

Introduction to ESE112

Course Overview

Introduction

- Instructor:
 - Diana Palsetia
 - Email: palsetia@seas.upenn.edu
 - Office Hour: TBA
- Meeting Times:
 - Lecture - T: 11:00-1 in Moore 212
 - Couple days we be in Moore 207
 - Lab - TW: 4:30-6:30pm in Moore 204
- Course Website:
<http://www.seas.upenn.edu/~ese112/>

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- Introductory programming that is integrated with traditional engineering theory
- Involves 2 components:
 - Computer Programming Lecture with Java Programming Language
 - Engineering Lab
 - You must enroll in both components
 - If you already know Beginner Level Java then come see me

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ESE112 contd..

- Get perspective for ESE
 - Unique set of labs that give you perspective to ESE
- Programming skills
 - A must have skill – just not for CS students
- Work on real-world engineering problems
 - E.g. 1 Designing & Prototyping a robotic sensing system
 - E.g. 2 Optimizing robot walking
- Communicate technical content

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Goals

- Able to apply knowledge of mathematics, and science to solve engineering problems
 - programming, circuit theory, calculus
- Develop problem solving and critical thinking skills
 - Investigate solutions by applying and evaluating information gathered from, or generated by observation, experience, and reasoning
 - Adapt to different thinking and working styles when working in a team
- Learn how to communicate your ideas to others in the field

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ESE major overview

- Electrical Engineering
 - Technology behind
 - Power & Energy
 - Gadgets: LCD displays, computers, phones, robots
 - Communication Devices : Radio, cell phones, WiFi, satellites
 - Electrical engineers are concerned with:
 - Electricity to transmit energy (power engineering)
 - Using electric signals to sense, store and transmit information (electronics engineering)
- System Science and Engineering (SSE)
 - Aspects of engineering pertaining to a system

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ESE (contd..)

System

- An arrangement (pattern, design) of parts which interact with each other within the system's boundaries (form, structure, organization) to function as a whole



Ben Franklin – Urban Challenge

<http://www.benfranklinracingteam.org/>



Rhex

http://kodlab.seas.upenn.edu/~edubot/wiki/index.php/Main_Page

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ESE (contd..)

SSE contd..

- Designing and developing a system requires integration of several scientific and technical fields
 - Math and Sciences
 - Computing (computer science)
 - Mechanical & Material Engineering
 - Many more...

Computer & Telecommunications Engineering (CTE)

- Computer Systems & Information Exchange (Internet)
 - Design & Building computers (embedded and general purpose) & networking systems

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Get to work with

- **EduBot**
 - Hexapedal robot
 - Independently moves forward or backward
 - Climbs over a variety of terrains
- **Exemplifies Core ESE Disciplines**
 - EE – electrical devices; electrical circuits
 - CE – embedded and distributed computation
 - SSE – composition, multiple hierarchies of subsystems



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Grading

- **Programming is 0.5 cu or 50%**
 - 3 Programming Exams: 60 % (15%, 20%, 25%)
 - Exam 1 (week of Feb 16th)
 - Exam 2 (week of March 30)
 - Exam 3 (Final Exam Period)
 - Homework: 30%
 - Participation & Attendance: 10%
 - Late Policy for assignment: 10% off per day up to 4 days and then no credit
 - No makeup exams are scheduled. Conflict? Schedule in advance

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Grading contd..

- Lab is 0.5 cu or 50%
 - Pre-lab exercise: 15%
 - Lab Report Write-ups: 70%
 - Quizzes (1-2): 15%
- Pre-labs due at start of the lab
 - Late pre-labs will not be accepted
- Lab report late submission policy
 - 10% per day up to 4 days and then no credit
- Missing Labs
 - Due to the nature of the course, making up missed labs is not possible.
 - Unexcused absences will result in a **15% penalty** for that lab

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Lab Logistics - Prelab

- Before lab period we will post lab with related background material
 - There is **no textbook** for this course
- Questions termed as “Pre-lab” are to be completed & turned in at the start of the lab
 - Work individually
 - Preferably typed (please write legibly)

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Lab Logistics - Post Lab Report

- Post-lab Write-ups
 - A technical report to communicate the findings of your lab experiments
 - Is to be done *individually*
 - The report must be typed
 - See report writing guidelines document on the website
 - You may use course notes & lectures provided and any external source (properly cited) with exception of past years lab/students



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Lecture Logistics

- Learn programming theory & practice to get comfortable to do lab assignments
 - There is no required textbook for programming as well
- Any material supplemental to lab that needs to be communicated

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Lab Logistics - Working in Lab

- Labs are to be done in groups of 2 or 3
 - You are encouraged to collaborate within your group and use any resources available to you
 - However, you may not discuss the lab with other groups



- Throughout the semester you may choose your *own* groups
 - HOWEVER, you may not work with the same person *twice* throughout the semester

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Any questions ?

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