Course Outcomes Guide

Course Title: Instrumentation and Process Control I- ELE113 **Date:** December 2017 2018

Course Team: Juan C Luna

Expected Learning Outcomes:

- Identify the various types of instrumentation used in industry.
- Understand basic control techniques, specifically PID loop control.
- Understand control systems and terminology.

Assessment:

At the end of the Spring 2018 semester, the instructor administered an ELE113 assessment exam. The assessment exam covers all course outcomes. The final grade is a composition of the final exam, homework assignments and hands-on activities. There was no comparable historical data for this course.

Validation:

The course outcomes and assessment tool for Instrumentation and Process Control I (ELE 113) 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.

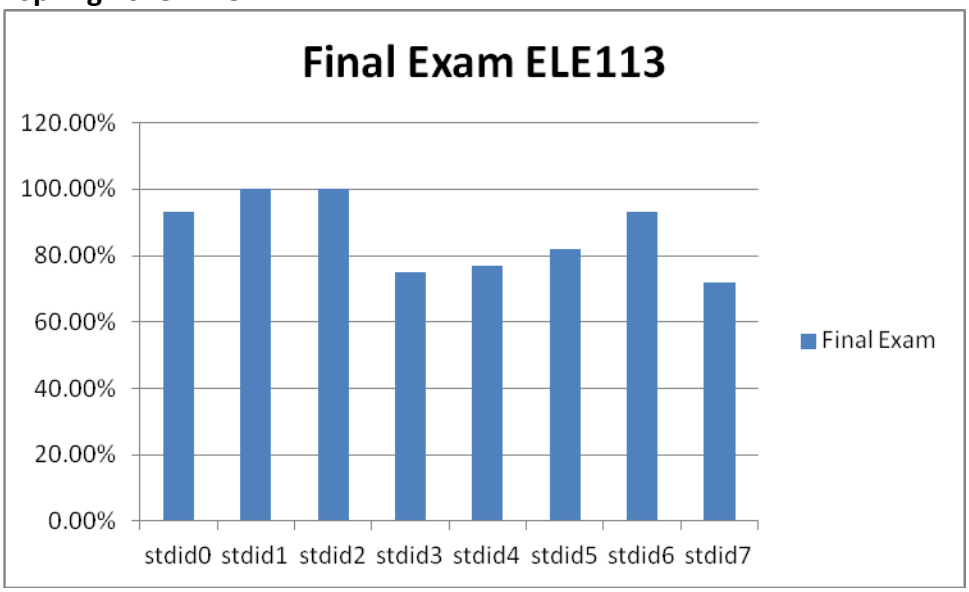
Results:

Assessment Final Exam Results: Fall 2017

The overall average score for the exam was 88.53%, the median was 88.03%, and the highest score was 97.3%. The sample size was 8 for the Fall 2017 semester.

There is no breakdown by relevant course outcome questions.

Spring 2018. N=8



Average Course Grade: 88.53%

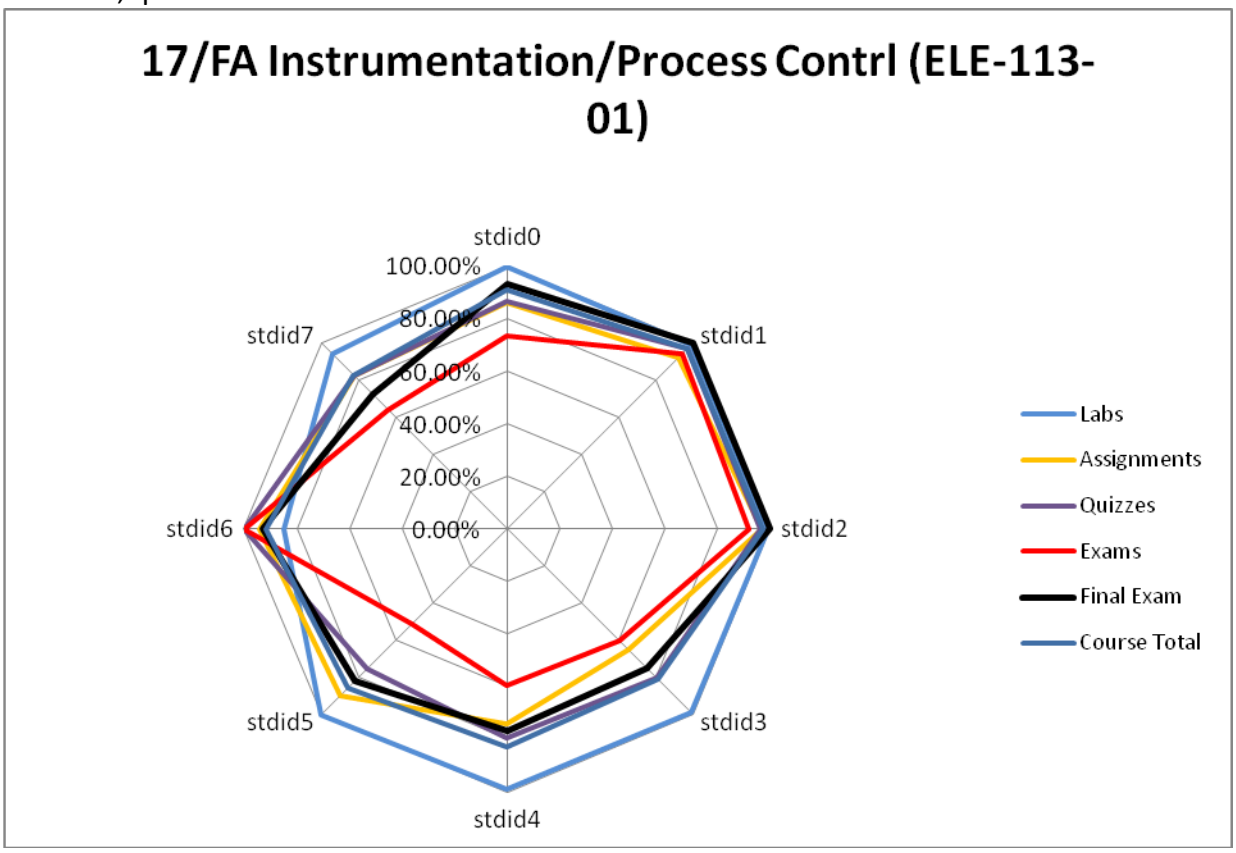
Strengths & Weaknesses:

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

- Identify the various types of instrumentation used in industry.
- Understand basic control techniques, specifically PID loop control.
- Understand control systems and terminology.

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, it can be shown that even the student (stdid5) with the lowest grade in the exams, was able to obtain a passing grade completing assignments, hands-on activity, and the final exam. This data shows how important are <u>all</u> the core assessment components.

COMPARISONS TO PREVIOUS SEMESTERS:

There is no historical data to compare.

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.