ECE 444 / 544

SUPERVISORY CONTROL
AND CRITICAL
INFRASTRUCTURE SYSTEMS

SESSION no. 1
Project
- Individual or team
- Propose project
- Project report or presentation
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.
3. We will be scheduling lab sessions using the model power system outside of the normal class time. We will try to set times that don't cause problems with your work schedules or the schedules for your other classes.

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). Limit to one or two attached files. We don't want a large number of files with no documentation on what order to use them. Make sure you number your pages as: 1/4, 2/4, etc., so we know whether or not we have a complete set. Also make sure writing is dark and clear on the FAX or a scan. If submitting by e-mail, please copy the course TA on your submission:
   Hussain Beled (bele5082@vandals.uidaho.edu)
5. 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.
6. 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 IEEEnet, 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.
ECE 444/544: Transients in Power Systems

Homework #0

Due: Session 3: [January 31]

- Name:

- Please describe background (courses, internships, etc.) related to class

- Why you are taking this class?

- What topics you are most interested in?

- What you hope to get out of this class?

- Hobby or fun fact
Different names

Industrial Control System (ICS)

Cyberphysical Control Systems (CPS)

Internet of Things (IoT)

Smart Grid
• SCADA - Supervisory Control and Data Acquisition

• Distributed Control System (DCS)

Distributed Automation
History of Applications of Supervisory Control

- Have machines replace or at least supplement human operators
- Improve performance
- Enabled by better understanding and use of electricity, magnetism, and measurements
Integrated circuits, special purpose computer platforms, communication systems, supplemented with communication systems.
Critical Infrastructure and ICS

- Power Industry
  - Power Plants, Transmission Lines
  - Substation Equipment
  - Facilities
- Water system in cities
- Oil & Gas pipeline systems
- Communications
- Air traffic control
- highways
- railroads

ICS - evolved slowly

- Equipment expected to have 30-40 year life
- minimum maintenance
- replacement ports