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# **Time Domain Simulation and Optimization for Design**

## **Lecture Set 0 Course Policies and Syllabus**

S.D. Sudhoff

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# Topics

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- Lecture Outline (50 minute lectures equivalents)
- Time Domain Simulation
  - Theory of Time Domain Simulation (2)
  - Coding of Simulation Engines (2)
  - Use of Matlab Simulink (2)
- Optimization for Design
  - Basic Single Objective Optimization (1)
  - Single Objective Optimization Using Genetic Algorithms (2)
  - Theory of Multi-Objective Optimization (2)
  - Multi-Objective Optimization Using Genetic Algorithms (2)
  - Single and Multi-Objective Optimization Using GOSET (2)

# Motivation of the Course

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- Existing Courses
  - ECE61014
  - ECE61016
  - ECE63300
  
- New Course
  - ECE69500 (for the moment)

# Before You Take This Course

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- Prerequisites
  - Undergraduate level background in linear algebra and ordinary differential equations
  - Should be familiar with Matlab, and writing Matlab scripts and functions
  - Need not be familiar with but will need access to Simulink

# Contact Information

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- Instructor: Professor S.D. Sudhoff
  - Office: Wang 2057
  - E-mail: [sudhoff@purdue.edu](mailto:sudhoff@purdue.edu)
  - Phone: 765-494-3246
- Office Hours:
  - MWF2:30-3:30
- Course Web Site
  - <http://cobweb.ecn.purdue.edu/~sudhoff/>
- Area Web Site
  - <https://engineering.purdue.edu/ECE/Research/Areas/PEDS>
- Secretary: Lori Carte
  - Office: Wang 2080
  - E-mail: [ljcarte@purdue.edu](mailto:ljcarte@purdue.edu)
  - Phone: 765-494-6442

# Homework/Projects/Final Grade

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- Problems should be e-mailed to [sudhoff@purdue.edu](mailto:sudhoff@purdue.edu) by 10:00 pm of your local time as directed in the homework
- Late homework will be docked 15 percent per business day late. After three days it won't be accepted.
- Final grade will be determined based on a weighted average of the problems (with harder problems worth more points)

# Cheating

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- At minimum, cheating will result in a zero on the assignment in question.
- All instances of cheating, even suspected cheating, will be reported to the ECE Assistant Head for Education and the Assistant Dean of Students

# Disclaimer on Policies

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- In the event of a worldwide pandemic, asteroid impact, global flood, sharknado, lavalantulas, invasion of space-alien homework-eating cyborg super beagles, or event such as one might see on a bad science fiction movie (of which I am a connoisseur), class policies may be adjusted midcourse. Information will be posted on course web site in such a case.

# Emergency Preparedness

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- To report an emergency, call 911. To obtain updates regarding an ongoing emergency, sign up for Purdue Alert text messages, view [www.purdue.edu/ea](http://www.purdue.edu/ea).
- There are nearly 300 Emergency Telephones outdoors across campus and in parking garages that connect directly to the PUPD. If you feel threatened or need help, push the button and you will be connected immediately.
- If we hear a fire alarm during class we will immediately suspend class, evacuate the building, and proceed outdoors. Do not use the elevator.
- If we are notified during class of a Shelter in Place requirement for a tornado warning, we will suspend class and shelter in the basement.
- If we are notified during class of a Shelter in Place requirement for a hazardous materials release, or a civil disturbance, including a shooting or other use of weapons, we will suspend class and shelter in the classroom, shutting the door and turning off the lights.
- Please review the Emergency Preparedness website for additional information.  
[http://www.purdue.edu/ehps/emergency\\_preparedness/index.html](http://www.purdue.edu/ehps/emergency_preparedness/index.html)

# Disabilities

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- Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: [drc@purdue.edu](mailto:drc@purdue.edu) or by phone: 765-494-1247.” <http://www.purdue.edu/drc/faculty/syllabus.html>

# In the Event of Something...

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- Contact me!
- The earlier I know, the better the chance I can do something useful

# Background

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- BSEE, Purdue, 1988
- MSEE, Purdue, 1989
- PhD, Purdue, 1991
- P.C. Krause and Associates, 1991-1993
- University of Missouri – Rolla, 1993-1997
- Purdue, 1997 –

# Interests

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- Electromechanical Devices
- Power Magnetics
- Applied Automatic Control
- Power Electronic Based Systems
- Evolutionary Computing / Optimization Techniques
- Automated Design