A Communication-Focused Four-Semester Design Requirement
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Four-Semester Design Clinic Involves Juniors and Seniors Collaborating on Project Teams

New Mexico Tech’s unique communication-focused design clinic includes four consecutive semesters of design beginning in the junior year. A required one-semester linked technical writing course supports communication emphasis and promotes knowledge transfer of rhetorical strategies. The four-semester model also allows for seniors mentoring juniors.

Communication Emphasis and Knowledge Transfer

Knowledge transfer: the impact and adaptation of prior communication instruction on similar or novel rhetorical situations [1].

Technical writing course promotes transfer of rhetorical strategies through:
• connected assignments
• dialogic environment
• assignments that foster knowledge building [2]

Program Evaluation

Faculty and sponsors evaluate teams on:
• Definition of the problem
• Planning the project
• Alternative approaches considered
• Evaluation and selection of preferred approach
• Results and conclusions
• Effectiveness of presentation
• Overall evaluation of project

• 2011-2017 data indicates 100% of teams each year were evaluated as competent or above for overall evaluation of project
• 2011-2017 existing senior surveys consistently ranked design clinic as “best aspect” of department and “amount of time spent on design” as most valuable component of degree
• Lowest average competency found for any of the ABET outcomes assessed since 2014 was 4.10.
• ABET 2016 reaccreditation noted design clinic as program strength

Inherent Challenges

• Within teams
• Extracurricular Activities
  o Comsol modeling
  o Inventor seminars
  o Welding workshops
• Presentation rehearsals
• Student Design Clinic junior and senior assistants

Mid-year team additions
• These students hear Junior and Senior course lectures in reverse order
• Senior mentoring helps

Scheduling
• Average, graduation rate is 4.5 years
• Faculty currently considering how to improve graduation rate without sacrificing quality

Varying project lengths
• Projects may span 2, 3, or 4 semesters
• Students may receive experience on more than 1 project

Junior and Senior Design Clinic Overview

• 4 semester requirement
• Linked Technical Writing course
• Industry-sponsored, faculty-research driven, and competition teams
• 135 students distributed on 20 teams
• Team sizes range from 4-14 members
• All teams elect a lead and advised by faculty advisor

NMT Mechanical Engineering Overview

• Publicly-funded STEM institution
• NMT undergraduate enrollment: 1700
• Mechanical Engineering: largest major (23%)
• Rigorous 135-credit curriculum
• ABET-accredited since 2005

References