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: http://engineering.jhu.edu/ei/

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: TBD
Email: 

Teaching Fellow
Name: TBD
Email: 

Course Dates/Times:
Monday – Friday: June 29 – July 24, 2015 9:00 AM – 3:00 PM  No Class on Friday, July 3, 2015

Additional assistance: If you have any questions on lectures, laboratories, computer exercises… 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
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 materials are found on the course website:
http://engineering.jhu.edu/ei/

Course Objectives
• To introduce students to prevalent topics in engineering
• To prepare students for rigorous college engineering programs (to push them)
• 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:
  o College Ranking Activity
  o Materials Science and Engineering
    ▪ Spaghetti in tension, bending and compression labs
  o Uncertainty, Statistics and Measurement
    ▪ Remote measurement lab
• Week 2:
  o Statics and Structures
    ▪ Bridge Builder virtual lab
• Digital Logic
  ▪ Circuit Builder virtual lab
  ▪ Robotic car building lab
• Mousetrap Project
  ▪ Design and build a mousetrap

• Week 3:
  o Chemical Processes
    ▪ Chemical Processes lab (distillation, chromatography and heat transfer)
  o Engineering Finance
  o Robotics

• Week 4:
  o Ethics
  o Request for Proposal
  o Build Bridge of Spaghetti
  o Take-Home Final Exam (pick up Mon - end of class; turn in Thurs - beginning of class)
  o Bridge Breaking Ceremony – the last day of class – family and friends are invited

Course Expectations & Grading

Classwork – 12%
   Introductory essay, lab reports, oral presentations, instructor assigned homework, projects, research essay, class participation, tardiness.

Weekly Quizzes – 11% each (33% total)
   One-hour weekly quizzes will be taken in class on Monday during the 2nd, 3rd and 4th week of class. You may use your calculator and course notes during the quiz. You will not have access to a computer or the internet. You must use a dedicated calculator for the quizzes. Cell phone calculators will not be permitted.

Final Exam – 55%
   The take-home final exam will be given to students at the end of class on the last Monday of the course and collected at the beginning of class on the last Thursday of the course.

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. Request for extension 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.

Key Dates
   Quiz 1: Monday July 6
   Quiz 2: Monday July 13
   Quiz 3: Monday July 20

   Final Exam: Students will receive the final on Monday July 20th. It is due at the beginning of class on Thursday July 23rd.

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 misconduct policies on the web at this website:


**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.