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

Academic Program	(2) What are these learning outcomes? Where are they published? (Please specify)	(3) Other than GPA, what data/evidence is 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?
Department: *NanoEngineering* **Major:** *B.S. in NanoEngineering* **(1) Have formal learning outcomes been developed?** *Yes* **(6) Date of last Academic Senate Review?** *2014-15*	**Students graduating with a degree should be able to:** • *Use their strong technical education and communication skills to enable them to have successful careers in a wide range of industrial and professional environments.* • *Be prepared for rapidly changing technological environments with the core knowledge central to multidisciplinary development and personal improvement throughout their professional careers.* • *Use a strong sense of humanistic values and professionalism such that they can conduct ethically and knowledgeably regarding technological impact in societal issues.* **Learning outcomes published:** • *UC San Diego General Catalog* • *Department website*	**Data/Evidence:** • *Students complete the program by taking two-quarter capstone process design course and laboratory that integrates all of their engineering education into the design, development, and testing of the engineering product. This senior level capstone course sequence (NANO 120A/B) brings together engineering theory with application through project- based experiences. Recognizing the rapid change of technology, the need to develop life long learning skills, working in an interdisciplinary team environment; the design sequence is based upon projects where students are required to apply their existing knowledge, and to explore and learn new material. Throughout these projects 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. We have developed a set of rubrics and each student is evaluated by written and oral project reports for these capstone courses.* • *Alumni Survey, Employer Survey, Placement and Employment Data, Graduate School Data, and FE/PE Exam Data are used to determine the level of achieved outcomes. Alumni and Employer Surveys are administered by JSOE. The survey results include employment and graduate school information, as well as polling graduates on the appropriateness and completeness of the program Educational Objectives, and the importance and level of preparation of each of the Program Outcomes. The surveys are conducted every 3-4 years. The Survey results are documented and displayed on our website abet.ucsd.edu.* • *Students are encouraged to have summer internships, participate in the UCSD education abroad program, engage in NanoEngineering and UCSD undergraduate research activities, and join professional engineering student organizations. After graduation, students are encouraged to take the Fundamentals of Engineering (FE) examination as the first step in becoming licensed as a professional engineer (PE).*	• *The assessment and continuous improvement processes are based on two feedback cycles: Educational Objectives Cycle (every 3 years), and Program Outcomes Cycle (every year). The NANO Teaching Group meet annually to carry out instructional planning, review assessment data, and evaluate each course. Recommendations are made to the Undergraduate Affairs Committee (UAC) regarding course and/or curriculum changes.* • *The UAC interprets the evidence of educational effectiveness, and is responsible for reviewing and making recommendations to the faculty and administration on all aspects of the undergraduate programs.* • *UAC tasks and responsibilities include assessment and evaluation of Educational Objectives and Program Outcomes, recommending approval of new courses and course objectives, curriculum changes, and evaluating academic policies.*	• *The evaluation feedback is implemented by UAC and appropriate faculty/instructors. The findings are used to further improve and modernize the academic program.* • *Individual course instructors at the teaching group meetings use the feedback to modify their classes, or introduce new classes.* • *Internally the department adjusts requirements and course sequences for all majors.* • *All significant course and curriculum changes must be approved by UCSD Committee on Educational Policy (CEP).*

Department: *NanoEngineering* *(continued)*		• *Majors are encouraged to study abroad in one of the UC Education Abroad Program's many affiliated universities or on an exchange program based in other US universities or study abroad consortia.*		

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Department: *Chemical Engineering Program administered by NanoEngineering Department* **Major:** *B.S. in* *Chemical Engineering* **(1) Have formal learning outcomes been developed?** *Yes* **(6) Date of last Academic Senate Review?** *2014-15*	**Students graduating with a degree should be able to:** • *Use their strong technical education and communication skills to enable them to have successful careers in a wide range of industrial and professional environments.* • *Be prepared for rapidly changing technological environments with the core knowledge central to multidisciplinary development and personal improvement throughout their professional careers.* • *Use a strong sense of humanistic values and professionalism such that they can conduct ethically and knowledgeably regarding technological impact in societal issues.* **Learning outcomes published:** • *UC San Diego General Catalog* • *Department website*	**Data/Evidence:** • *Students complete the program by taking two-quarter capstone process design course and laboratory that integrates all of their engineering education into the design, development, and testing of the engineering product. This senior level capstone course sequence (CENG 124A/B and CENG 176A/B) brings together engineering theory with application through project-based experiences. Recognizing the rapid change of technology, the need to develop life long learning skills, working in an interdisciplinary team environment; the design sequence is based upon projects where students are required to apply their existing knowledge, and to explore and learn new material. Throughout these projects 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. We have developed a set of rubrics and each student is evaluated by written and oral project reports for these capstone courses.* • *Alumni Survey, Employer Survey, Placement and Employment Data, Graduate School Data, and FE/PE Exam Data are used to determine the level of achieved outcomes. Alumni and Employer Surveys are administered by JSOE. The survey results include employment and graduate school information, as well as polling graduates on the appropriateness and completeness of the program Educational Objectives, and the importance and level of preparation of each of the Program Outcomes. The surveys are conducted every 3-4 years. The Survey results are documented and displayed on our website abet.ucsd.edu.* • *Students are encouraged to have summer internships, participate in the UCSD education abroad program, engage in Chemical Engineering and UCSD undergraduate research activities, and join professional engineering student organizations. After graduation, students are encouraged to take the Fundamentals of Engineering (FE) examination as the first step in becoming licensed as a professional engineer (PE).*	• *The assessment and continuous improvement processes are based on two feedback cycles: Educational Objectives Cycle (every 3 years), and Program Outcomes Cycle (every year). The CENG Teaching Group meet annually to carry out instructional planning, review assessment data, and evaluate each course. Recommendations are made to the Undergraduate Affairs Committee (UAC) regarding course and/or curriculum changes.* • *The UAC interprets the evidence of educational effectiveness, and is responsible for reviewing and making recommendations to the faculty and administration on all aspects of the undergraduate programs.* • *UAC tasks and responsibilities include assessment and evaluation of Educational Objectives and Program Outcomes, recommending approval of new courses and course objectives, curriculum changes, and evaluating academic policies.*	• *The evaluation feedback is implemented by UAC and appropriate faculty/instructors. The findings are used to further improve and modernize the academic program.* • *Individual course instructors at the teaching group meetings use the feedback to modify their classes, or introduce new classes.* • *Internally the department adjusts requirements and course sequences for all majors.* • *All significant course and curriculum changes must be approved by UCSD Committee on Educational Policy (CEP).*

Department: *Chemical Engineering Program administered by NanoEngineering Department* *(continued)*		• *Majors are encouraged to study abroad in one of the UC Education Abroad Program's many affiliated universities or on an exchange program based in other US universities or study abroad consortia.*		