

## Course Descriptor EETE 4011 Power Electronics

ACADEMIC YEAR	2020-2021			
Course Code & Title	EETE 4011 Power Electronics			
Credit hours	3	Level of study	Undergraduate	
College / Centre	COE			
Co-requisites		Pre-requisites	EETE2011 Fundamentals of Electronics	

### 1. COURSE OUTLINE

Fundamentals of power electronics and applications. Switch-mode power conversion, power supplies, inverters, motor drives, and power semiconductor devices. System analysis, design, and modeling. The course includes hands-on hardware and software (PSpice or NI Multisim) laboratory sessions.]

#### 2. AIMS

This course prepares students for engineering practice through discussion of design and performance of power electronic circuits and their applications. This course includes engineering topics and engineering design.]

LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS Teaching and Learning **Learning Outcomes Assessment** (Definitive) methods (Indicative) (Indicative) Upon successful completion of this course, students will be able to: 1. Design rectifiers and Lecturer, Presentation, Assignments, Written inverters seminar Examination, quizzes 2. Implement DC-DC switch-Lecturer, Presentation, Assignments, Written mode converters Examination, quizzes seminar 3. Develop DC-AC switch-Lecturer, Presentation, Assignments, Written mode converters Examination, quizzes seminar 4. Create switching DC Lecturer, Presentation, Assignments, Written power supplies Examination, quizzes seminar 5. Illustrate the motor drive Lecturer, Presentation, Assignments, Written applications seminar Examination, quizzes 6. [Assemble power [Lecturer, Presentation, [Written Examination and Lab electronic circuits for seminar, lab experiments] reports] residential and industrial

#### 4. ASSESSMENT WEIGHTING

applications.]

Assessment	Percentage of final mark (%)	
Mid-term examination I	30	
	0	
Assignments	30	
Final Examination	40	



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TOTAL	100%

## 5. ACHIEVING A PASS

Students will achieve <u>3</u> credit hours for this course by passing <u>ALL</u> of the course assessments [alternatively, list the compulsory pass assessments\*] and achieving a minimum overall score of <u>50%</u>

NB \*Ensure that ALL learning outcomes are taken into account

6. COURSE CONTENT (Indicative)	
LECTURE TOPIC	TIME (HOURS)
Introduction and semiconductor switches	
Line-frequency diode rectifiers	
DC-DC switch mode converters	
AC-DC inverters	8
Switching DC power supplies	8
Power conditioners and UPS	4
DC motor drives	6
AC induction motor drives	6
	4
TOTAL HOURS	60
Plus RECOMMENDED INDEPENDENT STUDY HOURS	
TOTAL COURSE HOURS	



# **Course Descriptor EETE 4011 Power Electronics**

### 7. RECOMMENDED READING

#### Core text/s:

< Ned Mohan, Tore Undeland, and William Robbins, Power Electronics: Converters, Applications, and Design, 3rd edition, John Wiley & Sons, 2003 >

## **Library + online resources:**

MIT OpenCourseWare, Power Electronics

https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-334-power-electronics-spring-2007/lecture-notes/chp1.pdf

OpenCourseWare

https://www.oercommons.org/courses/electronic-power-conversion