

THE CENTER FOR ADVANCED TECHNICAL STUDIES



The Center for Advanced Technical Studies Engineering Design and Development HN 2019 - 2020

Teacher Name: Sherry Clapp
Email: scclapp@lexrich5.org
Phone: 803-476-8659

Room Number: 309
Website: <https://www.lexrich5.org/Domain/4305>
Prerequisite: IED, POE, CEA
Credit: 1

I. Course Description

Engineering Design and Development is the final course in a five-course sequence program developed by Project Lead the Way (PLTW). It is an engineering research course in which students work in teams to research, design and construct a solution to an open-ended engineering problem. Students apply principles developed in the four preceding courses and are guided by a community mentor. They must present progress reports, submit a final written report and defend their solutions to a panel of outside reviewers at the end of the school year.

Course Standards

Standards can be found at:

<http://ed.sc.gov/instruction/career-and-technology-education/programs-and-courses/career-clusters/science-technology-engineering-and-mathematics/>

Additional information about PLTW can be found at: <https://www.pltw.org/our-programs/pltw-engineering>

II. Instructional Goals

The goal of this course to teach the product development process including problem identification, research, product specification, design, build, and test their product. Students will then create a marketing and business plan and present it to a technical audience.

This senior level course is highly recommended for those who are interested in engineering or technology related fields. Students will learn about engineering professions through speakers, job shadowing, and field trips.

III. Fees & Explanation

A fee of \$100 is assessed for instructional materials for classroom use.

IV. Textbook, Supplemental Materials, and Supplemental Reading(s)

There are no textbooks for this course. We use Autodesk Inventor and Revit software on our classroom computers. Students are not required to have access to these programs outside of the classroom but can download a free student copy if they choose. Students will be using Google Classroom and the PLTW website to access most of the course material. Many assignments will be turned in through Google Classroom using the Chrome book or classroom computers.

V. Other Requirements

Chromebook expectation: Each student can choose to bring their Chromebook each day. It can be helpful when watching tutorials and completing assignments on the lab computers.

Students will need to also have these items present each day.

- Basic Scientific Calculator
- Mechanical pencils, erasers, blue/black pens
- Project materials will vary by project.
- Engineering Notebook and binder (will be given to each student)
- Students will watch the movies Apollo 13 and Flash of Genius- rating PG

THE CENTER FOR ADVANCED TECHNICAL STUDIES

VI. Major Curricular Topics / Instructional Organization

- Unit 1 Project Management
- Unit 2 Define a Problem
- Unit 3 Design a Solution
- Poster Presentation
- Unit 4 Prototype a Solution
- Unit 5 Test, Evaluate, Improve
- Unit 6 Present the Solution
- Final Presentation

VII. Course Grading Policies, Assessments, & Procedures

a. To access grades, attendance, and other information regarding your student, go to Lexington Richland District Five website and login to the Parent Portal.

b. Uniform Grading Policy: A=90-100; B=80-89; C=70-79; D=60-69; F= Below 60

- Semester 1 = Quarter 1 (40%) + Quarter 2 (40%) + Midterm Exam/Project (20%)
- Semester 2 = Quarter 3 (40%) + Quarter 4 (40%) + Final Exam/Project (20%)
- Final = Semester 1 (50%) + Semester 2 (50%)

c. Final grades are largely determined by the team's effort. Students are encouraged to choose a team that will work toward academic success as well as good team dynamics.

First quarter students will determine the problem they wish to solve and present a 3-minute proposal in a "shark tank" like environment.

Second quarter will require a tri fold presentation poster of project progress and will be juried by peers, instructors and experts in the field that will comprise the final exam grade. They will also complete a grant proposal to obtain funding for their project

Third quarter, students will design build and test their prototypes. They will also participate in both the district and region II science fairs.

Fourth quarter will require a presentation of the product to an expert panel. They will provide the grading for the final exam grade.

Assessment rubrics are used for all graded assignments. Rubrics will vary depending on the assessment to be assessed.

At the teacher's discretion students who experience difficulty completing assignments or who did not demonstrate mastery in a content area will be given additional time to complete the assignment in a timely manner. Special arrangements may be made with me for individualized instruction or make-up assignments.

Assessment

Students will be evaluated according to the SC Department of Education according to the completion of the Education Vocational Competency Profile.

EDD is a Project Lead the Way course. Standards available at pltw.org

Students are expected to participate in class activities and prepare all assignments in a business-like manner.

Students will have homework to reinforce the law vocabulary learned in class.

THE CENTER FOR ADVANCED TECHNICAL STUDIES

Chapter tests will evaluate students' retention and application of concepts.

Rubrics

Rubrics are available on the Project Lead the Way website or Google Classroom

Students in this course will be assessed using a combination of tests, quizzes, assignments (in class and take-home), and projects.

Grades weights

- Formative Work: 50% (HW, classwork, quizzes)
- Summative: 40% (tests, projects, technical reports, presentations, and portfolios)
- Employability and Notebook Checks: 10% (see description below)
- **Formative Work:** Homework, classwork, quizzes are formative. Some of the lessons will be implemented as a flipped classroom where course material will be made available as PowerPoints or videos for students to review prior to class. A quiz regarding the content may be given.
- **Summative Assessments:** Exams are based on formative work but are given as a single attempt assessment. Projects, technical reports, presentations, and portfolios are graded using rubrics.
- **Employability portion of the grade covers professional work skills** - Each ½ quarter a grade is given. An infraction is recorded and the reason will be specified.
 - **Engineering Notebook Check** – proper use of paper and online notebook versions that are kept up to date.
 - **Prepared for Class** – has engineering notebook, calculator, and has completed homework as assigned.
 - **Self-Management/Initiative** – Starts work without being told. Shows self-control. Is where he/she belongs at all times (no non-class related websites, videos, social media, or games.)
 - **Attendance** – students are expected to e-mail prior to being absent and they will not receive an infraction against the employability grade. Late buses will also not apply.
 - **Punctuality** – on time from class.
 - **Sign-in and Sign-out of Class** – Signing-in upon arrival and Signing-Out when visiting the restroom, nurse, office, or other locations. Returning in a timely-manner.
 - **Early Dismissal** - If dismissing early, a student must present a parent note to the office upon arrival to get an early dismissal pass.
 - **Attitude/Cooperation** – Doing what is asked the first time.
 - **Teamwork** – Students will work with other students throughout the year on various assignments and projects.
 - **Integrity** – Students word is the truth.
 - **Timely** – Turns work in on time.
 - **Respectful** – address teacher and classmates in a respectful way. Deals with conflict in a respectful manner.
 - **Safety** – Clothing follows school guidelines. Students are required to wear their ID and closed-toe and closed-heel shoes at all times.
 - **General Housekeeping**- Leaves classroom ready for the next class.

THE CENTER FOR ADVANCED TECHNICAL STUDIES

VIII. Absences and Make-Up Policies

Students will be permitted to make-up work missed due to an absence without penalty. If the student misses 1 day, the make-up work must be completed **within 2 school days (2 “A” or “B” days)**. If the student misses 2 or more consecutive days, the make-up work must be completed with 5 school days. If circumstances dictate that the material which had been missed requires more time to be made up, the teacher will have the discretion to extend the deadline.

Students who miss a test, quiz, or other class work due to an absence will need to make up the work after school or at a time agreed upon with the teacher within five days of returning to school.

Students are strongly encouraged to record all assignments, dates, and grades. Absent students are expected to look on Google Classroom or contact the teacher or a classmate to collect the assignments they miss. Ultimately, it is the student’s responsibility to ensure that all work, especially assignments missed due to an absence, are completed in a timely manner.

Late work / Make-up Work: Just like in the “real world” of business, if an employee fails to get things turned into the boss on time, there are consequences. Students that were present and didn’t do the work when originally due - Make-up assignments will be accepted up to 2 days prior to the end of the grading periods (every 4 ½ weeks). Work turned in late loses one letter grade for EACH DAY (Day A or B) late or receives max. ½ credit after 5 days late. If a student has an issue with accessing an assignment, they must e-mail regarding their issue during the time they were to do the assignment.

Attendance: In order to be eligible to receive credit for this course, the student must meet the attendance requirement as set by the State of South Carolina.

IX. Academic Assistance and Suggestions for Success

Academic Assistance is available after school until 4:30pm except on Tuesdays

X. Classroom Management Plan / Classroom Expectations

- **Cell Phones/Personal Computers** are not permitted during class and should remain in student’s backpack during class. Exceptions - teacher gives permission for use with an assignment such as taking a photo of work to turn in or students may use their phones during scheduled class breaks. Personal devices cannot be charged during class.
- **Food:** Only water with a resealable top may be consumed in the classroom but not near the computers. No other food or drink is permitted but students may eat or drink in the hall during break.
- **Classroom Computers** - Students are expected to use computers for assignments only – no games or other unauthorized usage. Non-compliance will result in parent contact and discipline referral.
- **Parent opportunity to monitor student progress** - Parents can use the parent portal and I will contact parents with concern if student’s grade drops below 75. Parents can join Google Classroom also as a guardian to receive some classroom information posted.
- **Plagiarism** – Grade given is a 0. Parents will be contacted and student receives a discipline referral.
- **Public speaking** is an essential 21st Century communication skill. To help develop this skill each student will be required to present projects during class, competitions, and other events.
- **Important Dates** –Students are required to participate in these presentation events.
 - **October 7, 2019 Piranha Pond**
 - **November 14, 2019 EDD Poster Presentations**
 - **February 22, 2020 District 5 Engineering and Science Fair**
 - **March 13, 2020 USC Region II Science and Engineering Fair**
 - **March 28, 2020 South Carolina Junior Academy of Science**
 - **May 20, 2020 EDD Final Poster Presentation**

XI. Honor Code

In order to foster an environment of mutual trust & respect, we believe, within the community of School District 5 of Lexington & Richland counties, each individual should accept the personal responsibility to exhibit & promote academic & social integrity. The Academic Honesty Policy is being implemented to ensure that students submit credible work that is evident of their content mastery. Students should be totally honest in their dealings with others. They should complete their own work and be evaluated based upon its originality. They should avoid academic dishonesty and misconduct in all its forms, including plagiarism, fabrication or falsification, cheating, and other academic misconduct.

Syllabus Acknowledgement and Information Sheet

Attached is a student information sheet. Please take time to read and discuss the syllabus and discipline plan with your child, then sign and return the attached forms.

THE CENTER FOR ADVANCED TECHNICAL STUDIES

Course Syllabus Acknowledgement & Information Sheet

Sherry Clapp

Engineering Design and Development HN

"I have read and thoroughly understand the expectations, rules, and procedures that are expected of me as a student enrolled in this course. I have also read and agree to abide by the tenants set for in the honor code policy. I realize that I am responsible for all the rules, regulations, procedures, and course requirements set forth in all classes, and the district policy manual, and I will be held accountable for the contents of this class and supporting documents."

Student Name (first & last)

Student Signature

Student Email address (print)

Student Cell Phone Number

"I have read thoroughly the contents of this syllabus and discussed with my child the expectations in this course."

Parent/Guardian Names (print)

Parent/Guardian Signature

Contact Information Name 1: _____

Home Phone Number

Work Phone Number

Cell Phone Number

Parent/Guardian E-Mail address (print)

Contact Information Name 2: _____

Home Phone Number

Work Phone Number

Cell Phone Number

Parent/Guardian E-Mail address (print)

Additional information parent/guardian wishes teacher to know:

