Course Outcomes Guide

Course Title: Circuits, Schematics & Test Equipment ELE 158 **Date:** December 2017

Course Team: Juan C Luna

Expected Learning Outcomes:

- The student will be able to identify and describe a typical industrial control symbols used in advanced manufacturing.
- The student will be able to describe the operation of components shown on diagrams and schematics used on advanced manufacturing systems.
- The student will be able to properly read advanced manufacturing system diagrams and properly insert testing equipment and measurement tools.
- The student will be able to follow systemic and efficient troubleshooting procedures for advanced manufacturing systems.

Assessment:

At the end of the Fall 2017 semester, the instructor administered an ELE158 assessment exam. The assessment exam covers all course outcomes. There was no data from previous semesters to analyze or compare.

Validation:

The course outcomes and assessment tool for Circuits, Schematics & Test Equipment (ELE 158) are consistent and aligned with recommendations from the following IEEE publications:

- Merging Pedagogical Approaches: University of Glasgow-UESTC Joint Education Programme in Electronics and Electrical Engineering. K. Meehan et al.
  Frontiers in Education Conference (FIE), 2014 IEEE. 978-1-4799-3922-0

- Intelligent Performance Assessment of Students' Laboratory Work in a Virtual Electronic Laboratory Environment. Achumba et al.
  IEEE TRANSACTIONS ON LEARNING TECHNOLOGIES, VOL. 6, NO. 2, APRIL-JUNE 2013

- Assessment of undergraduate electrical engineering laboratory studies. G. Carter et al.
  IEEE PROC, Vol. 127, Pt. A, No. 7, SEPTEMBER 1980

The final grade comprises a combination of homework, lab activities, with several exams in between. A final assessment exam can determine the overall comprehension of the subject, although it will not measure other components typical of lab activities, like team player skills, hands-on expertise. The final assessment exam cannot measure homework effort and time management skills. Nevertheless, the final assessment exam can be an expected consequence of the effort put into the lab and homework activities.

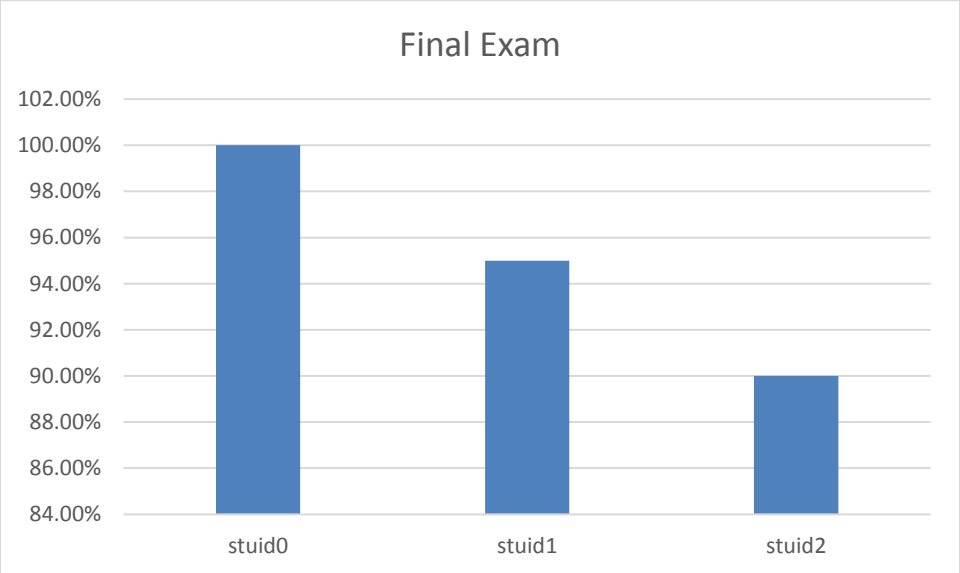
Results:

Assessment Final Exam Results: Fall 2017

The overall average score for the exam was 95%, the median was 95%, and the highest score was 100%. The sample size was 3 for the Fall 2017 semester.

Since the sample was not statistically significant, no relevant course outcome question breakdown was done.

Fall 2017. N=3



Average Relevant Course Outcome Question: N/A

Strengths & Weaknesses:

Based in the data, most students perform extremely well in questions pertaining

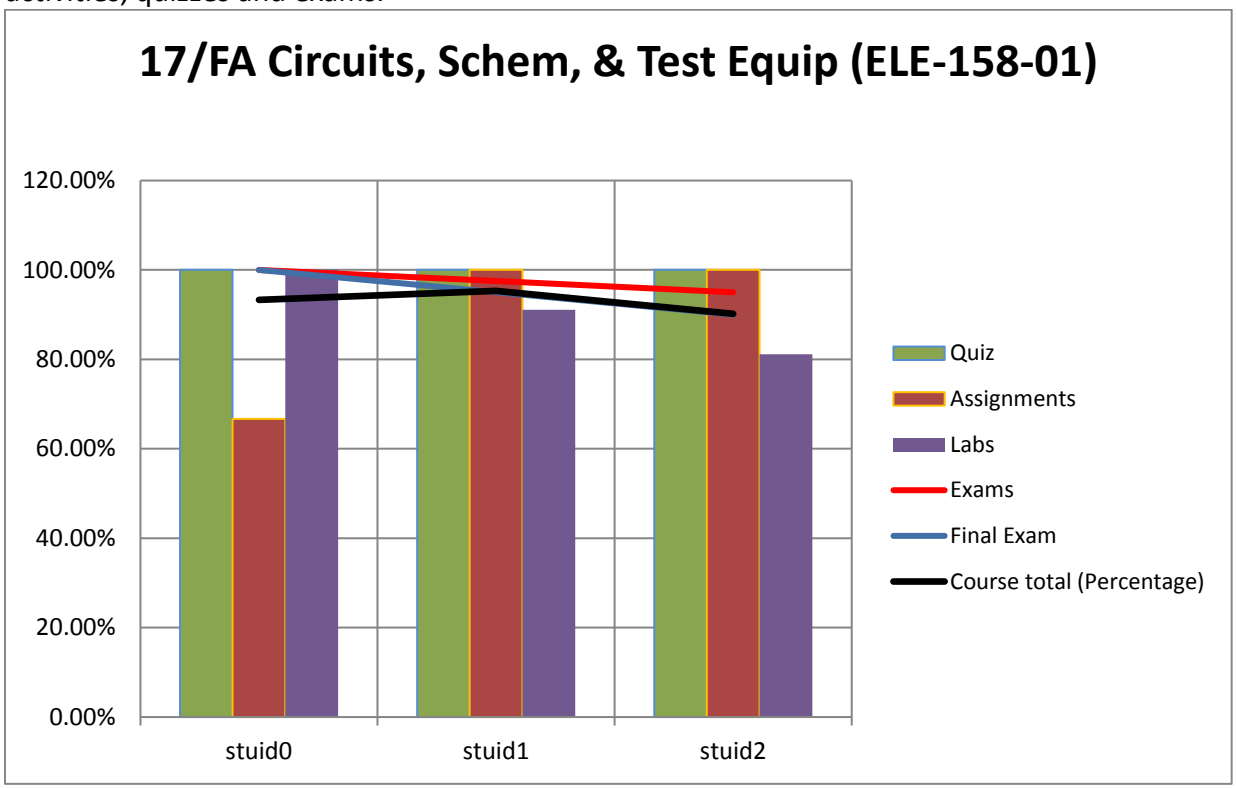
- To identify and describe a typical industrial control symbols used in advanced manufacturing.
- To describe the operation of components shown on diagrams and schematics used on advanced manufacturing systems.
- To read advanced manufacturing system diagrams and properly insert testing

equipment and measurement tools.

- To follow systemic and efficient troubleshooting procedures for advanced manufacturing systems.

Assessment Final Grade Results: Fall 2017

As it was expected the final grade is highly correlated with completion of assignments, lab activities, quizzes and exams.



From the above graph, the data shows that the final grade was strongly correlated with Quizzes and Assignments.
This data shows how important are all the core assessment components.

COMPARISONS TO PREVIOUS SEMESTERS :

N/A

The textbook was an issue for this course. The textbook Electrical Control for Machines, 7th Edition, Lobsiger et al, couldn't possible cover all the subjects in the syllabus. Original material was developed by the instructor to cover the contents of the course.

Follow-up

- The data will be evaluated to improve teaching techniques
- The results will be used to alter the course content to focus on areas were students had the most issues

Budget Justification

No additional resources needed.