UNSW AUSTRALIA Canberra

# Course Outline

## ZEIT4230 Electrical Engineering Design Practice – S1 2018

Never Stand Still | School of Engineering and Information Technology

## Course Staff


**Course Coordinator**
**Prof Mark Pickering**
Room 203 Building 16
Tel: 6268 8238
m.pickering@adfa.edu.au

**Lecturer**
**Dr Haroldo Hattori**
Office C, SR102 Building 32
Tel: 6268 8956
h.hattori@adfa.edu.au


We are usually available for additional consultation during normal working hours; please phone or email to make an appointment.

## Course Details

The purpose of this 6 UoC course is to further develop your skills with the electronic system design process, entailing the analysis, design, construction, test and evaluation of electronic systems to achieve a user need, from which you will articulate a set of specifications or performance goal(s). The details vary depending on the project, but range from the high level functional design and milestone identification to component level analysis, design and development engineering (part selection, component pin out and ratings identification, component value calculation, operating point selection, etc). In this course you will draw on the knowledge and skills you have acquired in previous courses. On completion of the course you will have had the opportunity to apply electrical engineering discipline and project management skills to achieve the project outcomes.

## Course Learning Outcomes

At the end of this course you will have had the opportunity to apply a range of Electrical Engineering discipline and project management skills to achieve the project goals. In particular, you should be able to:

**CLO1:** Apply Electrical Engineering foundational knowledge, techniques, tools and know-how to produce solutions to meet a specific requirement;

**CLO2:** Explore and analyse the range of alternative approaches, and identify the most suitable solution;

**CLO3:** Select relevant design methodologies and technologies in developing engineering solutions;

**CLO4:** Apply sustainable practices in system design, component selection and life cycle management of the system;

**CLO5:** Design and deliver an electronic system to meet a user need;

**CLO6:** Initiate, develop and apply comprehensive test and characterisation procedures and associated documentation to capture and communicate system performance, operation and maintenance to various users over the life of the system;

**CLO7:** Work effectively in a team environment and also individually to achieve the project's goals.

These learning outcomes reflect not only the development of your expertise in Electrical Engineering technology, and thereby progress towards graduation as a Professional Engineer, but also the general ongoing development of your intellectual skills through tertiary education (see Program Learning Outcomes below). For example this course stimulates the development of 'in-depth engagement with the relevant disciplinary knowledge' through the analysis of various system components, and the 'capacity for analytical and critical thinking and for creative problem solving' in the design of these components..

## Alignment with Program Learning Outcomes

Students will be encouraged to develop the following Program-level learning outcomes by undertaking the course activities and mastering the knowledge content. These outcomes are based on the Engineers Australia Stage 1 Competencies for Professional Engineers and will be assessed within the assessment tasks:

1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline (CLO1, CLO2, CLO3, CLO4);

1.4 Discernment of knowledge development and research directions within the engineering discipline (CLO1, CLO2, CLO3, CLO4);

1.5 Knowledge of engineering practice and contextual factors impacting the engineering discipline (CLO1, CLO2, CLO3, CLO4);

1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline (CLO1, CLO2, CLO3, CLO4)

2.1 Application of established engineering methods to complex engineering problem solving (CLO1, CLO2, CLO3, CLO4);

2.2 Fluent application of engineering techniques, tools and resources (CLO1, CLO2, CLO3, CLO4);

2.3 Application of systematic engineering synthesis and design processes (CLO1, CLO2, CLO3, CLO4);

2.4 Application of systematic approaches to the conduct and management of engineering projects (CLO1, CLO2, CLO3, CLO4);

3.1 Ethical conduct and professional accountability (CLO1, CLO2, CLO3, CLO4);

3.2 Effective oral and written communication in professional and lay domains (CLO1, CLO2, CLO3, CLO4);

3.3 Creative, innovative and pro-active demeanour (CLO1, CLO2, CLO3, CLO4);

3.4 Professional use and management of information (CLO1, CLO2, CLO3, CLO4);

3.5 Orderly management of self, and professional conduct (CLO1, CLO2, CLO3, CLO4);

3.6 Effective team membership and team leadership (CLO1, CLO2, CLO3, CLO4).

## Assistance with Moodle

Moodle is the online learning platform used throughout UNSW.

Log in to Moodle *here.* For Moodle instruction guides click *here*.

For assistance with enrolment and login issues please contact:
IT Service Centre
Email: *itservicecentre@unsw.edu.au*
Phone: (02) 9385-1333
International: +61 2 9385 1333

For ALL other Moodle issues please contact:
External TELT Support
Email: *externalteltsupport@unsw.edu.au*
Phone: (02) 9385-3331
International: +61 2 9385 3331
Opening hours:
Monday – Friday 8:00am – 10:00 pm
Saturday & Sunday 9:00 am – 5:00pm

## Assessment Requirements

All marks obtained for assessment items during the session are provisional. The final mark as published by the university following the assessment review group meeting is the only official mark.

In order to satisfactorily complete this course students must achieve an overall mark of 50% or greater in the overall course assessment.

The assessment will consist of a sequence of presentation-based reviews, and individual written reports as follows:

| Assessment | Weight | Due Date |
|---|---|---|
| Planning Review | 5% | 20th Mar |
| Project Planning Report | 10% | 23rd Mar |
| Progress Review | 5% | 1st May |
| Project Progress Report | 20% | 4th May |
| System Verification | 20% | 4th Jun |
| Project Final Report | 40% | 15th Jun |

This assessment scheme is designed to evaluate your performance for those parts of the project that you are individually responsible for, and to evaluate your performance working in a group.

The group mark will be the staff's overall assessment of the presentations for that group. Individual student marks will be calculated from the assessment of their reports.

### Late Submission of Assessment

The penalty for late submission will be 10% per calendar day, or part thereof, unless prior special consideration has been granted.

Assessment items submitted more than 5 calendar days late will not be assessed and will receive a grade of zero.

All requests for special consideration must be formally submitted via MyUNSW prior to the assessment due date.

### Supplementary Assessment

Supplementary assessment in the event of failure of the course is generally not available, and should not be expected. Exceptions may be made for students in the final year of their program where there is a single failure preventing graduation.

## Outcomes-Assessment Matrix

| Assessment item | CLO 1 | CLO 2 | CLO 3 | CLO 4 | CLO 5 | CLO 6 | CLO 7 |
|---|---|---|---|---|---|---|---|
| Sys Planning Review | X | X | | | | | X |
| Sys Analysis Report | X | X | | | | | X |
| Sys Design Review | X | X | X | X | X | X | X |
| Subsystem Report | X | X | X | X | X | X | X |
| Final Review | X | | X | X | X | X | X |
| Final Report | X | | X | X | X | X | X |

## Referencing

In this course, students are required to reference using in-text citations and a reference list, following the APA referencing style. Information about this referencing style is available on the Course Moodle site.

We will discuss in class where and when specific page numbers should be included in your references.

## Teaching Strategies

In this course you will work in a small group to focus on developing a solution to the set design problem. The format for this course is intended to expose you to a realistic professional practice scenario. The course content and order of presentation, the teaching methods and activities, and the assessment activities are carefully chosen to maximise the opportunities for you to achieve the course outcomes. You will achieve the major learning outcomes of this course through completion of the assessments.

You will be assessed on how well you follow a 'Design and Development' framework that structures the approach you take to each particular activity. This framework consists of the following six steps:

1. Overview/Introduction/Summary of the Task
2. Analysis
3. Design
4. Simulation (if required)
5. Build/Test/Characterise (if required)
6. Interpretation/Critique/Reflection/Conclusion

This framework is intended to encourage you to structure your thinking and approach to the activities in a logical and outcome directed way. This approach models good experimental practice in science and engineering, and encourages a deep approach to learning.

## Resources for Students

Materials for this course can be found on the Moodle site under this course heading.

The documents will be in PDF format, and you may download them and print them at your leisure. These notes and all included documents and resources on the web page are for the use of enrolled students only.

Please use the discussion forum, and monitor it to find current information and to clarify your understanding.

## Course Schedule

This is a project based course and as such does not have scheduled lectures or tutorials. Moodle is used for the distribution of course materials and for report submission by students. The timetabled 2 hour lecture timeslots will be reallocated to laboratory time as required.

## Course Evaluation and Development

The course will be evaluated both through formal (MyExperience) and informal process (such as class evaluation, individual feedback and students reflective journals). Your feedback is important for developing and reshaping this course effectively. A project with more flexibility in the design choices available for students has been adopted this year as a result of previous student feedback.

## Course Specific Information

All students are required to wear appropriate footwear while in laboratories. This means covered shoes in all laboratories. Students who do not have appropriate footwear will be asked to leave the laboratory space.

## Class Attendance and Absence

Students are expected to attend all classes in the course in which they are enrolled. All requests for exemption from attendance or absence should be addressed to the Course Authority and where applicable, be accompanied by a medical certificate.

See University Rules at:
https://student.unsw.edu.au/attendance

All Defence and Defence-funded students must also seek approval from relevant Defence authority for exemption from attendance or absence.

## Further Information

Information about the following appear on the Course Moodle site:

Referencing principles and practice

Academic Honesty and Plagiarism

UNSW Graduate Capabilities

UNSW Assessment Policy

UNSW Canberra Assessment Procedures

Cricos Provider Code: 00098G
The University of New South Wales Canberra