

Project Name:	Engagement in Society's Engineering Grand Challenges
MIU Round:	3
Sponsor(s):	College of Engineering
Coordinator(s):	Susan Hagness
Partner(s)	Undergraduate Research Scholars (URS) Program
Report Date:	Year 1, July 2012; Year 2, July 2013

Project Goal and Measures	
Project Impact Measure(s)	<p>Provide two synergistic undergraduate opportunities to better prepare students to help solve the grand challenges facing the global society in the 21st century, including:</p> <ul style="list-style-type: none"> • a first-year interdisciplinary and cross-disciplinary course that builds on InterEgr 102 but increases capacity for broader campus participation. Enrollment goal is 300 per year (double the pre-MIU enrollment of 150). • partnering with the Undergraduate Research Scholars Program (URS) to increase research opportunities for second-year undergraduates. Participation goal is 20 students per year.
Project Impact Data Source(s)	College of Engineering
Baseline Measure(s)	Course offerings and research participation prior to 2011-12 when the project funding began.

MIU Impact Measures	
A	<p>Increased access in bottleneck areas</p> <p>Increase enrollment in InterEgr 102 to 300 students per year (instead of the previous cap of 150 students).</p>
B	<p>Increased capacity for high-demand experiences</p> <p>Increase the opportunities for students outside of the College of Engineering to participate in InterEgr 102. The project goal is to have a 70:30 (Engineering/Non-Engineering) ratio.</p>
C	<p>Increased capacity for high-impact practices</p> <p>Maintain a low faculty/student ratio (ideally 1:25) even while increasing enrollments to facilitate high engagement with the course topics. Increased research opportunities for undergraduates (covered in project goals).</p>
D	<p>Increased student learning and teaching excellence</p> <p>Engage students in opportunities to work across disciplinary boundaries with diverse teams in order to think about societal problems in an engineering context and consider the societal constraints on engineering.</p>

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E	More tenured, tenure-track faculty teaching undergraduate courses	Enrollment in InterEgr 102 will increase by adding additional sections. These sections will be mainly taught by faculty members leading to an increase in the number of faculty-taught sections.
F	Decreased achievement gaps	The project team reviewed information on course achievement gaps provided by Academic Planning and Institutional Research. The project more specifically focuses on closing the participation gap by broadening the appeal of Engineering to a wider audience, including increasing the number of women and minorities.

Progress Reports

Year 1, 2011-12

- Offered InterEgr 102 in both fall and spring semesters in 2011-12 for a total enrollment of 231 students. Between 30-40% (depending on the semester) of enrollments were outside the College of Engineering.
- Assessed student learning gains in InterEgr 102 using the Student Assessment of Learning Gains (SALG). Initial findings are that 63% of students reported learning gains of 4 or 5 (on a scale from 1: not at all to 5: a great deal) in terms of thinking about societal problems in an engineering context. 74% rated either a 4 or 5 (same scale) on their understanding of understanding the social, economic, political, and ethnical constraints on engineering.
- Worked with the Undergraduate Research Scholars program to plan for implementation of the "Grand Challenges Research Scholars" year-long internship experience. Students will have the opportunity to participate in this experience as second year students after taking InterEgr 102 during their first year. Applications for the first round of scholars were due in May 2012. Engineering is also soliciting faculty members to provide research opportunities and supervise/mentor these students in projects. Implementation will be in Year 2 of this project.

Year 2, 2012-13

- Offered InterEgr 102 in both fall and spring semesters in 2012-13 for a total enrollment of 224 students. Around 30% were outside of the College of Engineering.
 - Increased to 14 (from base of 4 per year) the number of engineering research projects offered through the URS program.
 - Assessment: Assessed student learning gains in InterEgr 102 using the Student Assessment of Learning Gains (SALG). 74% of students reported learning gains of 4 or 5 (on a scale from 1: not at all to 5: a great deal) in terms of thinking about societal problems in an engineering context. 86% rated either a 4 or 5 (same scale) on their understanding of understanding the social, economic, political, and ethnical constraints on engineering. 89% rated either a 4 or 5 (same scale) on their understanding of the role of engineering in solving society's engineering grand challenges.
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