

ELEC 1002 DIGITAL SYSTEMS 1 (WSTC ASSOCD)

Credit Points 10

Legacy Code 700240

Coordinator Abbas Ranjbar ([https://directory.westernsydney.edu.au/search/name/Abbas Ranjbar/](https://directory.westernsydney.edu.au/search/name/Abbas%20Ranjbar/))

Description This subject provides students with a solid background in digital logic design which is foundational to the fields of electrical and computer engineering. Digital logic design involves building electronic components and hardware, such as circuit boards and microchip processors. Students are first introduced to the fundamentals of digital logic, basic logic devices and Boolean algebra. This is followed by analysis and design of combinational and sequential logic circuits. Offerings of alternate subjects are dependent on there being sufficient student enrolment numbers. If enrolments are low, the College may cancel delivery of the alternate subject.

School Eng, Design & Built Env

Discipline Communications Technologies

Student Contribution Band HECS Band 2 10cp

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 1 subject

Pre-requisite(s) MATH 1010

Equivalent Subjects ELEC 1001 - Digital Systems 1

Restrictions Students must be enrolled in 7022 Associate Degree in Engineering

Assumed Knowledge

Knowledge on basic principles of analysing an electric circuit, Kirchhoff's Voltage and Current laws and their use in electric circuits and concept of operational amplifier and its circuit would be desirable.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Describe basic digital concepts and the operation of basic logic gates.
2. Apply Boolean algebra to a range of logic expressions.
3. Apply Karnaugh maps to a range of logic expressions.
4. Analyse and design combinational logic circuits.
5. Describe the operation of a range of memory devices.
6. Describe the principles of analogue-to-digital and digital-to-analogue conversion schemes.
7. Describe the basic concepts of microcontrollers.
8. Describe the basic concepts and the basic operations of Programmable Logic Controllers (PLCs).

Subject Content

1. Boolean algebra and logic simplification
2. Karnaugh maps
3. Combinational logic circuits
4. Flip-flops, counters, registers
5. Memory

6. Analogue-to-digital and digital-to-analogue conversion
7. Introduction to Microcontrollers and PLCs

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task
Quiz	30 minutes eac	10	N	Individual
Practical	2 hours each	20	N	Group/ Individual
Intra-session Exam	1 hour	20	N	Individual
Final Exam	2 hours	50	N	Individual

Prescribed Texts

- Floyd, T.L. (2015). Digital fundamentals: a systems approach. Global 11th ed, Boston, Mass: Pearson Education Inc

Teaching Periods

Quarter 2 (2024)

Nirimba Education Precinct

Hybrid

Subject Contact Abbas Ranjbar ([https://directory.westernsydney.edu.au/search/name/Abbas Ranjbar/](https://directory.westernsydney.edu.au/search/name/Abbas%20Ranjbar/))

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC1002_24-Q2_BL_3#subjects)