Analogue Electronics - Course Outline
ECEN 303: 2015 Trimester 2

This document sets out the workload and assessment requirements for ECEN 303. It also provides contact information for staff involved in the course. If the contents of this document are altered during the course, you will be advised of the change by an announcement in lectures and/or on the course web site. A printed copy of this document is held in the School Office.

Objectives

The prime purpose of ECEN303 (and PHYS341) is to teach students to design analogue circuits for use in scientific instrumentation, data acquisition, and communications. A considerable emphasis is placed on design skills.

Objectives

This course contributes to the graduate attributes of the BE as indicated below. By the end of the course, students should be able to:

1. Analyse the operation of a range of analogue circuits including amplifiers, filters, oscillators and power supplies. 3(b) .

2. Design standard analogue electronic circuits with regard to practical considerations, such as component imperfections and thermal management. 3(b), 3(e).

3. Design and demonstrate the operation of a complex analogue system. 3(b), 3(d), 3(f).

4. Use modern test equipment and design tools in the the design and testing of electronic systems. 3(b), 3(f).

Particular Topics covered in the course include
- Operational Amplifiers Circuits
- Printed Circuit Board Design
- Operational Amplifier Imperfections
- Operational Amplifier Internals
- Stability in Operational Amplifier circuits
- Filters
- Power supplies
- Power amplifiers
- Positive Feedback circuits
- Oscillators
- Thermal management
- Comparators

Textbook

The recommended textbook for ECEN 303 is "Design with Operational Amplifiers and Analog Integrated Circuits" (3rd edition) by Sergio Franco. Two other useful texts for the course are Sedra & Smith, "Microelectronic Circuits" (4th or 5th edition), and Horowitz & Hill, "The Art of Electronics," (2nd or 3rd edition) both available in the University bookshop (or 2nd hand for older editions). These texts are available on closed reserve in the library.

Lectures, Tutorials and Laboratories

A schedule of lecture topics, readings, and assignment due dates is available online

Classes for ECEN 303 are held from 13 July to 23 August and 7 September to 18 October at the following times:

Lectures: Mondays and Wednesdays at 09:00 in AM105.

Tutorials: Fridays at 09:00 in AM105.

Labs: one session from either Wednesday 14:00–17:00 in CO249 or Thursday 14:00-17:00 in CO250. Time in the labs will be split between individual exercises and the group design project.

Assignments

Assignments will be distributed in the Monday lectures during weeks one and seven. The first one will be due at or before the Monday lecture in week 6, the second will be due at or before the Monday lecture in week 11.

Workload

In order to maintain satisfactory progress in ECEN 303, you should plan to spend an average of at least *10* hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures and tutorials: 3
- Readings: 2
- Assignments: 1
- Labs/project: 4

School of Engineering and Computer Science

The School office is located on level three of the Cotton Building (Cotton 358).

The notice board for ECEN 303 is located on the second floor of the Cotton Building.

Staff

The course coordinator for ECEN 303 is Ciaran Moore; lectures will be given by Ciaran Moore and Ramesh Rayudu. Their contact details are:

- *Ramesh Rayudu*
- AM421
- 463 5233 x8068
- Ramesh.Rayudu@ecs.

- *Ciaran Moore*
- AM227
- +64 4 463 8931
- Ciaran.Moore@ecs.

Your Lab instructor will be Eden Rafealov.

Announcements and Communication

The main means of communication outside of lectures will be the ECEN 303 web area at http://ecs.victoria.ac.nz/Courses/ECEN303_2015T2/. There you will find, among other things, this document, the lecture schedule and assignment handouts, and the ECEN 303 Forum. The forum is a web-based bulletin board system. Questions and comments can be posted to the forum, and staff will read these posts and frequently respond to them.

Assessment

Your grade for ECEN 303 will be determined based on the following assessment weightings:

Item	Weight	Objective
Assignments	20%	1-2
Design project	30%	2-4
Final Examination (3 hours)	50%	1-2

Assignments will be weighted equally. The design project will have separate milestones due in weeks 4, 6, 8, and 12.

Course outcomes one and two will be assessed via the assignments and the examination. The project will primarily assess course outcomes one, three and four. Work submitted after the due date will incur a penalty. Marks will be deducted at a rate of 10% of the full mark for each working day late. Work submitted more than five working days after the deadline will not be marked. Any work handed in after the model solutions have been made available will not be marked. Extensions will be given only in exceptional circumstances, and if agreed in writing before the due date. In the event of an aegrotat application, regular submission and performance in assignments and laboratories will contribute substantially to the outcome.

Tests and Exams

There is NO midterm test for ECEN 303.

The timetable for final examinations will be available from the University web site and will be posted on a notice board outside the faculty office. The final examination will be three hours long. Paper non-English to English dictionaries will be permitted, as will silent, non-programmable calculators with cleared memory. The examination period for trimester 2 is 23

October - 14 November.

Plagiarism

Working Together and Plagiarism

We encourage you to discuss the principles of the course and assignments with other students, to help and seek help with programming details and problems involving the lab machines. However, any work you hand in must be your own work.

The School policy on Plagiarism (claiming other people's work as your own) is available from the course home page. Please read it. We will penalise anyone we find plagiarising, whether from students currently doing the course, or from other sources. Students who knowingly allow other students to copy their work may also be penalised. If you have had help from someone else (other than a tutor), it is always safe to state the help that you got. For example, if you had help from someone else in writing a component of your code, it is not plagiarism as long as you state (eg, as a comment in the code) who helped you in writing the method.

Mandatory Requirements

To fulfil mandatory requirements for the course a student must
- Achieve at least a D in the examination.
- Submit the project report.

Passing ECEN 303

To pass ECEN 303, a student must satisfy mandatory requirements and gain at least a **C-** grade overall.

Withdrawal

The last date for withdrawal from ECEN 303 with entitlement to a refund of tuition fees is Friday 24 July 2015. The last date for withdrawal without being regarded as having failed the course is Friday 25 September 2015 -- though later withdrawals may be approved by the Dean in special circumstances.

Rules & Policies

Find key dates, explanations of grades and other useful information at http://www.victoria.ac.nz/home/study.

Find out about academic progress and restricted enrolment at http://www.victoria.ac.nz/home/study/academic-progress.

The University's statutes and policies are available at http://www.victoria.ac.nz/home/about/policy, except qualification statutes, which are available via the Calendar webpage at http://www.victoria.ac.nz/home/study/calendar (See Section C).

Further information about the University's academic processes can be found on the website of the Assistant Vice-Chancellor (Academic) at http://www.victoria.ac.nz/home/about/avcacademic

All students are expected to be familiar with the following regulations and policies, which are available from the school web site:

Grievances
Student and Staff Conduct
Meeting the Needs of Students with Disabilities
Student Support
Academic Integrity and Plagiarism
Dates and Deadlines including Withdrawal dates
School Laboratory Hours and Rules
Printing Allocations
Expectations of Students in ECS courses

The School of Engineering and Computer Science strives to anticipate all problems associated with its courses, laboratories and equipment. We hope you will find that your courses meet your expectations of a quality learning experience.

If you think we have overlooked something or would like to make a suggestion feel free to talk to your course organiser or lecturer.

Course Outline as PDF