To: EGR 2600 Students and SECS Faculty

From: Robert Van Til, Pawley Professor of Lean Studies and Chair
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Subject: Syllabus for EGR 2600 Introduction to Industrial and Systems Engineering

**Course Description.** Overview of industrial and systems engineering: perspectives, tools and models. In depth coverage of probability and statistics in engineering: density and distribution functions, population and sampling distributions, confidence intervals, hypothesis testing and introduction to discrete-event simulation.

**Prerequisite:** MTH 155

**Text:** D.C. Montgomery and G.C. Runger, *Applied Statistics and Probability for Engineers*, 6th edition, Wiley, 2013.

**Moodle:** All reading assignments, homework assignments and solutions, handouts, lecture previews and presentations, etc. are posted on Moodle at:

*moodle.oakland.edu*

**Office Hours:** Tues. and Thurs., 12:00 - 12:45 p.m., or by appointment.

**Laboratory:** All lab sessions will begin the week of January 21. The PLM Lab is located in room 568 Engineering Center.

**Grading:** The final course grade will be a weighted average of:

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| Homework | 15% | Exams (2) | 40% |
| Laboratory | 20% | Final Exam | 25% |

Note the average score and standard deviation for all graded homework, laboratory assignments and exams are presented in Moodle. All exams are open book and notes.

**Course Objectives:** In order to satisfactorily complete this course, a student is expected to demonstrate competency concerning their understanding of the following objectives:

1) Describe the role of an Industrial Engineer in a manufacturing / service industry (j).
2) Apply probability concepts of counting, mean, variance, expectation and others (a, e).
3) Apply discrete distributions including uniform, binomial, Poisson, geometric, and others (a, e).
4) Apply continuous distributions including uniform, normal, exponential, lognormal and others (a, e).
5) Estimate parameters with a given level of confidence (a, e).

6) Apply the concept of probability to real world problems (a, e).
7) Analyze data and estimate variation in a data set (a, b, e, k).
8) Apply probability and statistical operations on data using Excel (a, b, e, k).
9) Demonstrate how to perform a single population hypothesis test on the mean for a given level of significance (a, b, e).

**Student Outcomes:** These are a set of skills that assure the achievement of the program educational objectives. Before graduating, SECS students will demonstrate their skills in the following key areas.

a) an ability to apply knowledge of mathematics, science, and engineering;
b) an ability to design and conduct experiments, as well as to analyze and interpret data;
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
d) an ability to function on multi-disciplinary teams;
e) an ability to identify, formulate, and solve engineering problems;
f) an understanding of professional and ethical responsibility;
g) an ability to communicate effectively;
h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
i) a recognition of the need for, and an ability to engage in life-long learning;
j) a knowledge of contemporary issues; and
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;

**Academic Conduct:** Students are encouraged to discuss homework and laboratory assignments with one another for their mutual benefits. However, no form of plagiarism (for example, copying) is permitted. Further information and examples are available from the "Academic Conduct Policy" in the *Oakland University Undergraduate Catalog*. The “Code of Academic and Student Conduct” is also available at:

www.oakland.edu/deanofstudents/student-code-of-conduct/philosophy-and-purpose/

The seating location of every student may be randomly assigned for each exam.