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**Course Syllabus**

**Projects in Engineering**

**Fall 2022**

**Instructor:** Ms. Susie Cunningham

**Email:** scunningham@bsu.edu

 **Office: Elliott 008-C**

 **Classrooms: BU215 & BU219**

**Office Hours:**

### **Mondays: Noon – 2:00 p.m. (in Elliott 008-C)**

 **5:00 – 5:30 p.m. (in BU215)**

 **8:00 p.m. – 10:00 p.m. (Via Zoom)**

**Tuesdays: Noon – 1:00 p.m. (in Elliott 008-C)**

**Wednesdays: Noon – 2:00 p.m. (in Elliott 008-C)**

 **5:00 – 5:30 p.m. (in BU215)**

**Fridays: Noon – 2:00 p.m. (in Elliott 008-C)**

 Other times for Office Hours may be arranged by appointment.

 Can also email me at any time.

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**Description:**

This course will provide students with an introduction to engineering as a profession through case studies and hands-on projects in several areas of engineering, including robotics. Students will work in teams, applying engineering principles, to build and test simple robots. Students will have the opportunity to participate in a robotics competition.

**Texts:**

 Web Pages

 Hand-outs

 Manuals

**Course Methodology:**

 Course methodology will include **hands-on activities, lectures, outside readings, classroom discussion, and projects.** Students will be **creating** various hands-on projects.

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**Student Evaluation:**

There will be **9 discussion questions over engineering topics, 10 homework assignments,** and **1 major final project**.

**Method of Grading:**

Grades will be based on a point system.

 **Points**

 Discussion Questions 45

 Homework Assignments 90

 Major Final Project 100

 **Total Points 235**

 Accumulated totals are then distributed into letter grades as follows:

 **A (93% - 100%)**

 **A- (90% - 92.9%)**

 **B+ (88% - 89.9%)**

 **B (83% - 87.9%)**

 **B- (80% - 82.9%)**

 **C+ (78% - 79.9%)**

 **C (73% - 77.9%)**

 **C- (70% - 72.9%)**

 **D\* (69% and below)**

**Classroom Policies:**

**Homework Assignments:** **Homework assignments** must be **turned in by the due date**. Assignments may be turned in earlier than the due date. **Any late homework** will **result** in a **reduced** **grade.** **(25% off for each day late.) Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday all count as days. A timeframe for a day constitutes from 12:01 a.m. – Midnight.**

**Absence prior to due Date:** Missing class (excused or not) prior to a test, or other due dates for homework assignments does not exempt the student from preparing and taking the test and/or submitting the required homework assignment on the due date. Exceptions may be granted in advance of class time and must be discussed with the instructor.

**Tardiness:** Students arriving more than 5 minutes late to class are marked tardy. Students arriving 20+ minutes late will be marked absent. **A student sleeping in class will be counted as an absence.**

**Academic Dishonesty:** (Refer to the Indiana Academy Handbook.)

In the event, a student turns in a computer program for a homework assignment or test that was not

originally written by the student, the homework or test will fall under the category of plagiarism. This will be considered a **serious offense**. Students will be allowed to ask for help from other students if they are

working on a preannounce group project or the student needs assistance finding a syntax error or minor errors.

If a student does use code in a programming homework assignment or project that was obtained from the Internet, another programming source, or writing code that is similar in nature, the student **must put in a comment in the computer program with the source of where the code was obtained, otherwise this will be considered under the category of plagiarism.**

Furthermore, if a student writes a computer program for another student, the student “knowingly permitting one’s work to be submitted by another person as if it were the submitter’s original work” will also be penalized.

Penalties will be assessed in accordance to the Indiana Academy Handbook.

**Communication:**

The best way to communicate with me is through email at **scunningham@bsu.edu**. My phone dings when I receive an email and I can answer back via email through my phone. Generally, I do answer back almost immediately during work hours (unless I am teaching a course or on my way to class). I will always respond back within 24 hours. (This does include the weekends.) Generally, I am more available late at night. Office hours will be posted

**Diversity and Inclusion:**

Ball State University aspires to be a university that attracts and retains a diverse faculty, staff, and student body. We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse as expressed in our Beneficence Pledge and through university resources found at <http://cms.bsu.edu/campuslife/multiculturalcenter>.

**Accommodations:**

If you need course adaptations or accommodations because of a disability, please contact me as soon as possible.  Ball State’s Disability Services office coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or dsd@bsu.edu.

**Canvas Accessibility:**

Canvas provides a user experience that is easy, simple, and intuitive. Special attention has been paid to making Canvas screen-readable. The Rich Content Editor encourages users to create accessible content pages (i.e. text formatting is accomplished using styles). Canvas is designed to allow limited customization of colors and schemes to be accessible for all users. The National Federation of the Blind granted Canvas the Gold Level Web Certification in 2010.

Find more information by visiting the [Canvas Voluntary Product Accessibility Template (VPAT)](https://www.canvaslms.com/accessibility). <https://community.canvaslms.com/t5/Accessibility/Accessibility-within-Canvas/ba-p/261501>

**Indiana Academy Mask Policy:**

The Indiana Academy will follow [Ball State University’s mask policy](https://www.bsu.edu/-/media/www/departmentalcontent/emergencypreparedness/covid19/recovery%20plans/student%20return%20to%20campus%20plan_11-16-2020_full.pdf?la=en&hash=C46E28697410544B454D667609AA24BE6C7BAA9F) (see Section IV).

## Class Participation: Unless instructed otherwise, students need to be working on items relating to the classroom homework/topic during the class time.

## Blue circuit board

## Tentative Class Activity and Assignments

**Projects in Engineering**

**What is an Engineer?**

**Week of August 15, 2022:**

What is an engineer? How many types of engineers are there?

**HW #1 will be due on August 19, 2022 (5 pts.)**

**Mechanical and Software Engineering:**

**Week of August 22, 2022:**

Learn basics of mechanical engineering using a Mindstorms Lego Robotics kit.

**HW #2 will be due on August 26, 2022 (10 pts.)**

**Discussion Question #1 (5 pts.)**

**Mechanical and Software Engineering, cont.:**

**Week of August 29, 2022:**

Students will continue working on their projects and programming specific parts.

Students can continue with the Mindstorms Lego Robotics kit or change to using Tetrix or Vex Robotics kits.

**HW #3 will be due on September 2, 2022. (10 pts.)**

**Discussion Question #2 (5 pts.)**

**Chemical Engineering:**

**Week of September 5, 2022:**

(September 5th-6th is an extended weekend for Labor Day.)

Students will be given the opportunity to experience a simple hands-on task designed to demonstrate what a chemical engineer does. This task will be non-volatile.

**Discussion Question #3 (5 pts.)**

**Electrical Engineering:**

**Week of September 12, 2022:**

Students will be introduced to Arduinos.

**HW #4 will be due on September 16, 2022. (10 pts.)**

**Discussion Question #4 (5 pts.)**

**Electrical Engineering, cont.:**

**Week of September 19, 2022:**

Students will continue working with Arduinos.

**HW #5 will be due on September 26, 2022. (10 pts.)**

**Discussion Question #5 (5 pts.)**

**Civil and Industrial Engineering:**

**Week of September 26, 2022:**

Students will be introduced to a drafting package(s).

**HW #6 will be due on October 3, 2022. (10 pts.)**

**Discussion Question #6 (5 pts.)**

**Civil and Industrial Engineering:**

**Week of October 3, 2022:**

Students will continue working on drafting project.

**Discussion Question #7 (5 pts.)**

**Civil and Industrial Engineering, cont:**

**Week of October 10, 2022:**

(October 10th and 11th is an extended weekend for Fall Break.)

Students will finish drafting project.

**HW #7 will be due on October 14, 2022. (10 pts.)**

**Aeronautical and Astronomical Engineer:**

**Week of October 17, 2022:**

Using Arduino programming in C++ and bread boards, students will learn basics of Aeronautical and Astronomical engineering.

**HW #8 will be due on October 21, 2022. (10 pts.)**

**Discussion Question #8 (5 pts.)**

**Designing a Project:**

**Week of October 24, 2022:**

Students will design out a major project and subject it for approval.

**HW #9 will be due on October 28, 2022. (10 pts.)**

**Discussion Question #9 (5 pts.)**

**Weeks of October 31st, November 7th, and 14th, 2022:**

Students will complete work on their major final projects.

**HW #10 will be due on November 18, 2022. (5 pts.) (Check point for Major Final Project.)**

**Week of November 21st, 2022:**

Thanksgiving Break!

**Week of November 28, 2022:**

Students will make final revisions to their major projects.

**Week of December 5, 2022:**

Students will present their final major projects.

**ALL FINAL PROJECTS will be due on December 5, 2022! (100 pts.)**