# SPACE 478: Engineering for the Space Environment
## Fall 2018 Syllabus and Course Conduct Statement

**Time:** 11:30-1:30pm Tuesdays, Thursdays  
**Location:** 2246 Space Research Building  
**Instructor:** Professor Susan Lepri  
2429 Space Research Building  
slepri@umich.edu  

**Grader:** Daniel Brandt, CLaSP graduate student, branddan@umich.edu  

**Office Hours:** Thursdays 1:30-2:30

**Text:** The Space Environment and Its Effects on Space Systems 2nd Ed (Aiaa Education Series) by Vincent L. Pisacane  

**Make-up Classes:** The professor will attend several out of town meetings during the semester; therefore some lectures may need to be rescheduled from time to time, and guest lecturers may appear on occasion.

**Tentative Schedule and Topics:**

| Week 1  | W1_Tues | Intro to Class, Chapter 1: Introduction  
|         | W1_Thurs| Intro to Plasmas, E&M  
| Week 2  | W2_Tues | Start Chapter 2: Risk Management  
|         | W2_Thurs| Chapter 2  
| Week 3  | W3_Tues | Start Chapter 4: The Solar System  
|         | W3_Thurs| Chapter 4  
| Week 4  | W4_Tues | Start Chapter 5: The Sun  
|         | W4_Thurs| Chapter 5  
| Week 5  | W5_Tues | Start Chapter 7: Gravitational Fields  
|         | W5_Thurs| Chapter 7  
| Week 6  | W6_Tues | Start Chapter 8: Magnetic and Electric Fields  
|         | W6_Thurs| Chapter 8  
| Week 7  | W7_Tues | No Class- Fall break  
|         | W7_Thurs| Midterm Exam 1  
| Week 8  | W8_Tues | Start Chapter 9: Magnetosphere  
|         | W8_Thurs| Chapter 9  
| Week 9  | W9_Tues | Start Chapter 10: Space Radiation Environment  
|         | W9_Thurs| Chapter 10  
| Week 10 | W10_Tues| Start Chapter 11: Radiation Interactions  
|         | W10_Thurs| Chapter 11  

Week 11  W11_Tues  Start Chapter 12: Neutral Environment
W11_Thurs  Chapter 12
Week 12  W12_Tues  Start Chapter 13: Plasma Interactions
W12_Thurs  No Class - Thanksgiving Break
Week 13  W13_Tues  Exam Review
W13_Thurs  Midterm Exam 2
Week 14  W14_Tues  Presentations
W14_Thurs  Presentations
Week 15  W15_Tues  Presentations  last class

Grading Apportionment:
Homework:  30%
2 Midterms: 40%
Final Project: 25%
Attendance/Participation: 5%

Milestone Dates:
9/5  First day of class
10/19  Midterm 1
10/18  Fall Break
11/22  Thanksgiving Break
11/30  Midterm 2
12/12  Last Day of class Case Study Final Presentations

Final Project: There will be a Final Project that will require both a written and oral component, each counting for 50% of the Final Project grade. The topic of the project will be discussed in class. It will be due after thanksgiving and oral presentations will be given during the last two weeks of class. This project will be a group project, but everyone must hand in an individual written report. The report will be on the order of 10-20 pages, and the presentations will be on the order of 20-30 minutes. Details will be discussed in more depth in the end of September.

Course Conduct Statement
The College of Engineering has an honor code, which is taken seriously. For more details, please visit:  http://honorcode.engin.umich.edu/wp-content/uploads/sites/147/2014/07/Honor-code-pamphlet-Adobe-Prof.pdf

Policy on Homework
You are encouraged to form study groups to work on homework problems and to study in other ways. You are allowed to consult with other students during the conceptualization of a problem. However, all written work, whether in scrap or final form, is to be generated by you alone. Show all work for homework problems, a correct answer can be marked down if work is not shown on how you arrive at the answer. You are not allowed to possess, look at, use, or in anyway derive advantage from the existence of solutions.
prepared in prior years, whether these solutions were former students' work product or copies of solutions that had been made available by others. You may be required to use a computational math program (Mathematica, MATLAB, etc.) for homework. Be sure such work is clearly annotated. In modern software, the number of comment lines describing the calculation is expected to exceed the number of lines of actual code. You should meet this standard. Unless arrangements are made beforehand, late homework will be given half credit if submitted before the on-time homework is graded and returned. After the homework has been graded and returned, late homework will no longer be accepted.

**Policy on Exams**

You are to complete all examinations on your own, with only benefit of the allowed aids that you yourself have prepared, and without looking or talking about at the examination work of others. Violation of this policy is grounds for me to initiate an action that would be filed with the Dean's office and would come before the Honor Council of the College of Engineering. If you have any questions about this policy, PLEASE do not hesitate to contact me.

**Grading policy:**

Grading of each homework or exam problem will be numerical on a 10-point nominal scale. The meanings of the points are:

10. A complete and correct yet succinct treatment of the problem, methods used for generating the answer are explained clearly, and logically move through the steps.
8. Nearly correct work deficient in various details.
5. Correct approach and concepts, however lacking the necessary mathematics or conceptual reasoning to obtain the correct result.
3. Shows the ability to identify relevant known formulae or simple concepts but not to successfully apply them, or work that fails to adequately set up and define the problem.)
1. Some work, but incorrect approach and incomplete work.