

GRIFFITH UNIVERSITY

FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

**2008MEE POWER ELECTRONICS AND ELECTRIC MACHINES**

COURSE OUTLINE

1.0 IDENTIFYING INFORMATION

Course Code: 2008MEE  
Course Title: Power Electronics and Electric Machines  
Class Number: 10149  
Faculty: Engineering and Information Technology  
School: Microelectronic Engineering  
Discipline Code: 031303

Program/s for which course is designed:

1149 (previously MEE101) Bachelor of Engineering in Microelectronic Engineering  
1150 (previously MEE102) Bachelor of Computer and Communication Technology  
(previously the Bachelor of Technology in Microelectronics)  
1151 (previously MEE103) Bachelor of Engineering in Microelectronic  
Engineering/Bachelor of Information Technology  
1152 (previously MEE104) Bachelor of Engineering/Bachelor of Commerce in  
Microelectronics and Management  
1153 (previously MEE105) Bachelor of Engineering in Microelectronic  
Engineering/Bachelor of Science  
1027 (previously AVN102) Bachelor of Technology with Aviation

Status of course within program: Second Year Core Course  
Credit Point Value: 5CP  
Prerequisites: 1003MEE Computers and Software Engineering  
1004MEE Digital Networks and Systems  
1005MEE Electronic Devices, Circuits and Systems  
1006MEE Network Theory and Analysis  
1602SCE Mathematics  
1605SCE Mathematics  
Corequisites: Nil  
Prior Assumed: Nil  
Incompatible: SM32032 Power Electronics and Electric Machines  
MEE2008 Power Electronics and Electric Machines  
Year and Semester: Year 2, Semester 1 (1149, 1150, 1151, 1152, 1027)  
Year 3, Semester 1 (1153)  
Year of Offer: 2003  
Course Convenor: Dr Jun Wei Lu  
Office Location: Technology Building, Level -1, Room -1.14 (N44 -  
1.14)  
Office Telephone: (07) 3875 5118  
Email Address: j.lu@griffith.edu.au  
Teaching Team Members: Dr Jun Wei Lu  
Staff as required

2.0 OBJECTIVES

The objective of this course is to develop student's engineering design and analysis skills in the area of power electronics and electric machines. The course covers the theory and practice of power electronics and electrical machines and their applications.

### 3.0 BRIEF DESCRIPTION

This course covers the theory and practice of power electronic devices, converters and circuits, and electrical machines and their control systems, and the design and analysis of electrical power and machine control systems. Assessment is by laboratory work, tutorials and an examination.

### 4.0 CONTENT

Week 1	Introduction to Power Electronics and Electric Machines
Week 2	Magnetics and Energy Conversion
Week 3	Transformers and Tutorial
Week 4	Power Electronic Devices
Week 5	DC Choppers I
Week 6	DC Choppers II and Tutorial
Week 7	PWM Inverters
Week 8	Power Supplies
Week 9	Electric Machines I
Week 10	Electric Machines II and Tutorial
Week 11	Motor Drive Applications
Week 12	Examination Revision

### 5.0 ORGANISATION AND TEACHING METHODS

Lectures	14 hours
Experiments (Laboratories)	20 hours
Tutorials	4 hours

### 6.0 ASSESSMENT

Five Laboratories and One Tutorial	30%
End of Semester Examination (1.5 hours)	70%

### 7.0 TEXTS AND SUPPORTING MATERIALS

- [1] P.C. Sen: *Principles of Electric Machines and Power Electronics*, Second Edition, John Wiley, 1997
- [2] Muhammad H. Rashid: *Power Electronics, Circuits, Devices, and Applications*, Prentice Hall, 1995
- [3] J.J. Cathey: *Electric Machines Analysis and Design Applying MATLAB*, McGraw Hill, 2001

### 8.0 ADMINISTRATION

8.1 The Course Convenor will administer the course through the School of Microelectronic Engineering. The Course Convenor and teaching team are available for students to discuss administration arrangements and technical contents for this course.

#### 8.2 **Prerequisite/Prior Assumed Requirements**

Enrolment in this course is granted on the basis that a grade of Pass (P) or better has been achieved in any prerequisite or prior assumed requirement in this course as listed under Section 1 of this outline. Failure to meet this requirement may result in

you having difficulty with the course and not being able to complete it successfully.  
**Any additional support or special assistance cannot be expected, nor requested, if the prerequisite and/or prior assumed requirements have not been met.**