

# ELEC 3005 ELECTRICAL DRIVES

Practical	3 hours (per practical)	20	Y	Individual	Y
Final Exam	2 hours	55	N	Individual	Y

**Credit Points** 10

**Legacy Code** 300070

**Coordinator** Jamal Rizk ([https://directory.westernsydney.edu.au/search/name/Jamal Rizk/](https://directory.westernsydney.edu.au/search/name/Jamal%20Rizk/))

**Description** Through practical laboratory exercises students will analyse and evaluate electrical machines and drives. They will examine various types of electrical motors and drive systems, their applications and control. They will also study various types of speed control, starting and braking systems and dynamics.

**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/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 3 subject

**Pre-requisite(s)** ELEC 3006

## Learning Outcomes

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

1. Analyse various types of electrical drive systems.
2. Evaluate recent developments in the control of electric drive systems.
3. Apply various drive systems to different applications.

## Subject Content

Introduction to machine drives. Principal characteristics and requirements. Basic Components of an Electric Drive System. D.C. motors. Circuit representation. Speed-torque characteristics. Speed Control of D.C motors  
 Induction motors. Circuit representation. Speed-torque characteristics. Speed control of Induction Motors: voltage control, slip-energy recovery, speed control by inverters, frequency and Voltage/Frequency Control.  
 Power electronic devices and basic power converters. Three-phase naturally commutated bridge circuit  
 Braking of Electrical Motors: Regenerative, Dynamics and counter-current braking.  
 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	1.5 hours	25	N	Individual	Y