Syllabus
Mechanical Engineering EN.530.649
System Identification
Spring, 2015
(4 credits, EQ)

Description
Welcome to ME 530.649, System Identification. This course provides a graduate level introduction to system identification. The course will cover several fundamental approaches system identification, including spectral, prediction error, and subspace identification methods. The emphasis will be on LTI systems and in particular on spectral methods, but some time may be devoted to system identification for classes of nonlinear dynamical systems, such as those that are linear in parameters.

Prerequisites
Required course background: multivariable integral and differential calculus, linear algebra, ordinary differential equations, and a graduate course in Linear Systems Theory (e.g. ME 530.616, ECE 520.601 or BME 580.616). Programming: Knowledge of the Matlab programming language including data input/output, 1-D and 2-D arrays, and user-defined function calls. Students with experience with these language elements in other programming languages (C, C++, Python, Java, etc.) should be able to self-tutor themselves in the Matlab language as part of the programming exercises.

Instructor
Professor Noah J. Cowan,mailto:me530.649-instructor@jhu.edu
http://limbs.lcsr.jhu.edu/people/cowan/
Office: Hackerman 126, 410-516-5301
Office hours: In class and by appointment.

Teaching Assistants N/A

Meetings
MWF, 9:00-9:50 am, Hodson 303

Textbook
- Required: Ljung [1]:
  http://proquestcombo.safaribooksonline.com.proxy1.library.jhu.edu/9780132441933
- Recommended System ID reading:
  (1) Pintelon and Schoukens [2]:
  http://ieeexplore.ieee.org/xpl/bkabstractplus.jsp?bkn=6198969
  (2) Soderstrom and Stoica [3]:
  http://user.it.uu.se/~tets/sysidbook.pdf
- Recommended reading for System Theory: Murray and Astrom [4].

Online Resources
Website:http://limbs.lcsr.jhu.edu/people/cowan/courses/sysid/
Course Expectations & Grading
Coursework includes, roughly, weekly problem sets (some of which use Matlab numerical programming environment), one midterm examination, a final examination, and a course project. Problem sets, midterm exam, final exam, and project each represents approximately 20-30% of the course grade. Active class participation is expected. 
No credit will be given for late work unless previously approved by the instructor or in exceptional circumstances.

Key Dates
TBA

Ethics
The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition.
In addition, the specific ethics guidelines for this course are:
(1) Working together on problem sets is encouraged, but it must be acknowledged on your problem set. DO NOT COPY. Your problem set writeup should come from your brain not your friend’s paper.
(2) DO NOT share any source code via email or other sharing means (dropbox, git, etc).
(3) While working on your final write-ups for assignments, you may refer to your own class notes, your own laboratory notes, the text, internet, etc.
(4) Disclosure of Outside Sources: If you use outside sources other than your class notes and your text to solve problems in the pre-lab and lab assignments (i.e. if you have used sources such as your roommate, study partner, the Internet, another textbook, a file from your office-mate’s files) then you must disclose the outside source and what you took from the source in your writeup. THIS IS GENERALLY OK – just disclose your sources. While most problem sets are unique, some problems will inevitably be re-used from previous years. If you discover solutions online, please let me know.
Report any violations you witness to the instructor.
You can find more information about university misconduct policies on the web at these sites:
    • Undergraduates: e-catalog.jhu.edu/undergrad-students/student-life-policies/
    • Graduate students: e-catalog.jhu.edu/grad-students/graduate-specific-policies/

Students with Disabilities
Any student with a disability who may need accommodations in this class must obtain an accommodation letter from Student Disability Services, 385 Garland, (410) 516–4720, studentdisabilityservices@jhu.edu

REFERENCES