

College of Engineering and Technology

Actions Taken to Improve Student Learning Based on Analysis of Results



Undergraduate

*Programs included:

- Design (BS)
- Industrial Distribution and Logistics (BS)

Undergraduate Examples

- Ensured students were aware of ECU's writing center
- Spent time reviewing the difference between 'research' and 'literature review' and the preparation of a research paper
- Offered a poster construction session
- Required completion of evaluation forms from the Research Creative and Achievement Week judges
- Gave lessons on group dynamic in accessing data for an assignment
- Encouraged group dynamics and functioning throughout a project
- Updated the rubric to clarify outcomes

Graduate Examples

- Incorporated an additional writing assignment as a foundation for a larger assignment so students could use the first assignment to become more familiar with the process
- Faculty continued to use additional assignments to prepare students for the final paper
- Encouraged students to explore sources beyond their textbook to further assist in preparation for their final assignment

Graduate

*Programs included:

- Construction Management (MCM) & Residential Construction Management (Certificate)

Program name	Design (BS)
Delivery mode	Face to Face
Outcome being summarized	Ability to communicate effectively: Graduates will exhibit an ability to communicate effectively with global audiences.
Program level example	<p>The purpose of the BS in Design is to prepare individuals to apply technical skills to the management and creation of working drawings and computer simulations for a variety of applications. This shall include, but will not be limited to, instruction in specification interpretation, dimensioning techniques, drafting calculations, material estimation, technical communications, computer applications, and interpersonal communications. This program is accredited by the Association of Technology, Management, and Applied Engineering (ATMAE). It has various outcomes that relate to student success, including to identify, analyze, and solve technical problems; to communicate effectively with global audiences; and to analyze, design, optimize, and maintain systems or processes. An example of one of these outcomes is reviewed below.</p> <p>Students' ability to communicate effectively with global audiences is currently assessed two ways:</p> <ol style="list-style-type: none"> 1) Students in DESN 3230/1 (Rapid Prototyping) collaborated with College of Business students in MGMT 4252 (Entrepreneurship) to complete a project and then presented the results of the project. This is a new means of assessment for 2017-18. 2) Students in DESN 3038/9 (Sustainable Design) presented at ECU's annual Research and Creative Achievement Week (RCAW). <p>Because the first means of assessment only has one year of results, this example will focus on the RCAW presentations. The criterion for success is that all student presentations will be scored at least "excellent" on the RCAW scale of superior, excellent, good, and satisfactory by RCAW judges.</p> <p>During the 2016-17 year, all students in DESN 3038/9 presented at RCAW. However, only two sets of student evaluation forms were collected so the ability to employ judges' inputs in the evaluation process was limited. Using faculty's professional judgement as well as the two sets of evaluation forms, faculty concluded that students had limited experience conducting research and writing research papers, preparing presentation, and using guidance available for delivering presentations. Students were under the impression that research was limited</p>

	<p>to and entailed what is normally thought of as a literature review.</p> <p>To address this deficiency, faculty updated syllabi to ensure that students were aware of the services available through ECU's writing center; spent a session reviewing the difference between 'research' and 'literature review' and the preparation of a research paper; offered a poster construction session; and required students to turn in evaluation forms from the Research Creative and Achievement Week judges.</p> <p>2017-18 results showed all students in DESN 3038/9 presented at RCAW and all were judged as at least 'excellent' with the exception of one presentation. In addition, all students turned in their judge forms as part of the new course requirement. This project was deemed successful and showed a significant improvement over the previous year's results. The actions implemented for 2017-18 will continue for the upcoming academic year.</p>
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Program name	Industrial Distribution and Logistics (BS)
Delivery mode	Face to Face and Online
Outcome being summarized	Ability of function effectively on teams: Graduates will demonstrate an ability to function effectively on teams.
Program level example	<p>The purpose of the Industrial Distribution and Logistics program is to provide an applied distribution and logistics education for careers in operations, business-to-business sales, and transportation and logistics. The program develops technical, analytical, business, and communication skills required for professional and organizational success. It is accredited by the Association of Technology, Management, and Applied Engineering (ATMAE). This program uses various outcomes to assess student learning that include the ability to identify, analyze, and solve technical problems; ability to analyze, design, optimize, and maintain systems or processes; and the ability to understand professional, ethical, global and social responsibilities to name a few. An example of one of these outcomes can be found below.</p> <p>In order to demonstrate the ability to function effectively on teams, students submit a two week assignment requiring teams of students to analyze risks of a distribution center physical facility, make an assessment of those risks, and choose appropriate response development according to the assessment utilizing response measures in class. The project is assessed by instructor review of the submitted report as prescribed by the grading rubric including a review of the group peer evaluation. The outcome is successfully attained if 80% of students earn a minimum rating of satisfactory (3), equivalent to at least 75% of 100 rubric points.</p> <p>In 2015-16, 35% demonstrated superior achievement; 35% demonstrated satisfactory achievement; 20% fell below expectations; and 10% showed no significant achievement toward the outcome. The goal was 80% of students and it fell short.</p> <p>To address this deficiency, during the 2016-17 year faculty gave specific instruction on group dynamics in accessing appropriate and accurate data for the assignment. They continued to support and encourage group dynamics and functioning during the project and updated the rubric to ensure everyone understood outcomes.</p> <p>2016-17 results showed eight teams, comprised of 29 total students, were evaluated for this report. 93% of the students</p>

	<p>were rated 3 or 4 on the rubric versus the goal of 80%; the criterion for success was met. The overall objective of team effectiveness was met with six of eight teams meeting project goals and working as a team effectively. Two teams (4 and 5) met the project goals but failed to meet teamwork goals as determined through peer review. This was a result of two students failing to meet their required tasks and not adequately working with other students as a team. Actions planned for the upcoming year include having students choose a group leader and write a plan for division of labor within the group.</p>
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Program name	Construction Management (MCM)/Residential Construction Management (G Cert)
Delivery mode	Face to Face and Online
Outcome being summarized	Global Construction Issues: Uses disciplinary concepts to explain how global and local issues are interconnected.
Program level example	<p>The assessment of the Construction Management MCM and Residential Construction Management Graduate Certificate programs is combined into one unit in Nuventive Improve because of the overlap in core courses. However, this example will focus on the MCM outcomes.</p> <p>The purpose of the MCM program is to provide advanced knowledge and critical thinking skills needed to be leaders and innovators in an increasing globalized construction industry. For mid-career and experience professionals, this graduate degree will provide even greater access to knowledge that is essential for excelling in today's fast paced and ever changing local and international arena. Career advancing topics in the MCM program include emerging technologies, globalization, sustainable construction, productivity, and quality, profitability, and best practices. Faculty assess students on global construction issues, project risk management, research skills, schedule management, cost management and legal issues in construction.</p> <p>For the Global Construction Issues outcome, students use disciplinary concepts to explain how global and local issues are interconnected. To assess this outcome, faculty use a written assignment in CMGT 6650 (Global Management of Construction). The criterion for success is that 80% of students receive 80% or better on the assignment.</p> <p>In 2015-16, 90% of students (n=10) scored 80% or better on the written assignment. That year, faculty had used an additional written paper as a foundation for the larger international paper. The shorter assignment allowed students to dig deeper into the risks that are inherent in megaprojects, especially risks of a global economy, before completing their final paper.</p> <p>Faculty continued the use of the additional assignments to prepare students for the final paper in 2016-17. Students were referred to sources beyond the text such as ENR, journal papers and the Internet. As students investigated project situations in different countries, they shared their findings with each other in the online class.</p>

	<p>In 2016-17, 100% of students met the criterion for success. Faculty felt that having the students share their research findings on different countries had a positive impact on the results. For the upcoming academic year, faculty planned to supplement the textbook with additional materials, given that the textbook was published in 2007. Topics to consider include: China and India as competition at the global level and cybersecurity as a global threat.</p>
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