



**Syllabus – Engineering Innovation  
General Engineering 500.110  
Summer 2018**

**Description**

Engineering Innovation is an exciting college-level summer program for motivated high school students with an aptitude in math and science and an interest in (or curiosity about) engineering. This program has been available to high school students since 2006. In the program, students learn to think and problem-solve like engineers and have the opportunity to earn Johns Hopkins University (JHU) credit.

Visit our website for more information: <https://ei.jhu.edu>

**Prerequisites**

High school algebra II and trigonometry  
High school lab science (chemistry, physics and/or biology)  
As and Bs in high school math and science courses

**Instructor**

Name:  
Email:

**Teaching Fellow**

Name:  
Email:

**Teaching Assistant**

Name:  
Email:

**Course Dates/Times:**

Monday – Friday: June 25 – July 20, 2018      9:00 AM – 3:00 PM  
No Class on Wednesday, July 4, 2018

Additional assistance: If you have any questions on lectures, laboratories, computer exercises, etc... please ask for help. The instructor, teaching fellow, and teaching assistant are available before and after class most days. Additionally, they are available via email throughout the course.

**Required Materials**

**Course materials are located on Blackboard:** <https://blackboard.jhu.edu>

Login to Blackboard using your Johns Hopkins credentials (JHED Login ID), which you should have received in an email from the registrar. It is a string of 3-8 characters that typically begins with the first letter of your first name, contains the starting letters of your last name, and ends in a number. If you need assistance logging in, please email [webregistration@jhu.edu](mailto:webregistration@jhu.edu) or call 410-516-8080.

**Calculator:** You must have a dedicated scientific calculator to complete the weekly quizzes. You will not be permitted to use a calculator application on a cell phone during quizzes.

**No Required Textbook.**

**Course Objectives**

- To introduce students to prevalent topics in engineering
- To prepare students for rigorous college engineering programs
- To help students develop problem solving strategies and confidence
- To assist students in determining whether engineering is a career they are interested in pursuing

**Course Topics and Tentative Schedule**

- Week 1:
  - Units and Dimensions

- Data Analysis
- Materials
- Week 2:
  - Statics and Structures
  - Electronics
- Week 3:
  - Chemical Processes
  - Finance
  - Technical Communication
- Week 4:
  - Ethics
  - Spaghetti Bridge Building
  - Final Exam
  - Bridge Breaking Ceremony – the last day of class – family and friends are invited

### **Course Expectations & Grading**

#### **Classwork – 15%**

Lab reports, oral presentations, instructor assigned homework, projects, class participation, tardiness.

#### **Weekly Quizzes – 30%**

One-hour weekly quizzes will be taken in class on Monday (dates below). You may use a dedicated calculator; cell phone calculators are not permitted. Your teacher will provide an EI Reference Packet with important equations. You may also bring one letter-size piece of paper, double-sided, with your personal notes.

- **Quiz 1:** Monday July 2 – Data Analysis, Materials, Units and Dimensions
- **Quiz 2:** Monday July 9 – Statics and Structures, Electronics
- **Quiz 3:** Monday July 16 – Chemical Processes, Finance

#### **Final Exam – 55%**

1. The first part of the final exam, worth 15% of the final grade, will be in class on the morning of Tuesday July 17. The rules that apply to weekly quizzes also apply to part 1 of the final exam.
2. The second part of the final exam, worth 40% of the final grade, is a take-home exam given to students after class on Tuesday July 17. Students may use the internet and external resources, but they must work alone. Students will have time to work on this portion during class on Wednesday and it will be due at the start of class on Thursday July 19.

<b>Event</b>	<b>Points</b>	<b>Percentage</b>
<b>Final Exam 2 (take-home)</b>	800	40%
<b>Final Exam 1 (in-class only)</b>	300	15%
<b>Quiz 1</b>	160	8%
<b>Quiz 2</b>	220	11%
<b>Quiz 3</b>	220	11%
<b>Classwork (below)</b>	300	15%
Data Analysis / Excel Lab	20	
Remote Measurement Lab	20	
Strength of Spaghetti Labs	40	
Digital Logic Lab	30	
Chemical Processes Labs	40	
Request For Proposal	30	
Mousetrap Design Lab	20	
Spaghetti Bridge Project	60	
Instructor Points	40	
<b>TOTAL</b>	2000	100%

**Late assignments:** Late assignments will not be accepted. This class moves at a quick pace. Once you get behind in your coursework it will be difficult to catch up.

**Extensions:** Extensions will only be granted for extenuating circumstances. Requests for extensions **MUST** be made before the assignment is due.

**Absences:** Students who miss more than 2 days of class are not eligible to receive JHU credit.

### **Ethics**

The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition.

If a student is suspected of a possible violation of academic ethics, the instructor in charge of the course shall review the evidence and the facts of the case. If the instructor believes that a violation of academic ethics has occurred, the instructor will report the case to the Engineering Innovation Director. The Director will notify each student, who has committed a violation, in writing to the offense and the penalty. The student may either accept the penalty or appeal in writing within fourteen (14) days. The appeal should outline the offense and reasons that the penalty is not just. The appeal should be addressed to the Vice Dean of Engineering Education who will make a final decision based on the appeal.

### **Potential Penalties**

- a) Retake of the examination, paper or exercise involved.
- b) Score of zero on the examination, paper or exercise involved.
- c) Lowering of the course grade.
- d) Failure of the course.
- e) Failure of the course with a notation on the transcript that the grade was for a violation of academic ethics.

Report any ethics violations you witness to the instructor.

You can find more information about university policies at this website:

<http://e-catalog.jhu.edu/undergrad-students/student-life-policies/>

### **Students with Disabilities**

Any student with a disability who may need accommodations in this class must obtain an accommodation letter from Student Disability Services, 385 Garland, (410) 516-4720, [studentdisabilityservices@jhu.edu](mailto:studentdisabilityservices@jhu.edu). We recommend you contact this office as soon as possible so the accommodations can be arranged in time for the first week of class.