are these learning outcomes? <u>Students graduating with a degree should be able to:</u>	(3) Other than GPA, what data/evidence are used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?	(4) Who interprets the evidence? What is the process?	(5) How are the findings used?
<p>Department: NanoEngineering</p> <p>Major: B.S. in Chemical Engineering</p> <p>(1) Have formal learning outcomes been developed? Yes</p> <p>(6) Date of the last Academic Senate Review? 2014-15</p> <p>December 23, 2016</p>	<p>Written Communication Communicate effectively through written reports</p>	<p>Written Communication Capstone courses where communication skills are evaluated through written team progress reports and a final team presentation (CENG 124A/B) and multiple group laboratory reports and presentations (CENG 176A/B). Graduating Senior Survey, administered by JSOE to provide seniors' self-evaluation of learning outcomes along with feedback on all aspects of the program.</p>	<p>Written Communication Capstone course instructors, through an established set of rubrics. The Undergraduate Affairs Committee (UAC), using a scale of 1-7, where a score >4 signifies that the outcome has been moderately met.</p>	<p>Written Communication Each course and its outcomes are reviewed during an annual Teaching Working Group. All findings are reviewed in an Annual Program Evaluation by UAC. The UAC identifies areas of weakness and discusses curriculum revisions and improvements. Changes are implemented by the UAC.</p>
	<p>Oral Communication Communicate effectively through oral presentations; Function on multidisciplinary teams.</p>	<p>Oral Communication Capstone course (CENG 124A/B), where students work in assigned student teams and are evaluated on a final team presentation. Capstone course (CENG 176A/B), where students work in assigned student teams and are evaluated on presentations on lab experiments. Graduating Senior Survey, administered by JSOE to provide seniors' self-evaluation of learning outcomes along with feedback on all aspects of the program.</p>	<p>Oral Communication Capstone course instructors, through an established set of rubrics. The UAC, using a scale of 1-7, where a score >4 signifies that the outcome has been moderately met.</p>	<p>Oral Communication Each course and its outcomes are reviewed during an annual Teaching Working Group. All findings are reviewed in an Annual Program Evaluation by UAC. The UAC identifies areas of weakness and discusses curriculum revisions and improvements. Changes are implemented by the UAC.</p>
	<p>Quantitative Reasoning: Apply knowledge of mathematics, science, and engineering; Design and conduct experiments, as well as to analyze and interpret data.</p>	<p>Quantitative Reasoning At least 50% of graded assignments in upper-division core CENG courses assess students' fundamental knowledge of mathematics, science, and engineering. Capstone course (CENG 124A/B), students are evaluated on process design, simulation, and data analysis. Capstone course (CENG 176A/B), students are evaluated on experimental design, data analysis, and interpreting results and trends. Graduating Senior Survey, administered by JSOE to provide seniors' self-evaluation of learning outcomes along with feedback on all aspects of the program.</p>	<p>Quantitative Reasoning Instructors for course, through exams and homework assignments. Capstone course instructors, through an established set of rubrics. The UAC, using a scale of 1-7, where a score >4 signifies that the outcome has been moderately met.</p>	<p>Quantitative Reasoning Each course and its outcomes are reviewed during an annual Teaching Working Group. All findings are reviewed in an Annual Program Evaluation by UAC. The UAC identifies areas of weakness and discusses curriculum revisions and improvements. Changes are implemented by the UAC.</p>
	<p>Information Literacy Recognize of the need for, and possess the ability to engage in life-long learning; Possess knowledge of contemporary issues; Understand the impact of engineering solutions in a global, economic, environmental, and societal context.</p>	<p>Information Literacy Capstone course (CENG 124A/B), where students are required to simulate common and new chemical processes to satisfy societal needs while minimizing economic costs and negative environmental effects. Graduating Senior Survey, administered by JSOE to provide seniors' self-evaluation of learning outcomes along with feedback on all aspects of the program.</p>	<p>Information Literacy Capstone course instructors, through an established set of rubrics. The UAC, using a scale of 1-7, where a score >4 signifies that the outcome has been moderately met.</p>	<p>Information Literacy Each course and its outcomes are reviewed during an annual Teaching Working Group. All findings are reviewed in an Annual Program Evaluation by UAC. The UAC identifies areas of weakness and discusses curriculum revisions and</p>

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	<p>Critical Thinking</p> <p>Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;</p> <p>Identify, formulate, and solve engineering problems.</p>	<p>Critical Thinking</p> <p>Capstone course (CENG 124A/B), where emphasis is placed on effective management of the design process by addressing issues such as: problem definition, prioritization, concept generation, risk reduction, teamwork, scheduling, and application of theory to justify design decisions.</p> <p>Graduating Senior Survey, administered by JSOE to provide seniors' self-evaluation of learning outcomes along with feedback on all aspects of the program.</p>	<p>Critical Thinking</p> <p>Capstone course instructors, through an established set of rubrics.</p> <p>The UAC, using a scale of 1-7, where a score >4 signifies that the outcome has been moderately met.</p>	<p>Critical Thinking</p> <p>Each course and its outcomes are reviewed during an annual Teaching Working Group. All findings are reviewed in an Annual Program Evaluation by UAC. The UAC identifies areas of weakness and discusses curriculum revisions and improvements. Changes are implemented by the UAC.</p>
	<p>Technical Skills</p> <p>Use the techniques, skills, and modern engineering tools necessary for engineering practice.</p>	<p>Technical Skills</p> <p>Capstone course (CENG 176A/B)</p> <p>Graduating Senior Survey, administered by JSOE to provide seniors' self-evaluation of learning outcomes along with feedback on all aspects of the program.</p>	<p>Technical Skills</p> <p>Capstone course instructors, through an established set of rubrics.</p> <p>The UAC, using a scale of 1-7, where a score >4 signifies that the outcome has been moderately met.</p>	<p>Technical Skills</p> <p>Each course and its outcomes are reviewed during an annual Teaching Working Group. All findings are reviewed in an Annual Program Evaluation by UAC. The UAC identifies areas of weakness and discusses curriculum revisions and improvements. Changes are implemented by the UAC.</p>
	<p>Ethics</p> <p>Understand their professional and ethical responsibilities as nanoengineers.</p>	<p>Ethics</p> <p>Capstone course (CENG 124A/B)</p> <p>Graduating Senior Survey, administered by JSOE to provide seniors' self-evaluation of learning outcomes along with feedback on all aspects of the program.</p>	<p>Ethics</p> <p>Capstone course instructors, through an established set of rubrics.</p> <p>The UAC, using a scale of 1-7, where a score >4 signifies that the outcome has been moderately met.</p>	<p>Ethics</p> <p>Each course and its outcomes are reviewed during an annual Teaching Working Group. All findings are reviewed in an Annual Program Evaluation by UAC. The UAC identifies areas of weakness and discusses curriculum revisions and improvements. Changes are implemented by the UAC.</p>
	<p>(2b)</p> <p>Where are the learning outcomes published? Please provide your department/program website address.</p>	<p>Department website: http://nanoengineering.ucsd.edu/abet-ce</p> <p>UCSD Course Catalog: http://www.ucsd.edu/catalog/curric/NANO-gr.html#CENG</p>		