



<p>College of Engineering and Computing</p> <p>Program: BS Biomedical Engineering</p>	<p>Goal 1: LO2 Students will be able to design and conduct laboratory experiments on living systems and their interactions with non- living systems, as well as to analyze and interpret data.</p>	<p>Laboratory reports for BMEN 260 Introduction to Biomechanics, BMEN 271 Introduction to Biomaterials, BMEN 321 Biomonitoring and Electrophysiology, BMEN 345 Anatomy and Physiology, and BMEN 361</p> <p>At least 70% of students must receive an average passing grade (“C” or higher) on the graded laboratory reports/tests for each applicable sophomore level course; 80% of students must receive an average passing grade (“C” or higher) on the graded laboratory reports/tests for junior level courses.</p> <p>Furthermore, student confidence in their ability to design and execute laboratory experiments will be evaluated with a supplemental question in student evaluations. Responses, collected on a Likert scale, must reflect an average of at least 70% student confidence in all classes.</p> <p>Finally, an exit survey of graduating seniors, administered annually, will determine the level of confidence that students have with respect to the design and execution of laboratory experiments. This will be accomplished with closed ended questions to be answered using a Likert scale, as well as open-ended questions. At least 80% of graduating seniors</p>	<p>All courses meet the criterion of 70% passing (a grade “C” or higher; sophomore level, BMEN 260) or 80% passing (a grade “C” or higher; junior level, BMEN 271, BMEN 321, BMEN 345, and BMEN 361), respectively. Within the narrow range of 86% to 100% passing of the composite laboratory student performance.</p> <p>Most courses do not meet the criterion of 70% of students expressing a high level of confidence, with the exception of BMEN 361, the last course in the curriculum sequence, suggesting that students, do increase their confidence in their ability to design and conduct laboratory experiments on living systems and their interactions with non-living systems, as well as to analyze and interpret data as they move through the curriculum. During their senior year, this confidence slightly drops again, with 70% of graduating seniors reporting a high level of confidence in this learning outcome.</p>	<p>Within open-ended questions and discussions during their senior exit interviews, some students identified the laboratory experiences and practice of technical reports as one of the strengths of the program; other students noted some disappointment with the delivery of the laboratory experience due to increased student numbers, low number of equipment, high student throughput, and lack of teaching assistants (TAs). The increasing challenges of offering laboratory components to a rapidly growing student population, particularly at the sophomore level, led the BME Undergraduate Committee to reconsider the manner in which laboratory components were administered within the curriculum in the summer and fall of 2016. In the junior-level classes that contain a laboratory component, all individual lab reports meet the criterion of 80% passing (a grade of “C” or higher), hence exceeding the criterion of 80% passing (a grade “C” or higher) in regard to the composite report grade.</p> <p>Most courses do not meet the criterion of 70% of students expressing a high level of confidence,</p>	<p>In Spring 2018, 100% of students received a grade of B or higher for their design solutions; in Spring 2019, 92% of students received a grade of B or higher. In both years, the criterion of 90% or more of students receiving a grade of A or B in their final design report was met.</p> <p>However, both indirect as well as direct assessment indicate that there is opportunity for improvement within LO 2.</p> <p>Student-confidence levels, was below the expected levels for five out of eleven recorded surveys. Upon graduation, 71.2% of seniors felt very confident in their ability to design apply engineering design in May of 2018.</p>	<p>The Assessment Committee suggested incorporating some additional lectures at the beginning of the BMEN 427 semester reiterating some concepts of the design process such as the difference between goals and objectives and the creation of Gantt charts and decision matrices.</p> <p>Some students however wished for more help during their first semester of senior design (BMEN 427), a comment that has been brought forward to the instructor of the course.</p>	<p>In 2019, this percentage had increased to 86.3% of students. Within open-ended questions and discussions during their senior exit interviews, students noted a big learning curve in this LO during their senior capstone design sequence BMEN 427 and BMEN 428.</p> <p>Additionally, students undergoing the new curriculum will now be eased into the concept of a research proposal and experiment design through the addition of BMEN 382. The first students who will have undergone this new sequence are set to graduate May 2021.</p>	<p><Insert BS Biomedical Engineering 16-17 Assessment Report> </p> <p><Insert BS Biomedical Engineering Cycle 1 Report> </p>
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	Learning Outcome	Assessment Measure(s)	AY- 16-17 Results	Program Changes In Response to AY-16-17 Results	Cycle 1 Results	Cycle 1 Actions	Did it work? Next Steps	Links to Complete Reports
		<p>must respond that they have a high level of confidence in their ability to design and execute laboratory experiments.</p>		<p>with the exception of BMEN 361, the last course in the curriculum sequence, suggesting that students, though not meeting the criterion in lower-level classes, do increase their confidence in their ability to design and conduct laboratory experiments on living systems and their interactions with non-living systems, as well as to analyze and interpret data as they move through the curriculum. During their senior year, when students are not exposed to laboratory exercises anymore, this confidence slightly drops again, with 70% of graduating seniors reporting a high level of confidence in this learning outcome.</p>				