ELEC 1003 ELECTRICAL FUNDAMENTALS

Credit Points 10

Legacy Code 300021

Coordinator Jamal Rizk (https://directory.westernsydney.edu.au/search/name/Jamal Rizk/)

Description This unit introduces essential electrical engineering concepts that provide students with the basic requirements for analysing, designing, building, and testing simple engineering systems. Students use techniques for analysing different types of circuits based on their knowledge of electrical theory and the characteristics of power, electrical energy, signals, and electrical circuit components. Students have practical activities including conducting experiments in learning how electrical systems work. Students are introduced to Electrical Machines and Renewable Energy systems for a fundamental understanding.

School Eng, Design & Built Env

Discipline Electrical And Electronic Engineering And Technology

Student Contribution Band HECS Band 2 10cp

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

Level Undergraduate Level 1 subject

Equivalent Subjects ELEC 1005 Electrical Fundamentals (WSTC) ELEC 1004 Electrical Fundamentals (WSTC Assoc Deg)

Learning Outcomes

On successful completion of this subject, students should be able to:
1. Explain the elements in an electric circuit
2. Apply the basic principles of analysing an electric circuit
3. Apply nodal,mesh,superposition,Thevenin's analysis DC electric circuits.
4. Apply the principles of capacitors and inductors as energy storage elements and their first order circuits.
5. Explain characteristics of electronic devices
6. Explain basic principles of communication waves
7. Explain significance of Logic gates and number systems
8. Explain the operation of transformers, DC and AC machines.
9. Explain principle of operation of Renewable Energy systems
10. Explain the elements in electric circuits and electronic devices
11. Apply appropriate techniques in the analysis of electric circuits
12. Analyse the principles of capacitors and inductors as energy storage elements and their first order circuits
13. Explain the operation of transformers, DC and AC machines
14. Outline the key principles involved in the operation of Renewable Energy systems
15. Use appropriate equipment in conducting experiments in a safe manner.

Subject Content

Introduction to basic electrical quantities
Kirchhoffs current and voltage laws
Series and parallel resistors, current and the voltage divider rules
Nodal and Loop analysis, The principle of superposition and Thevenin and Norton equivalent circuits
Energy storage elements,capacitors and inductors. Transient Response of first-order circuits
An introduction to Electronics
An introduction to communcation waves
Logic gates and number systems
An introduction to Transformers, Electrical Machines
An introduction to Renewable Energy systems

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.

Item	Length	Percent	Threshold	Individual/ Group Task
Quiz	4 x Inclass tests 15 minutes per test.	10	N	Individual
Intra-session Exam	1 hour and 30 minutes	20	N	Individual
Practical	6 x Laboratories 3 hours per practical	20	N	Individual
Final Exam	2 hours	50	N	Individual

Teaching Periods

Summer B
Parramatta City - Macquarie St
Day
Subject Contact Jamal Rizk (https://directory.westernsydney.edu.au/search/name/Jamal Rizk/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC1003_22-SUB_PC_D#subjects)

Sydney City Campus - Term 1
Sydney City
Day
Subject Contact Peter Lendrum (https://directory.westernsydney.edu.au/search/name/Peter Lendrum/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC1003_22-SC1_SC_D#subjects)

Spring
Parramatta - Victoria Rd
Day
Subject Contact Jamal Rizk (https://directory.westernsydney.edu.au/search/name/Jamal Rizk/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ELEC1003_22-SPR_PS_D#subjects)

Sydney City Campus - Term 3
Sydney City
Day
Subject Contact Eileen An (https://directory.westernsydney.edu.au/ search/name/Eileen An/)

View timetable (https://classregistration.westernsydney.edu.au/even/ timetable/?subject_code=ELEC1003_22-SC3_SC_D#subjects)

Sydney City Campus - Term 3
Sydney City
Day