UNIVERSITI MALAYA

MAKLUMAT KURSUS UNTUK SEMESTER/PENGGAL SEMASA
COURSE INFORMATION FOR CURRENT SEMESTER/TERM

Sesi Akademik *Academic Session*	2020/2021
Semester/Penggal *Semester/Term*	2
Kod Kursus *Course Code*	KIE3008
Tajuk Kursus *Course Title*	Elektronik Kuasa *Power Electronics*
Bahasa Pengantar *Medium of Instruction*	Bahasa Inggeris *English*
Rujukan Utama *Main Reference*	1. Mohan, Underland and Robbins, " *Power Electronics Converters, Applications, and Design*" Wiley 2nd Edition 1995. 2. Muhammad H. Rashid "*Power Electronics circuits, devices, and applications*" Pearson Prentice Hall 2004.
Strategi Pembelajaran *Learning Strategies*	Kuliah, Seminar, dan Perbincangan Kumpulan *Lectures, and Group Discussion*
Masa Pembelajaran Pelajar *Student Learning Time*	Bersemuka / *Face to face* : 45 jam/*hours* Tidak Bersemuka / *Non Face to face*: 0 jam/*hour* Masa Persediaan Pelajar / *Student Preparation Time*: 75 jam/*hours*
Kemahiran Boleh Pindah Transferable Skills	Kemahiran pengoptimuman, kemahiran simulasi *Optimization skills, simulation skills*
Pensyarah / *Lecturer* Bilik / *Room* Telefon/e-mel *Telephone/e-mail*	Prof. Dr. Saad Mekhilef Bilik 12, Tingkat 1 79676851 / saad@um.edu.my
Sesi Kuliah / *Lecture Session:* Hari/Masa / *Day/Time* Tempat / *Venue*	Rujuk kepada myum.um.edu.my. *Refer to* myum.um.edu.my.
Sesi Tutorial/Amali: *Tutorial/Practical Session:* Hari/Masa / *Day/Time* Tempat / *Venue*	Tiada *No*
Perincian Pemberatan Penilaian *Detail of Assessment Weightage*	Penilaian Berterusan / *Continuous Assessment* : 40% Peperiksaan Akhir / *Final Examination* : 60%

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Jadual Pengajaran / *Teaching Schedule*

Minggu *Week*	Topik & Aktiviti *Topic & Activities*	Rujukan *References*
1	Pengenalan kepada elektronik kuasa dan aplikasinya *Introduction to power electronics and its applications*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
2	Peranti semikonduktor, peranti kuasa: Diod kuasa, Thyristors, Kuasa MOSFET *Semiconductor devices, power devices: Power diodes, Thyristors, Power MOSFETs*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
3	GTOs, IGBTs, Suis kawalan dikawal (SiT dan SiTH) (bersambung) *GTOs, IGBTs, Field controlled switches (SiT and SiTH) (continued)*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
4	Penyejukan untuk peranti pensuisan kuasa, Reka bentuk haba sink, litar snubber dan reka bentuk pemandu Komponen pasif: kapasitor, bahan magnetik lembut dan reka bentuk penapis *Cooling for power switching devices, Heat sink design, snubber circuitry and driver design Passive components: capacitor, soft magnetic materials and filter design*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
5	Penyearu tidak terkawal, penyearah tunggal dan tiga fasa. *Uncontrolled rectifier, single and three phase rectifier.*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
6	Litar pergeseran: penerus fasa tunggal dan tiga fasa, penerus kekerapan fasa terkawal fasa *Commutation circuit: single and three phase rectifier, phase controlled line frequency rectifier*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
7	Bekalan kuasa mod DC-DC: Buck, Boost, topologi penukar Buck-boost *DC-DC switched mode power supply: Buck, Boost, Buck-boost converter topology*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
8	Bekalan kuasa mod DC-DC: Buck, Boost, topologi penukar Buck-boost *DC-DC switched mode power supply: Buck, Boost, Buck-boost converter topology*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
9	Teknik modulasi lebar berdenyut *Pulsed width modulation techniques*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
10	Penukar fasa tunggal dan tiga fasa AC-DC *Single-phase and three-phase AC-DC converter*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
11	Penukar fasa tunggal dan fasa tiga fasa DC-AC *Single-phase and three-phase DC-AC converter*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
12	Piawaian EMC, harmonik dan faktor kuasa *EMC standards, harmonics and power factor*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
13	Perkakas elektronik dan aplikasi industri elektrik seperti UPS, pemampas SVaR, aplikasi HVDC, dan aplikasi tenaga boleh diperbaharui. *Power electronics household and industrial applications such as UPS, SVaR compensator, HVDC applications, and renewable energy application.*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*
14	Kajian Kes / aplikasi elektronik Kuasa *Case Study/ Power electronics applications*	Ruj. [1,2], Nota kuliah *Ref. [1,2], lecture note*