

EE776 – ADAPTIVE CONTROL

CATALOG DATA

Introduction, model reference control, hyperstability, Popov criterion, parameter identification, adaptive control of discrete systems, adaptive predictor, adaptive state estimation... 3 credits

PREREQUISITE: ECG 770 or consent of instructor

RELEVANT TEXTBOOKS*

Adaptive Control Tutorial by P. A. Ionnu and B. Fidan, SIAM2006.

INSTRUCTOR

Sahjendra N. Singh

COURSE OBJECTIVES

- to develop to the students' ability to do parameter identification
- to develop the students' ability to design model reference adaptive control system
- to develop the student's ability to design stabilizers by adaptive pole placement
- to develop the student's ability to design adaptive controllers for a class of nonlinear systems

COURSE TOPICS*

- Review: Linear system theory and stability theory
- Parameter models (ch. 2)
- Parameter identification: continuous systems (ch. 3)
- Continuous -time adaptive model reference control (ch. 5)
- Continuous -time adaptive pole placement (ch. 6)
- Parameter identification and adaptive control of discrete-time systems (ch. 4, 7)

COURSE OUTCOMES

Upon completion of the course, students should be able to:

- Design identifiers and adaptive controllers for linear systems
- Design Adaptive feedback linearizing control systems for nonlinear systems

COMPUTER USAGE

Students to use MATLAB programs for analysis and design

CLASS SCHEDULE

TTH: 4:00-5:15 PM @ BHS 221

GRADING

Project= 50 (approximate)

Midterm = 100

Final = 150

Total = 300

COURSE PREPARER AND DATE OF PREPARATION

Sahjendra Singh, January, 2015.

OFFICE HRS & CONTACT

T & Th: 10:00 – 12:00; 2:45-3:30 (TBE B332)

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Phone: 895 3417

Library Resources

Students may consult <https://www.library.unlv.edu/consultation> with a librarian on research needs. For this class, the subject librarian is Sue Wainscott. (https://www.library.unlv.edu/contact/librarians_by_subject). UNLV Libraries provides resources to support students' access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at <https://www.library.unlv.edu>.

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Religious Holidays Policy – Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor no later than the end of the first two weeks of classes, January 29, 2016, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

Incomplete Grades - The grade of I – Incomplete – can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student's control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

Tutoring – The Academic Success Center (ASC) provides tutoring and academic assistance for all UNLV students taking UNLV courses. Students are encouraged to stop by the ASC to learn more about subjects offered, tutoring times and other academic resources. The ASC is located across from the Student Services Complex (SSC). Students may learn more about tutoring services by calling 702-895-3177 or visiting the tutoring web site at: <http://academicsuccess.unlv.edu/tutoring/>.

UNLV Writing Center – One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>

Rebelmail – By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail

prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu. Emailing within WebCampus is acceptable.

Final Examinations – The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.