



## COURSE OUTLINE

# ELC300 Electronic Design and Analysis

**Course Coordinator:** Kenneth Ang (lang@usc.edu.au) **School:** School of Science, Technology and Engineering

2022 | Semester 1

USC Moreton Bay

**BLENDED  
LEARNING**

Most of your course is on campus but you may be able to do some components of this course online.

*Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered.*

## 1. What is this course about?

### 1.1. Description

In this course you will advance your knowledge and skills in the design, analysis and applications of electronic circuits. You will be able to design more complex and intelligent circuits by the specification and application of specialised electronic components. This project-based course will focus on developing skills at the graduate level.

### 1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
<b>BLENDED LEARNING</b>			
<b>Learning materials</b> – Asynchronous learning material	1hr	Week 1	13 times
<b>Laboratory 1</b> – On campus laboratory	3hrs	Week 1	8 times
<b>Seminar</b> – On campus seminar	2hrs	Week 1	Once Only

### 1.3. Course Topics

- Design of complex electronic circuits
- Specification of semiconductor devices
- Transistors
- Optoelectronics
- Design of PCBs
- Electronic and filter design

## 2. What level is this course?

300 Level (Graduate)

Demonstrating coherence and breadth or depth of knowledge and skills. Independent application of knowledge and skills in unfamiliar contexts. Meeting professional requirements and AQF descriptors for the degree. May require pre-requisites where discipline specific introductory or developing knowledge or skills is necessary. Normally undertaken in the third or fourth full-time study year of an undergraduate program.

## 3. What is the unit value of this course?

12 units

#### 4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES	GRADUATE QUALITIES MAPPING	PROFESSIONAL STANDARD MAPPING
On successful completion of this course, you should be able to...	Completing these tasks successfully will contribute to you becoming...	Engineers Australia
1 Develops and applies deep knowledge of Electronic Circuit theory and applications	Knowledgeable	1.3 - In-depth understanding of specialist bodies of knowledge within the engineering discipline. 2.1 - Application of established engineering methods to complex engineering problem solving.
2 Demonstrates expertise and capabilities in knowledge and skills in designing complex electronic circuits	Empowered	1.5 - Knowledge of engineering design practice and contextual factors impacting the engineering discipline. 3.6 - Effective team membership and team leadership.
3 Applies communication skills to present a clear, coherent and succinct explanation of the design, application and analysis of electronic systems	Engaged	3.2 - Effective oral and written communication in professional and lay domains.

#### 5. Am I eligible to enrol in this course?

Refer to the [USC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

##### 5.1. Pre-requisites

ELC201 and ELC204

##### 5.2. Co-requisites

Not applicable

##### 5.3. Anti-requisites

Not applicable

##### 5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

#### 6. How am I going to be assessed?

##### 6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

##### 6.2. Details of early feedback on progress

Early feedback will be provided through completion of weekly activities in workshops. Furthermore, feedback on each assessment will be provided which will be used to help with the following assessment.

##### 6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Quiz/zes	Individual	20%	1 hour	Week 5	Online Submission
All	2	Portfolio	Group	40%	1500 words equivalent	Week 12	Online Submission
All	3	Examination - Centrally Scheduled	Individual	40%	2 hours	Exam Period	Exam Venue

**All - Assessment Task 1:** Mid-semester test

<b>GOAL:</b>	To develop your understanding of core theory and enable you to demonstrate your knowledge and skills in developing electronic circuits of complex complexity.	
<b>PRODUCT:</b>	Quiz/zes	
<b>FORMAT:</b>	Test format	
<b>CRITERIA:</b>	<b>No.</b>	<b>Learning Outcome assessed</b>
	1	Demonstration of efficient and effective techniques and skills to develop electronic circuits <b>1</b>
	2	Presentation of engineering drawings using the appropriate format, symbols and projection standards <b>2</b>
	3	Communication of design specifications using appropriate engineering terminology and symbols <b>2</b>

**All - Assessment Task 2:** Report-based Workshop Portfolio

<b>GOAL:</b>	To develop your ability to design, build and create electronic circuits for problem solving and document your conclusions in a portfolio of engineering reports.	
<b>PRODUCT:</b>	Portfolio	
<b>FORMAT:</b>	You'll work as a group to produce a portfolio of electronic circuits and related information in the form of a document of 1500 words equivalent including figures, text, and diagrams. You will provide drafts of your work in Weeks 1-3 and receive formative feedback on your progress.	
<b>CRITERIA:</b>	<b>No.</b>	<b>Learning Outcome assessed</b>
	1	Selection of appropriate constructs to design electronic circuits <b>1</b>
	2	Application of fundamental theory and knowledge of mathematical principles to the operation of electronic circuits <b>2</b>
	3	Demonstration of the operation and performance of electronic circuits <b>1</b>
	4	Communication of design specifications using appropriate engineering terminology, symbols and diagrams in appropriate report format <b>2</b>
	5	Demonstration of ability to work collaboratively in teams to design electronic circuits to meet specified requirements <b>3</b>

**All - Assessment Task 3:** Final Examination

<b>GOAL:</b>	The final exam will develop your ability to independently apply your skills and knowledge to solve familiar problem based questions with confidence within a set time limit and without access to additional resources.	
<b>PRODUCT:</b>	Examination - Centrally Scheduled	
<b>FORMAT:</b>	Centrally scheduled 2-hour closed book examination.	

**CRITERIA:**

No.		Learning Outcome assessed
1	Selection of appropriate mathematical theory and electronic constructs	1
2	Correct application of theory and knowledge to solve engineering problems	2
3	Communication of solutions using appropriate engineering terminology, symbols and diagrams	2

## 7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

## 8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Canvas site– Please log in as soon as possible.

### 8.1. Prescribed text(s) or course reader

There are no required/recommended resources for this course.

### 8.2. Specific requirements

Not applicable

## 9. How are risks managed in this course?

Risk assessments have been performed for all laboratory classes and a low level of health and safety risk exists. Some risk concerns may include equipment, instruments, and tools; as well as manual handling items within the laboratory. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the [online induction training for students](#), and following the instructions of the University staff.

## 10. What administrative information is relevant to this course?

### 10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

### 10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

The final mark is in the percentage range 47% to 49.4%

The course is graded using the Standard Grading scale

You have not failed an assessment task in the course due to academic misconduct

### 10.3. Assessment: Submission penalties

Late submission of assessment tasks may be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day - 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.

To request an extension you must contact your course coordinator to negotiate an outcome.

### 10.4. SafeUSC

USC is committed to a culture of respect and providing a safe and supportive environment for all members of our community. For immediate assistance on campus contact SafeUSC by phone: [07 5430 1168](tel:0754301168) or using the [SafeZone](#) app. For general enquires contact the SafeUSC team by phone [07 5456 3864](tel:0754563864) or email [safe@usc.edu.au](mailto:safe@usc.edu.au).

The SafeUSC Specialist Service is a Student Wellbeing service that provides free and confidential support to students who may have experienced or observed behaviour that could cause fear, offence or trauma. To contact the service call [07 5430 1226](tel:0754301226) or email [studentwellbeing@usc.edu.au](mailto:studentwellbeing@usc.edu.au).

### 10.5. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the [Learning Advisers](#) web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or [studentcentral@usc.edu.au](mailto:studentcentral@usc.edu.au).

### 10.6. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to [Student Hub](#), email [studentwellbeing@usc.edu.au](mailto:studentwellbeing@usc.edu.au) or call 07 5430 1226.

### 10.7. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, [AccessAbility Services](#) can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to [Student Hub](#), email [AccessAbility@usc.edu.au](mailto:AccessAbility@usc.edu.au) or call 07 5430 2890.

### 10.8. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website: <https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

### 10.9. Student Charter

USC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The [Student Charter](#) sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

## 10.10.General Enquiries

### In person:

- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **USC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **USC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **USC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **USC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

**Tel:** +61 7 5430 2890

**Email:** [studentcentral@usc.edu.au](mailto:studentcentral@usc.edu.au)