

Course Outline (Higher Education)

School:	School of Science, Engineering and Information Technology
Course Title:	DIGITAL LOGIC AND DESIGN
Course ID:	ENGIN2101
Credit Points:	15.00
Prerequisite(s):	ENGIN1002 (Engineering Physics)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	031301

Description of the Course :

This course facilitates development of knowledge and skills required for designing simple combinational and synchronous digital systems which comprise modules of larger digital systems. The course enables understanding of timing and hazard analysis for reliable digital circuit designs and the use of Electronic Design Automation (EDA) tools for design, analysis and simulation.

Grade Scheme: Graded (HD, D, C, etc.)

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks..

Program Level:

AQF Level of Program						
	5	6	7	8	9	10
Level						
Introductory	■	■	■	■	■	■
Intermediate	■	■	✓	■	■	■
Advanced	■	■	■	■	■	■

Learning Outcomes:

Knowledge:

- K1.** Explain the principles used to implement logic functions and its limitations.
- K2.** Demonstrate the principles of digital circuits and logic design techniques.
- K3.** Describe and verify the behaviour of logic circuits used to implement various functions.

Course Outline (Higher Education)

ENGIN2101 DIGITAL LOGIC AND DESIGN

Skills:

- S1.** Design, construct and test digital circuits to implement logic functions.
- S2.** Solve digital logic design problems.
- S3.** Employ simple fault finding techniques.

Application of knowledge and skills:

- A1.** Apply Electronic Design Automation (EDA) tools to the digital design process.
- A2.** Analyse test logic circuits, using appropriate techniques, to meet specifications.
- A3.** Evaluate digital circuits to demonstrate and verify the validity of theory.

Course Content:

Topics may include:

- Boolean Algebra and Logic Design
- Simplification of Boolean Functions
- Logic Components
- Programmable Logic Devices
- Synchronous Sequential Logic
- Hardware Description Languages (VHDL)

Values:

- V1.** Appreciate real-world considerations in the design of digital circuits.
- V2.** Appreciate timing and hazard considerations in simple digital circuit designs.

Graduate Attributes:

FedUni graduate attributes statement. To have graduates with knowledge, skills and competence that enable them to stand out as critical, creative and enquiring learners who are capable, flexible and work ready, and responsible, ethical and engaged citizens.

Attribute	Brief Description	Focus
Knowledge, skills and competence	Engineering is a fast-changing technological area, which affects our every-day life. Students will demonstrate the development of the knowledge, skills and competence needed to be a successful engineer.	High
Critical, creative and enquiring learners	Demonstration of the skills needed to be an independent, critical, and creative learner is an essential feature of engineering education. Within their studies, students will demonstrate a basic ability to be creative and critical.	High
Capable, flexible and work ready	Engineering is inherently interdisciplinary in nature. It requires a teamwork approach to execute tasks to achieve common objectives. Training for this engagement is built in to second year through a demonstration of the basic skills needed within the engineering workplace.	Low

Course Outline (Higher Education)

ENGIN2101 DIGITAL LOGIC AND DESIGN

Attribute	Brief Description	Focus
Responsible, ethical and engaged citizens	Through the breadth of learning the second year of the engineering programmes delivers, a student will develop an understanding of the engineering input needed for the advancement of humanity.	Low

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1 - K3, S1 - S3, A1 - A3	Experimental work and / or projects to verify students ability to apply knowledge and skills acquired in the course.	Reports, demonstrations	10% - 30%
K1 - K3, S1 - S3, A1 - A3	Relevant tasks and problems to enforce understanding of the students and help in gradual development of knowledge and skills throughout the course.	Assignments, quizzes	10% - 30%
K1 - K3, S1 - S3, A1 - A3	Questions and problems related to the materials covered in the course.	Mid and / or End of semester examination	50% - 70%

Adopted Reference Style:

Other (IEEE)