Control Engineering ELEC 4300

General Course Information Sheet

Outcomes

Students are able to model dynamical systems both in time domain and frequency domain; perform analysis and design using state feedback concepts; understand advances in the field of modern control theory; communicate effectively with others; undertake continuous learning and realise that an understanding of fundamentals can maintain currency.

Course Contents

Modelling: state-space equations (MIMO, continuous and discrete), linearisation; transfer functions, similarity transformations, some standard useful realisations (canonical forms); discretisation of state-space equations; and introduction to sampled-data systems. Analysis: Controllability, observability, and minimality; Lyapunov stability analysis; Design: Controller and observer design: pole-placement and optimal control techniques.

Pre-requisites

Signals and Systems 2 and Mathematics Unit containing Matrix theory

Block Diagrams, Signal Flow Graphs, Signal Flow Graph Examples, Routh Table, and Routh-Table-Examples.

Lecturer and Tutor:

- A/Prof. Victor Sreeram

Contact Details: Room No: 3.16, Phone: 6488 3069, e-mail:sreeram@ee.uwa.edu.au
No Lab Demonstrator

- If you have any questions regarding the lab, please ask the Lecturer/Tutor.

Text Book


Reference Books


Lecture Notes, Tutorial Sheets, Solutions and Laboratory Manuals

- Material covered in the notes will be taken mainly from the text book and the references.
- Copies of Lecture Notes will be handed out during the lecture hours and any left over extra copies will be placed in a box outside my office, Room 3.16.
- Tutorial Sheets will be handed out during the tutorial and extra copies will be placed in a box outside my office, Room 3.16.
- Laboratory Manuals will be handed out during the lab sessions and extra copies will be placed in a box outside my office, Room 3.16.
- Electronic copies of Tutorial Sheets and Solutions, and Lab Manuals will be available on the
Web.

- Copies of last year's exam paper with solutions will be handed out during the first week of the semester and the extra copies will be placed in a box outside my office, Room 3.16.

Consultation Times

Any day between 10 am and 4 pm

Assessment

Examination: 60 %

Tests (2 tests): 20 %

Laboratory (3 lab reports): 20 %

Timetable for Tests

Test-I: Wednesday, 8th April 2009, 11:00 to 11:45 in ENCM: G11

Material Covered for Test-I: TBA

Test-II: Wednesday, 20th May 2009, 11:00 to 11:45 in ENCM: G11

Material Covered for Test-II: TBA

Deadlines for Lab Reports

1st Lab Report Due: Monday, 13th April 2009, 12:00 noon.

2nd Lab Report Due: Monday, 4th May 2009, 12:00 noon.

3rd Lab Report Due: Monday, 25th May 2009, 12:00 noon.
Lab report should contain Aim, Theory relevant to the lab, Simulation results, Programs, and Conclusions. Please also include answers (or derivations) to questions asked in the lab manual.

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**Lecture Hours**

Mondays: 10:00 to 10:45, in ENCM: G11

Wednesdays: 11:00 to 11:45 in ENCM: G11

Fridays: 10:00 to 10:45 in ENCM: G11

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**Tutorial Hours**

Thursdays: 11:00 to 11:45 in MATH: Blakers

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**Laboratory Hours**

Laboratory sessions will be run as open sessions in Room 2.71. You can walk in to any session provided there is a vacant computer terminal. You may also do the labs at home if you have matlab on your computer. If you have any questions regarding the lab, please see me after the lectures or in my office. For Lab timetable [Please Click Here](http://www.ee.uwa.edu.au/~sreeram/teaching/2009/semester1/elec4300/course.html).

Attendance in Labs is Optional.

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**Hints for Preparing for Tests and Final Examination**

- Reading the text book in addition to the notes will help you not only in understanding the subject material better but also in solving new type of problems you may not have seen in tutorials or notes.

- The class tests and the final examination tests your understanding of the subject. Therefore, memorising the notes, tutorial solutions, and past exam solutions will not
help you in the getting a good mark.

- While preparing for the exam try to solve tutorial questions and problems in the notes without looking at the solutions or the notes. Just remember you will not have your notes or solutions in the exam!

- Understanding the derivations and the proofs in notes is very important if you are aiming for a good final mark. A good understanding of the theory will help you in solving problems you have not come across in tutorials or the notes.

- If you can understand the theory completely, solve the tutorial questions and the problems in the notes without looking at the solutions or the notes, then you should be able to solve any question in the exam.

- The exam and test questions in general may include both problem solving and theory based questions.

- Copies of last years exam paper and solutions will be handed out in the class.

Faculty Policies

For School Student Policies please click here.

For faculty’s policy on plagiarism please click here.

For faculty's policy on assessment practices and procedures please click here.

For faculty's policy on examinations and appeals please click here.

For faculty's policy on calculators in examinations and tests please click here.

For policy on Student Occupational Health & Safety please click here.

IMPORTANT: The university policy on special consideration has been altered so that from now on application for consideration, deferral of tests or exams or extensions of time for assignments on medical, personal or other grounds must be lodged with the faculty office no later than three working days after the due date for the assessment in question. This rule will apply to all students except in exceptional circumstances ('exceptional' does not mean 'exceptional', not 'just didn't have to time to get around to
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