

Faculty Course Assessment Report
North Dakota State University
Department of Construction Management and Engineering
CM&E 421, Electrical and Mechanical Construction, 3 credits
Fall 2010 – Darshi De Saram

Catalog Description:

This course provides an introduction to electrical and mechanical systems, the design and construction procedures used, code-based requirements, interaction with general construction and structural components, and spatial requirements. Prereq: PHYS 211, Senior standing.

Grade Distribution:

A	B	C	D	F	W	Total
51	0	0	0	0	0	51

Modifications Made to Course:

This is the first time I conducted this course. I deviated from the previous offerings by requiring the students to present their plumbing and HVAC layouts to the class. Such presentations in public, and defending their work against questions from the audience, and especially my questions, made everyone reflect more on the exercise and learn from each other's experiences. It also gave students more opportunity to improve their communication skills.

Course Outcomes Assessment ACCE: (matrix content)

- 4.22 Electrical
- 4.23 Mechanical
- 4.32 Terminology and Units of measure
- 4.34 Conformance references and testing techniques
- 4.38 Assembly techniques and equipment selection
- 4.39 Building Codes and Standards
- 4.41 Basic sketching and drawing techniques

Communications Component:

Students were required to make oral presentations to the class on their plumbing and HVAC layouts.

Contemporary Issues Component:

New developments in plumbing and HVAC were discussed, e.g., PEX tube manifolds, environmental and sustainability issues.

Student Feedback:

Being the first time I conducted the course, I had the students confused in many activities. I wish to better organize the activities thus getting better quality output from the students.

Students requested more preparation in terms of implementing a course plan.

Industry Advisory Board Feedback:

The Industry Advisory Committee member who visited the class commented that: "Students need more practical examples or real life applications." Working with the reviewer, I took the class on a field trip to a construction site where electrical and mechanical installations are in progress and visible. The reviewer, and the site agent for that project were both present to help explain to the students.

Reflection:

In the Spring 2011, I attended the Mechanical Electrical Academic Consortium (MEAC) Boot Camp. That exposed me to many good methods employed by peers in other colleges, thus giving me a good opportunity to improve.

Students were assigned to draw layouts and do calculations for a complete building. This was too big a task, and took too much time. Peers in other universities, instead, focus their students to work on either a service branch or on a limited area, thus keeping the exercises manageable. I too would follow those examples.

Selection of the textbook was based on what was used in the previous offerings. I was not comfortable in using that, and especially the units were not presented consistently and clearly for students to understand.

Electrical and mechanical installations are mostly hidden behind the walls and ceilings. The knowledge of electrical and mechanical installations is limited among most clients of construction products. Hence, ethical practice among constructors installing electrical and mechanical systems is very important.

Proposed Actions for Course Improvement:

Instead of assigning students to draw layouts and do calculations for a complete building, they will be assigned to work on either a branch or one toilet room, thus keeping the exercises manageable.

Textbook will be changed to:

ATP Staff, (2010), *Mechanical & Electrical Systems for Construction Managers*, 2 ed.,
Gosse, Jonathan F., ed., American Technical Publishers (ATP).

MS PowerPoint presentations provided by the publishers of the above book will be improved to provide better instructions to students.

More time would be put into preparation, be connected to the students and implement a course plan.

Although I required the students to present plumbing and HVAC layouts developed by them, I could not prepare rubrics to grade them. Preparing a good set of rubrics is an improvement objective.

An ethics component would be included in the course.