

Engineering Field Experience (EFE)

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2017-2018 Course Syllabus

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COURSE DESCRIPTION: This course is designed to provide the student with those experiences that are germane to the day-to-day working environment of professional engineers. Students will learn and use the principals of *fluid mechanics, statics, dynamics* and appropriate levels of mathematics in order to address either a project on public infrastructure or waste water treatment plant design. Students will also be familiarized with such topics as leadership, local, state, federal codes, and professional ethics.

This course is divided amongst two organizations;

- *Lee's Summit Public Works Department:* Students in the AM section of EFE will spend their semester working with the engineering staff at City Hall on Tuesday and Friday, 0755-1000. This project will entail an aspect of the city's infrastructure pertaining to roads, storm water, traffic, etc.
- *HDR, Inc.:* Students in the PM section of EFF will spend their semester working with the engineering staff on the essential aspects of Waste Water Treatment Plant (WWTP) design.

INSTRUCTIONAL PHILOSOPHY: This course will expose the student to what it will be like to be enrolled in a school of engineering at **any ABET** accredited school of engineering in conjunction with the daily activity of those in the profession. This instructional environment, perhaps unlike EDD, **will** separate, “the men from the boys, or the women from the girls.” as the saying goes. Along with the critical academic rigor, students will have the **privilege** of working side-by-side with those who have ‘been there and done that’ in the engineering profession. Both organizations will require a final presentation of the students’ gained knowledge and skills to an audience comprised of engineering staff, city and district officials, and various community members.

ESSENTIAL STANDARDS:

1. *LSPW & HDR:*
 - a. *Students will understand and utilize those concepts underlying the principles of fluid mechanics (statics & dynamics), and structures (statics & dynamics).*
 - b. *Students will understand and utilize those local, state, and federal policies, processes and codes that are germane to their design project.*
2. *LSPW: Students will understand and utilize those policies and procedures that govern the City of Lee's Summit's infrastructure and/or that pertain to their design project. (City of Lee's Summit, Design & Construction Manual, Ordinance No.5813, September 16th, 2004)*
3. *HDR: Students will understand and utilize those principles that underlie the design and operation of a waste water treatment plant.*

MAJOR ASSIGNMENTS/PROJECTS:

1. *Engineering notebook: This is an ongoing project item to be maintained throughout the design project process. It will be assessed on a regular, unannounced basis. This notebook will be identical to the type used during EDD.*
2. *LSPW: Students will present to the engineering staff, presentations entitled, 40%, 80%, and 100%(Final Exam) pertaining to their design project based upon those concepts and calculations shared by Dr. Rutherford and the LSPW engineering staff.*
3. *HDR: Students will; (1) compose a technical report as to the extent of their knowledge and utility of the processes used in the waste water treatment process, and (2) present their accumulated knowledge to the HDR engineering staff at the conclusion of the semester.*

ASSESSMENT PLAN: *Assessment in EFE will be accomplished via two methodologies, formative and summative either through Lee's Summit Public Works (LSPW) or HDR, Inc. Throughout the semester, students will,*

1. LSPW

- *maintain an Engineering Notebook (formative)*
- *be required to present numerous times throughout the semester (formative)*
- *open class with quizzes both computational, conceptual, and informational (formative)*
- *be required to present progress to engineering staff, 40% & 80% (formative)*
- *be required to present their design project to city officials, LSPW engineering staff, LSR7 officials, and community members (summative)*
- *others as deemed necessary by Dr. Rutherford (formative and/or summative)*

2. HDR, Inc.

- *maintain an Engineering Notebook (formative)*
- *be required to present numerous times throughout the semester (formative)*
- *open class with quizzes both computational, conceptual, and informational (formative)*
- *Final technical paper and presentation (summative)*
- *others as deemed necessary by Dr. Rutherford (formative and/or summative)*

POST-SECONDARY RECOGNITION OF PLTW/EDD

The following post-secondary institutions provide opportunities for those students completing a series of PLTW courses;

- **Missouri S&T(Rolla):** <http://pltw.mst.edu/index.html>
- **University of Missouri-Columbia:** <http://engineering.missouri.edu/scholarships/>
- **University of Kansas:**
<http://www.engr.ku.edu/prospective/undergraduate/scholarships/>

GRADING POLICY: *Grades will be figured using the Summit Technology Academy approved grading scale. Grades are cumulative throughout the semester. Semester (A1 & A2) grades are computed as per the following weighted grading system:*

1. *EDD homework: 35%*
2. *Exams: 55%*
3. *Quizzes: 10%*

Sample calculation of A1 or A2:

Homework: 550/750; Exams: 425/500; Quizzes: 340/450

$$A1 \text{ or } A2 = 35(550/750) + 55(425/550) + 10(340/450) \approx 75.7\% = C$$

Sample calculation of S1 or S2:

From previous calculation of A1 or A2

Final exam(E1 or E2): 87/100

$$S1 \text{ or } S2 = 0.80(75.7) + 0.20(87) \approx 78\% = C+$$

The students' Final Exam is their design team presentation (LSPW & HDR) in early May. It is weighted 20% of the semester grade.

Note: Any assignment, be it a paper, quiz, etc., that is not turned in (hard copy and/or email) as per the due date and time or as prescribed in this syllabus will receive a ZERO! In short, anything late will simply not be tolerated.

The following standardized grading scale is used for STA:

A = 95 - 100	C = 73 - 76
A- = 90 - 94	C- = 70 - 72
B+ = 87 - 89	D+ = 67 - 69
B = 83 - 86	D = 63 - 66
B- = 80 - 82	D- = 60 - 62
C+ = 77 - 79	F = 59 & below (No Credit)

TUTORING/EXTRA HELP PLAN: STA utilizes a pyramid of interventions in order to increase the likelihood that students successfully meet the course requirements. Tutoring or extra help can be obtained by contacting the STA teacher through e-mail, phone or a student management system (such as Blackboard or Canvas). The teacher will provide either immediate help, set up a time to meet, or utilize an online video conference method.

ATTENDANCE POLICY: Regular attendance reflects dependability. The experience gained by student design teams is of paramount importance. **Summit Technology Academy's policy may differ from that of the home school and will be in effect for the period of attendance at STA.**

A student shall be allowed no more than nine (9) absences, excused or unexcused, per semester in any one class. When a student reaches 9 days, the school will send an informational letter to the parents, regardless of prior contact by phone or conference. The letter serves as notification of the number and type of absences by the student in each class. On the tenth (10) absence, in any one class, the student will not earn credit for that class. Students will have the opportunity to work with their administrator or teacher to make up missed time prior to the end of the semester. If a student still has 10 or more absences at the conclusion of the semester, the student will be required to complete an attendance waiver appeal. A waiver to maintain full credit must be submitted by the end of the semester. This waiver should include documentation of illness, funeral, or family emergency from a medical doctor, dentist, minister, or other official source. The waiver should be turned into the attendance office.

ELECTRONIC GRADEBOOK/PARENT CONNECT WEBSITE: *Grades are updated on a daily basis. The Parent Connect website address is <http://pc.lsr7.net>*

ACADEMIC LETTERING: *Any student who has maintained a 4.0 GPA for both semesters of the STA course will receive an academic letter.*

ADDEMDUM TO COURSE SYLLABUS

TARDY POLICY: *A tardy will be issued in accordance with the student handbook. Students are on time if they are seated in their assigned seats in the classroom at 0755/1150, not simply walking through the classroom door, milling about smartly, etc. A tardy will result in a “0” on any daily opening activity/quiz. Take care of water-drinking and restroom needs, socializing, etc. BEFORE the bell sounds. Well, it’s not actually a ‘bell’ per-se, it is some weird ‘department store closing’ or, ‘make your final purchases’ type sound. Anyway..., you get my point.*

DRIVING PRIVILEGES: *Driving to STA is a privilege and can be revoked at any time. Students are allowed to drive to STA as long as their sending school allows them to drive and a permit is on file. Driving permits may be revoked if a student is frequently tardy, late to school, or exhibits irresponsible driving practices upon entering, or leaving STA, etc.*

ELECTRONICS POLICY: *No electronics or headphones are allowed in the classroom unless being used in the educational process or as directed by the instructor. Always ask your instructor’s permission before you use any device. Electronics should be placed in backpacks or purses and out of sight. Students are encouraged to interact and help one another when appropriate.*

DAILY MATERIALS NEEDED:

1. Engineering notebook: 1st notebook will be provided by STA.
2. Fluid mechanics notebook: This is to be provided by the student. Like the engineering notebook, it will be a *composition-style* notebook. Students will compile any and all fluidic work in this notebook.
3. 1, 2or 3-inch, 3-ring binder with a transparent cover slip.
4. Scientific calculator.
5. Pencil(s) and pen(s).
6. At a minimum, 2-4G flash drive.

TECHNOLOGY: *Students are required to utilize technology for various assignments. It is understood that not all students will have home access to personal computers. Computers are available at your home high schools, the public library, etc.. Your instructor will not tolerate, “I didn’t have access to a computer.”, or “My computer crashed.”, or “I can’t find my flash drive.”, or “I left my flash drive at home.”, blah, blah, blah, etc. It is wise to backup all coursework in multiple locations. Catch my drift!? Refer to late policy*