ESE 313
https://ese313upenn.wikidot.com/
Robotics and Bioinspired Systems
Lecture 0: Administrative Details
Dan Koditschek, Course Instructor
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Deniz Ilhan, Lab Instructor
bdeniz@seas.upenn.edu
Philosophy

• Need for Lifelong Education: Independent Learner
  – Human knowledge continues to explode
  – Technology changes too quickly to teach much detail beyond foundations

• Independent Learner ⇒ Critical Thinker
  – Motivated: curiosity-driven inquiry
  – Skeptical: evidence-driven “cross-checks”
  – Social: diverse-group-driven progress

• Critical Thinker ⇒ Scientific Researcher
  “social creation of a never-ending web of technical hypotheses

• Bioinspired Engineering Science
  – Engineering: synthesis is the arbiter of understanding
  – Bioinspired: new angle on the art-rationality spectrum
    “…what design did evolution come up with in surmounting this problem..?”
Components: Lecture, Lab, Project

- T, Th 1:30 – 3:00 Towne 305 or Ketterer Lab, https://ese313upenn.wikidot.com/
- Topic Lecturer: Dan Koditschek (kod@seas.upenn.edu)
  - Bioinspiration in Engineering Design
  - Mechanical Aspects of Locomotion
  - Neuromechanical Aspects of Locomotion
  - Precognitive-Neuro Implications of Locomotion
  - Precognitive-Social Implications of Locomotion
  - Mathematical Methods
- Office Hours: Moore 202, Tu & Th 3:00 – 4:00
  - Or by appointment through Delores Magobet (magobet@seas.upenn.edu)
Components: Lecture, Lab, Project

- Lab TA: Deniz Ilhan (bdeniz@seas.upenn.edu)
  - Lab Warmup 0: Introduction to EduBot/Junior & Dynamism
    Due Dates - Prelab: 1/21; Demo & Report: 1/28
  - Lab Warmup 1: Mathematical Underpinnings of a RHex Gait
    Due Dates - Prelab: 1/27; Demo & Report: 2/2
  - Lab Warmup 2: Dynamics of Steering
    Due Dates - Prelab: 2/2; Demo & Report: 2/17
  - Lab Warmup 3: Proprioceptive Sensing and Locomotion
    Due Dates - Prelab: 2/17; Demo & Report: 3/3
  - Advice & Consulting on 2nd Half-Semester EduBot Experiments

- Office Hours: Ketterer Lab
  - Times TBA
Components: Lecture, Lab, Project

• Search and Writing Mechanics Lecturers: SEAS TCP
  – Douglas McGee, Assistant Director, Engineering Library
    o dmcgee@seas.upenn.edu
    o Electronic search methods and bibliographic databases
    o Annotated bibliographies
  – Mary Westervelt, Director, Technical Communication Program
    o mwester@seas.upenn.edu
    o Technical Writing
    o Technical Oral Presentations
  – TCP Fellows (advice & consulting on communications-related assignments)
Communications Assignments

• C.1) Source Acquisition – using search tools
• C.2) Source Annotation – how to read
• C.3) Problem Formulation – how to hypothesize
• C.4) Oral Project Proposal – how to pitch technical ideas
• C.5) Experimental Methods & Setup – what to do
• C.6) Draft Technical Report – getting all the pieces in place
• C.7) Oral Final Project Presentation
• C.8) Final Project Report – how to write
• C.9 & C.10) [Written Reviews and Evaluations]
Laboratory

• EduBot/Junior
  – Six-legged bioinspired robot

• 4 Warmup labs
  – Familiarize students with the robot
  – Learn the capabilities of the robot
  – Explore ways to improve or explore new territory with EduBot

• Original project
  – Use experience from the warmup labs along with what you’ve found in your research to develop an original hypothesis
  – Second half of class we work with you to complete your project
  – Active dialog all semester, ask us about projects as you think of them!
Timing and Scoring

(This schedule, posted at https://ese313upenn.wikidot.com/course-description#toc14, will be subject to change as the semester moves along)

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<th>Week</th>
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**Total Course Score = 0.4 I + 0.5 G + 0.1 C**