GENERAL GUIDELINES:

On-Campus Students:
1. Assignments handed in after the due date will be worth a maximum of 50%. However, I will allow extensions if you consult with me in advance, and have a major schedule conflict.
2. Feel free to contact me by phone or e-mail if you have questions and can't make it to our offices easily. I have a link to my Google calendar posted on the course web page. Please refer to that to check my availability, especially if you want to schedule a meeting.

Outreach Students:
1. This is not a self-paced class. Engineering Outreach students are expected to finish the course at the same time as the on campus students.
2. Due dates for homework and projects will generally be specified the same as the due date for on-campus students. This is the date when your assignment reaches Moscow. Assignments will be worth a maximum of 50% after the due date. However, I will allow extensions if you consult with me in advance and if you have a major schedule conflict.
3. Returned homework and projects may not reach you prior to exams. Please make copies of any assignments that you believe may be useful before you submit them.
4. Please put your name and the course number on top of the first page of each exam and homework, especially if submitting by FAX or e-mail. It would be best if your name was in the header of each page. E-mail submission of assignments is ok, as long as compatible file formats are used. Allowable formats for electronic submission are Adobe Portable Document Format (PDF), Microsoft Word (*.doc or *.docx), Rich Text Format (*.rtf) or MathCAD 15 (or earlier) or Prime 3.1 (or earlier), and transient program files. Limit the number of attached files. I don't want a large number of files with no documentation on what order to use them.
5. Make sure you number your pages as: 1/4, 2/4, etc., so I know whether or not I have a complete set. Also make sure writing is dark and clear on the FAX or a scan.
6. Phone calls or the use of e-mail for asking questions is encouraged. You are welcome to call outside of office hours. The Engineering Outreach 800 line is available 24 hours a day so you can reach me outside of their hours. I have a link to my Google calendar posted on the course web page. Please refer to that to check my availability, especially if you want to schedule a meeting.
7. Library Resources: As a UI student, you not only have access to valuable print and electronic resources from the university's library, such as access to IEEEXplore, but you also have the access to personalized assistance from the librarians. If you have assignments or research questions and aren't sure how to make the most of library resources from off campus, you can visit the Off-Campus Access information page on the library's website at http://www.lib.uidaho.edu/help/offcampus.html
As a UI student you can also download a VPN client from the ITS Help Desk: http://www.uidaho.edu/its/Software. You will need to log in using your UI student account.
What Are Electromagnetic Transients?

- Power systems normally in steady-state
  » Or Quasi-steady-state
  » Allows use of RMS phasors
- Switching, operations, faults, lightning,
  » Response frequencies from DC to MHz
  » Generally dies out rapidly (higher freq.)
  » Large voltage and currents are possible
  » RLC response to change in voltage or current

Why Analyze Transients?

- Power systems operate in sinusoidal steady-state majority of time
- Sudden changes cause large voltage and currents
  » Including faults and response to clearing faults
- Protection decisions before transients die out
- Or even based on transients
Classification by Frequency Range (CIGRE WG 33.02)

- Low frequency oscillations
  - 0.1 Hz – 3 kHz
- Slow front surges (most switching)
  - 50/60 Hz – 20 kHz
- Fast front surges (lightning, some classes breakers)
  - 10 kHz – 3 MHz
- Very fast front surges (disconnector restrikes, GIS)
  - 100 kHz – 50 MHz

Validation of Models...

- Graphical user interfaces have made transients programs much easier to use
- It is very easy to get simulation results
- But it is critical to be able to verify that the results are correct
- First step is validating the system model