EE5600 – Interference Control in Electronic Systems
Fall Semester, 2017

Instructor:
Dr. Daryl Beetner
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Office: EECH 139
Web page: http://www.mst.edu/~daryl
Office hours (tentative): MW 9:00-10:00
(though I’m often available at other times – just as Sandy Martin)

Prerequisites: EE3600: Electromagnetics I, and EE3400: Cont. Linear Systems.


Course Objectives:
1. Learn to diagnose and solve basic electromagnetic compatibility problems.
2. Develop the skills necessary to design electronic systems that function without errors or problems related to electromagnetic compatibility.
3. Understand real-world design constraints and learn to make appropriate trade-offs to achieve cost-effective design that meets necessary requirements.
4. Learn to effectively describe EMC-related concepts and ideas to circuit and system designers.

Material Covered: (tentative).
- Introduction: EMC definitions, history, and regulations
- Resistance, capacitance, inductance
- Common impedance, capacitive, and inductive coupling and crosstalk
- Common and differential mode currents
- Spectral characteristics of digital signals
- Electromagnetic measurements
- Radiation mechanisms and antennas
- Shielding
- Current return path
- PCB design
- Power bus decoupling
- Grounding
- EMC filter design
- Digital circuit susceptibility, ESD and lightning

Grading: (tentative)
28% Test 1
28% Test 2
32% Final Exam
10% Homework, quizzes, and labs
2% Evaluation (I can push you up or down by 1%. Unusual to push you to an A if no test scores with an A).
Tests and Quizzes:
Tests will cover material from the lectures, text, homework and labs, with a slight emphasis on homework. Tests will primarily cover material presented since the last exam, though some material from earlier tests is not uncommon. Final exams are comprehensive, though an emphasis will be placed on material that was not covered on previous tests. I reserve the right to give small, surprise, in-class quizzes and adjust grade distribution accordingly.

Test dates:
Test I: Approximately Sept. 25
Test II: Approximately Oct. 30
Final: TBA

Test locations to be announced.

Homework:
- In general, homework assignments will be posted on the web on the Canvas websites, http://canvas.mst.edu.
- You are expected to read appropriate sections of the textbook before they are presented in class.
- Homework problems will be assigned in class or through email.
- As a rule of thumb, no late homework is accepted.
- Homework may involve some lab work.
- While you are expected to complete all assigned problems, the grader may randomly pick only certain problems to grade. It is common in larger classes to compute your grade based on the accuracy of 1 or 2 problems and an evaluation of how hard you “tried” on the rest.
- Lowest homework grade is dropped.
- Extra credit may occasionally be offered. You will not be penalized for not completing the extra credit, but if you have cause to be concerned about your grade I strongly recommend you take advantage of it when available.
- I strongly encourage you to study with others, as this can be a powerful tool for learning. However, I insist that you must a) attempt to understand and solve each problem by yourself and b) thoroughly understand any solution you turn in. If you cannot adequately explain the basis for your solution at a later date, no credit will be given even if your solution is correct. Simply “copying someone else’s homework will be considered cheating and will not be accepted under any circumstances.
- Homework is due at the beginning of class.

Partial Credit:
Problems are rarely graded as all-or-none. Emphasis is placed first on proper understanding of the concepts, then on proper application of those concepts, and lastly on “the right answer”. You will not be severely penalized for minor, non-conceptual errors. On the other hand, a simple answer with no work or explanation may not be given full credit.
If you feel you deserve more credit on a problem than was given, you may submit a written request for additional credit, clearly stating why you deserve additional credit. Such requests may not be made until 24 hours after the exam was handed back and should be in the form of a memo like you would use when communicating between professionals on the job. No requests will be accepted after 30 days.

**Attendance:**
Attendance to lectures is generally not required; however, I will not be sympathetic to problems caused by skipping class without a documented excuse. Excessive absence (in particular, failure to attend a quiz or exam without an excuse) may cause you to be dropped from the course. Attendance to quizzes and exams is required and will result in a zero score if missed.

**Cheating:**
Don’t do it. The consequences are bad and the rules are enforced. If you have any question about what is and is not allowed, ask. Examples include using or giving information during an exam, using someone else’s solution on a homework assignment and turning it in as your own, using notes where they are not allowed, and requesting a regrade of a problem that has been altered. There are many others. For additional information, see page 30 of http://registrar.mst.edu/academicregs/index.html.

**Disability Support**
Any student in need of academic accommodations because of a disability should contact the Disability Support Service (http://dss.mst.edu/; dss@mst.edu).

**Lead Learning Assistance**
If you are having troubles in the course, please don’t hesitate to come see me. In addition to working with me and other students in the course, you might also be able to find some help from the student tutors and help sessions at the LEAD learning center, http://lead.mst.edu/.

**Title IX**
US Federal Law Title IX states that no member of the university community shall, on the basis of sex, be excluded from participation in, or be denied benefits of, or be subjected to discrimination under any education program or activity. For more information, please visit http://titleix.mst.edu.