Outline: SESSION 1 2010
Course staff and consultation

Course Coordinator and Lecturer in Charge:

Professor David Taubman  
Room: 303, Electrical Engineering Building  
Phone: 9385 5223  
Email: d.taubman@unsw.edu.au

Laboratory demonstrators:  
To be announced

Tutorials:  
In this session, all tutorials will be taken by the Lecturer in Charge.

Consultation hours:
The lecturer in charge will be available for student consultation on Wednesdays from 11-12. This is the regularly timetabled lecture slot, but apart from Week 1 there will be no lectures for this course. Instead, you may come to the lecturer’s office during that time if you have specific questions which are not addressed during the tutorials or laboratories. However, you are encouraged to bring your questions to the scheduled tutorials which form an important element in this course.

Course information

Course size:  
This course is 6 units of credit.

Course organisation:
This is a rather unusual course, in that there are essentially no formal lectures. Neither is there any examination. Instead, the course is based on weekly 4 hour laboratories and weekly 1 hour tutorials. Your assessment in this subject are based largely upon these laboratories and tutorials, so you should regard attendance as compulsory and you should not seek to obtain exemption from them, except under highly unusual circumstances.

How this course fits with others in your program:
This course directly ties into core courses in Electronics, Signal Processing, Control, Telecommunications, Data Networks and Energy Systems which you should have already taken (typically in the third year of your program). See below for more on what is expected.

Design Topics:
The course is divided into a sequence of three “core design topics” and one “elective design topic,” each of which is assigned 3 weeks in the laboratory timetable. The core design topics are: 1) Electronic Circuits; 2) Signal Processing; and 3) Control Systems. The elective topics are: 4a) Telecommunications; 4b) Data Networks; and 4c) Energy Systems.
Design tasks for the core topics must be completed individually, although you are encouraged to discuss the topics with your fellow students.

The elective design is performed in groups of at most 4 students; you must organize yourself into such a group and nominate which of the elective topics you intend to pursue by the end of Week 7. Elective design groups must be formed from within your tutorial class.

**Objectives and teaching philosophy:**

The principle purpose of this class is to test your design proficiency, through a sequence of design challenges. Some of these challenges are very basic, but there is also plenty of scope for you to demonstrate superior skills.

A secondary aim of the class is to fill in any major holes in your fundamental design knowledge, so as to ensure that all graduating students have at least a minimum level of proficiency. Although some of you might initially feel uncomfortable about this, it is important to realize that prospective employers will be very pleased indeed to know that you are able to demonstrate your proficiency. You should expect that this course will reinforce your existing knowledge and increase your confidence in design and some of the fundamental disciplines you have been studying.

A third objective of the course is to expose you to a healthy balance between teamwork and individual responsibility. The assessment scheme is designed to encourage you to share your ideas with your fellow students and to learn from them. At the same time, you are individually responsible for your level of proficiency. The tutorials in this course play a very important role as a forum for the exchange of ideas, where such exchange can be appropriately rewarded by the tutor.

**Learning Outcomes:**

Upon successful completion of this course, the student should:

- Have demonstrated an ability to work both individually and within a group, to produce designs which draw upon a number of disciplines previously studied in other courses.
- Have demonstrated an ability to contribute to and learn from peers.
- Have demonstrated a sufficient level of understanding and skill within a range of disciplines, together with an ability to explain design decisions.
- Be in a position to make a positive contribution to the workforce as a professional Electrical or Telecommunications engineer.

**Assessment**

The marks for this course will be assigned as follows:

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution within tutorials</td>
<td>20%</td>
</tr>
<tr>
<td>Achievement of design objectives, as demonstrated in labs</td>
<td>40% (4x10%)</td>
</tr>
<tr>
<td>Understanding of relevant subject material, as demonstrated in labs</td>
<td>28% (4x7%)</td>
</tr>
<tr>
<td>Mini group report on elective design topic</td>
<td>12%</td>
</tr>
</tbody>
</table>
Academic honesty and plagiarism

What is Plagiarism?
Plagiarism is the presentation of the thoughts or work of another as one’s own. Examples include:
• direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, website, Internet, other electronic resource, or another person’s assignment without appropriate acknowledgement;
• paraphrasing another person’s work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
• piecing together sections of the work of others into a new whole;
• presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
• claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism. Knowingly permitting your work to be copied by another student may also be considered to be plagiarism.

Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does not amount to plagiarism.

The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via:

www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:
• correct referencing practices;
• paraphrasing, summarising, essay writing, and time management;
• appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle
† Adapted with kind permission from the University of Melbourne.
Course schedule

<table>
<thead>
<tr>
<th>Wk</th>
<th>Begins</th>
<th>Laboratories (Wed 2-6pm)</th>
<th>Tutorials (Thursdays)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 Mar</td>
<td>No Laboratory <strong>Lecture held at 11am</strong>, this week only</td>
<td>Electronic Circuits</td>
</tr>
<tr>
<td>2</td>
<td>8 Mar</td>
<td>Electronic Circuits</td>
<td>Electronic Circuits</td>
</tr>
<tr>
<td>3</td>
<td>15 Mar</td>
<td>Electronic Circuits</td>
<td>Electronic Circuits</td>
</tr>
<tr>
<td>4</td>
<td>21 Mar</td>
<td>Electronic Circuits</td>
<td>Signal Processing</td>
</tr>
<tr>
<td>5</td>
<td>28 Mar</td>
<td>Signal Processing</td>
<td>Signal Processing</td>
</tr>
<tr>
<td>6</td>
<td>5 Apr</td>
<td>Mid-Session Recess</td>
<td><strong>Signal Processing (or no tutorial – TBA)</strong></td>
</tr>
<tr>
<td>7</td>
<td>12 Apr</td>
<td>Signal Processing</td>
<td>Signal Processing</td>
</tr>
<tr>
<td>8</td>
<td>19 Apr</td>
<td>Signal Processing</td>
<td>Control Systems</td>
</tr>
<tr>
<td>9</td>
<td>26 Apr</td>
<td>Control Systems</td>
<td>Control Systems</td>
</tr>
<tr>
<td>10</td>
<td>3 May</td>
<td>Control Systems</td>
<td>Control Systems</td>
</tr>
<tr>
<td>11</td>
<td>10 May</td>
<td>Control Systems</td>
<td>Elective Topic</td>
</tr>
<tr>
<td>12</td>
<td>17 May</td>
<td>Elective Topic</td>
<td>Elective Topic</td>
</tr>
<tr>
<td>13</td>
<td>24 May</td>
<td>Elective Topic</td>
<td>Elective Topic</td>
</tr>
<tr>
<td>14</td>
<td>31 May</td>
<td>Elective Topic</td>
<td>No tutorial</td>
</tr>
</tbody>
</table>

Resources for students

**Web-Site**

For information on the design challenges, announcements, and any other supplementary information, the primary web-site for this course will be http://subjects.ee.unsw.edu.au/~elec4123. You should check the web-site regularly.

**Useful and Recommended Texts**

There are no specific texts for this course, but you should consider your lecture notes and text books from earlier classes in Electronics, Signal Processing, Control, Telecommunications, Data Networks and/or Energy Systems to be useful resources.

**Continual course improvement**

This is a relatively new course; it has been taught already in 2009, but never to such a large cohort of students and not in quite the same way. This course is necessarily a work in progress and we ask for your patience and input as we endeavour to make it as valuable to you and future students as possible.

In view of this, we will probably run multiple surveys throughout the course to gather your valued feedback and suggestions.
Administrative Matters

What you should and cannot bring to the Laboratory

You will need to bring your own prototyping breadboard, such as those used for previous courses in design. In addition you will need to bring a laboratory notebook for recording your work between laboratory sessions. Your lab demonstrator must sign off your laboratory notebook and sign it in again at the start of the next laboratory.

Unless explicitly told otherwise, you are not permitted to bring any written materials to the laboratory, other than your lab notebook (with all written pages previously signed off by the demonstrator) and print outs of materials from the subject web-site itself.

The following tools are essential in laboratories where you work directly with circuit hardware: small screwdriver, small pointed pliers and side cutters. A wire stripping tool is also useful. The small pliers are indispensable for inserting component pigtails in prototyping boards.

Unless explicitly told otherwise, you are not permitted to bring pre-assembled circuits to the laboratory. Your prototyping breadboard must be unpopulated at the start of each laboratory session, although you may bring electronic components you have checked out from an earlier laboratory session.

Note: The restrictions highlighted in bold above apply primarily to the first 9 laboratory sessions, in which you will demonstrate individual proficiency in the three “core design topics.”

Occupational Health and Safety

Like the wider community, UNSW has strict policies and expectations on Occupational Health and Safety. The School of Electrical Engineering and Telecommunications has developed its own safety manual for new students. Most likely, you will have received a copy of this manual and signed a declaration that you have read and understood its contents, during your first year at the university. If you have not done so, please request a copy via the lab demonstrators and be sure to sign and return the declaration at the end of the manual, again via the lab demonstrators.

Please note the following points in particular:

1) The direct connection of 240 V mains power to any circuit developed in this course is not permitted.

2) Clothing bags and other articles must be stowed safely under the laboratory benches, where they cannot cause a person to trip. Falls are a surprisingly common cause of laboratory accidents.

3) If you have any doubts concerning the suitability of the device ratings you have used, do not risk overheating or explosion. Ask one of the trained laboratory personnel to check your work. Where appropriate, test your design initially with a low applied voltage, ramping up to normal operating levels only after measuring all critical circuit elements.
Examination procedures and advice concerning illness or misadventure

It may happen that a student performs far below their ability in an assessment or is unable to attend scheduled laboratories or tutorials due to illness or misadventure.

Where students have a documented medical history or instance of misadventure they should submit a Special Consideration request form at NewSouth Q. The form must be lodged within 3 working days from the date of the assessment task and it must be accompanied by certified documentation.

A doctor's certificate must indicate the severity of the illness, AND ALSO the severity of the effect on the student's capacity to undertake the assessment. Please note that "headache", "feeling unwell", "nervous tension", etc are unacceptable grounds. NewSouth Q will not accept incomplete and/or undocumented applications.

Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course coordinator in the first week of their course, or with the Equity Officer (Disability) in the Equity and Diversity Unit (9385 4734 or www.equity.unsw.edu.au/disabil.html). Early notification is essential to enable any necessary adjustments to be made.