ELEC 4008 ELECTRICAL DRIVES

Credit Points 10

Coordinator Ehsan Gatavi (https://directory.westernsydney.edu.au/search/name/Ehsan Gatavi/)

Description Electrical drives are electromechanical systems which enable electrical machines to function. Through theoretical analyses and practical laboratory exercises, students analyse and evaluate electrical machines and drives as well as examine various types of electrical motors and drive systems, their applications and control. Students conduct experiments on speed control, starting and braking systems, and dynamics of electric motors. These activities comprise essential knowledge and skills for students to be competent in the area of power engineering.

School Eng, Design & Built Env

Discipline Electrical And Electronic Engineering And Technology

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 4 subject

Pre-requisite(s) ELEC 3006

Learning Outcomes

1. Analyse various types of electrical drive systems.
2. Analyse a range of methods for speed control of DC and induction motors.
3. Analyse a range of methods of starting electric motors
4. Design different braking methods for electric motors
5. Integrate the concepts of braking of electric motors and renewable energy generation
6. Conduct laboratory experiments in a safe, responsible and professional manner that replicates real-world scenarios
7. Apply communication and collaboration skills, with ethical considerations, for reporting outcomes of experimental activities

Subject Content

1. Introduction to machine drives. Principal characteristics and requirements. Basic Components of an Electric Drive System.
2. D.C. motors. Circuit representation. Speed-torque characteristics.
3. Speed Control of D.C motors
4. Induction motors. Circuit representation. Speed-torque characteristics.
5. Speed control of Induction Motors: voltage control, slip-energy recovery, speed control by inverters, frequency and Voltage/Frequency Control.
6. Power electronic devices and basic power converters.
7. Braking of Electrical Motors: Regenerative, Dynamics and counter-current braking.
8. Dynamics of DC and Induction Motors.

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	Mandatory
Intra-session Exam	2 hours	25	N	Individual	N
Practical	3 hours (per practical)	25	N	Individual	N
Final Exam	2 hours	50	N	Individual	Y

Teaching Periods

Sydney City Campus - Term 2 (2025)
Sydney City
On-site
Subject Contact Peter Lendrum (https://directory.westernsydney.edu.au/search/name/Peter Lendrum/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC4008_25-SC2_SC_1#subjects)

Spring (2025)
Penrith (Kingswood)
Hybrid
Subject Contact Ehsan Gatavi (https://directory.westernsydney.edu.au/search/name/Ehsan Gatavi/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC4008_25-SPR_KW_3#subjects)

Parramatta City - Macquarie St
Hybrid
Subject Contact Ehsan Gatavi (https://directory.westernsydney.edu.au/search/name/Ehsan Gatavi/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ELEC4008_25-SPR_PC_3#subjects)