

# Course Syllabus

Spring 2019

ET 251 – STEM Internships

CRN # 20554

2211 Science and Technology Center

3 credit hours

Varies

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## Description/Purpose

*ET 251 – STEM Internships* – Teaches the skills necessary for leading and mentoring a team through an authentic technical design/problem-solving experience, the FIRST Robotics Competition. The FIRST Robotics Competition challenges teams of high-school students and their mentors to solve a common set of technical problems through the design of a multi-function robot in a six-week timeframe using a standard "kit of parts" and a common set of rules. Teams build robots from the parts and enter them in a series of competitions. Teams are rewarded for excellence in design, demonstrated team spirit, gracious professionalism and maturity, and ability to overcome obstacles. Scoring the most points is a secondary goal. All participants are winners by learning about the practical applications of science, math, and engineering, and building partnerships that last.

**Textbook:** Online resources will be provided

**Student Learning Outcomes:** Leadership, mentorship, and process management skills are critical for success in any professional career. The objective of the course is to teach students skills and strategies in managing and leading diverse groups of people through technical design and problem-solving processes. The course accomplishes this through classroom discussions and written assignments and through a hands-on field experience where students work directly with the Sunflower County Consolidated School District (SCCSD) FIRST robotics team. The course has a logical flow: developing goals and objectives, timeline, mentoring/facilitating, evaluation, and final evaluation report, recommendations and presentation. Having completed this course the student will be able to:

As a result of this course the learner should be able to:

- 1) Demonstrate leadership and mentorship skills in the context of technical scenarios with diverse groups
- 2) Apply the engineering design process and its purpose
- 3) Describe effective project management skills: establishing goals and objectives, timeline, strategies for implementation, implementation, assessment and evaluation of project outcomes related to goals and objectives.
- 4) Demonstrate skills and strategies for facilitating team processes
- 5) Demonstrate application of technical skills, including the engineering design process, in a practical field-based setting
- 6) Demonstrate leadership and mentorship skills in the context of technical scenarios with diverse groups
- 7) Apply the engineering design process and its purpose

- 8) Describe effective project management skills: establishing goals and objectives, timeline, strategies for implementation, implementation, assessment and evaluation of project outcomes related to goals and objectives.
- 9) Demonstrate skills and strategies for facilitating team processes
- 10) Demonstrate application of technical skills, including the engineering design process, in a practical SCCSD-based setting

## Course Requirements:

### Spring 2016

- 1) **Regular attendance at key events such as class meetings, SCCSD robotics team's weekly meetings, and at least one competition is required.** Exceptions for extenuating circumstances with good cause will be made.
- 2) You will be expected to **co-develop with your subteam a timeline/gantt chart beginning with the goals and objectives** outlining the responsibilities for the final four weeks of build season for your subteam, due the following **Monday, January 14th**.
- 3) During the build season, the shop will be open 6 days a week. Due to the nature of the project and the time commitment of the high school students, you must log a minimum of **15 hours each week** with your assigned groups during the build season which ends **February 16th**. You should record your hours on the memo that you submit in Scholar each week.
- 1) You will be **expected to attend the regional competition** (New Orleans, LA) and possibly other competitions with team 6068 as a mentor should the robot win and advance (food, transportation and lodging will be provided).
- 2) You will be expected to keep **record of all of your activities** related to the goals and objectives each week in a logbook. Bring to class on **Monday, March 25th**. This logbook will help you with your final evaluation report.
- 3) You will be expected to complete **memos and an abstract**, one at the beginning of each week, **1/7, 1/14, 1/21, 1/28, 2/4, and 2/11** answering these questions: 1. What is the status of your sub-team? 2. What is your plan for the path forward for the sub-team and how will you facilitate it? The abstract is due on **4/15** is a summary of your recommendation and rationale for your final report.
- 4) You and/your mentoring group/peer will be expected to submit a **final evaluation report** due **4/15**. The evaluation will include the goals and objectives for your subteam, your activities related to the goals and objectives, your assessment of your subteam's effectiveness in achieving the goals and objectives, challenges and recommendations. You will choose one of the recommendations and translate it into a strategy that you develop and submit to the FIRST high school teaching staff. See the final project template attached to this syllabus.
- 5) You and/your mentoring group/peer will be expected to make a **final oral presentation (15 min.)** of this evaluation for the high school faculty.

### Grading:

Career Orientation Presentation	10%
What I Bring to the Project Reflection	10%
Five week timeline/gantt chart w/goals and objectives	10%
Five Memos w/time logs	20%
Log books	15%

Final Evaluation Report:  
Final Presentation:

20%  
15%

**Project Expectations:**

This STEM internship is unlike any other class you've taken at MVSU. As university students, you will lead and mentor high school students from the SCCSD who are part of the FIRST robotics course at the high school level. **You are serving as a role model for younger students.** Mentorship of emerging engineers, even before they formally identify this as their career area, is an important service to the profession, and a primary goal of FIRST. It is a commitment that will require a lot of time and energy, but that effort will make a positive impact in the lives of many other people.

It is important to note that the project will be extremely time intensive during the six week build period. Although the requirement is a minimum of 15 hours in the workshops, mentors are expected to put as much time as possible into the project. Time commitment to the FIRST program beyond the build season which ends mid-February is reduced considerably (but continues!). Travel to and from the SCCSD shop, which is located at Gentry High School in the Career and Technical Center is required.

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**Honor Code:** Any work submitted is expected to be yours. Dishonesty (cheating) in any form will not be tolerated and will be handled by your instructor following the "*Academic Sanctions for Cheating or Plagiarism*" as published in the 2013-2015 Mississippi Valley State University Undergraduate Catalog.

**Other:** All student conduct policies are in full effect as outlined in the Mississippi Valley State University Undergraduate Catalog. You are serving as an example to others. Conduct yourself accordingly!

**Accommodating Special Needs Students:** Students with learning or physical disabilities admitted to this class will be expected to perform the same level of work at the same proficiency as students without disabilities. However, where necessary, alternative methods will be used to accommodate any learning or physical condition if it is made known to the instructor in advance. No student will be turned away from this class because of a disabling condition.

The Mississippi Valley State University's ADA (Americans with Disabilities Act) Office offers students with disabilities (as defined by the ADA definition of a disability) accommodations according to provided documentation. Disability may include learning, psychiatric, physical disabilities, or chronic health disorder. A disability is a permanent condition which substantially limits one or more major life activities. Contact the MVSU ADA Office in the Technical Education Building:  
Kathy Brownlow, ADA Coordinator (662) 254-3443 or [kbrownlow@mvsu.edu](mailto:kbrownlow@mvsu.edu)

**Withdrawals and Incompletes:** A syllabus constitutes a contract between the student and the course instructor. Participation in this course indicates your acceptance of its teaching focus, requirements, and policies. Please review the syllabus and the course requirements as soon as possible. If you believe that the nature of this course does not meet your interests, needs or expectations, if you are not prepared for the amount of work involved or if you anticipate that the class meetings, assignment deadlines or abiding by the course policies will constitute an unacceptable hardship for you, you should drop the class by the drop/add deadline. Incompletes will not be offered in this course.

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## Final Report

(This final report is used to give a summary of progress to date, the overall project situation, and sufficient information to make recommendations on what to do next for your subteam.)

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## 1. Executive Summary

(Summarize the report so that the reader can be readily acquainted with what it consists of)

## 2. Goals and Objectives

## 3. Data Sources

(This project report is based upon the following.)

## 4. Overall Analysis

(What is your overall assessment of the project in terms of the three categories?)

- Planning, Designing and Construction
- Subteam Structure
- Mentor/Mentee Structure

## 5. Strengths

- Planning, Designing and Construction
- Subteam Structure
- Mentor/Mentee Structure

## 6. Weaknesses

- Planning, Designing and Construction(Engineering Design)
- Subteam Structure
- Mentor/Mentee Structure

## 7. Recommendations and Strategies

(Recommendation of a solution for the future of this project specific to your subteam/description)

## 8. Solution (Example)

## 9. Signatures

Prepared By

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Date

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