

COURSE INFORMATION

School/Faculty:	Razak Faculty of Technology and Informatics	Page:	1 of 5
Program name:	Executive Diploma In Manufacturing Technology		
Course code:	FRSH 1553	Academic Session/Semester:	2020/2021/3
Course name:	Electrical and Electronics Technology	Pre/co requisite (course name and code, if applicable):	
Credit hours:	3		

Course synopsis	This course covers the basic electrical and electronics principles namely direct current and circuit, alternating current and circuit, capacitance and inductance, transformer and motor, diodes, transistor and mosfet, and digital electronics. The principles are discussed in class and students are taught how to apply these principles in solving electrical and electronics engineering problems.			
Course coordinator (if applicable)	Dr Norulhusna Ahmad			
Course lecturer(s)	Name	Office	Contact no.	E-mail
	Dr Norulhusna Ahmad	MJIT 07.08.01	03-22031398	norulhusna.kl@utm.my
	Ts Haslaile Abdullah	MJIT 06.12.1	03-22031346	haslaile.kl@utm.my
	Ts Dr Siti Armiza Mohd Aris	F306C	03-26154689	armiza.kl@utm.my

Mapping of the Course Learning Outcomes (CLO) to the Programme Learning Outcomes (PLO), Teaching & Learning (T&L) methods and Assessment methods:

No.	CLO*	PLO (Code)	**Taxonomies and ***generic skills	T&L methods	****Assessment methods
CLO 1	Explain electrical component, electronic devices and its technology applications	PLO1 (KW)	C2	Lecture, active learning	Quiz 1 (10%) Test 1 (15%)
CLO 2	Apply DC and AC circuit principles to solve electrical problems	PLO2 (THPA)	C3	Lecture, active learning	Quiz 2 (10%) Test 2 (15%) Post Module Assessment (30%)

Prepared by: Name: Ts Haslaile Abdullah Signature: <i>Haslaile</i> Date: 15 Sept 2020	Certified by: Name: Signature: Date:
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CLO 3	Apply appropriate electrical code of conduct to ensure work safety	PLO6 (GSE)	P3, CTPS1	Lecture, active learning	Post Module Assessment (20%)
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*This is the basic mapping required for the CI. Any added information is allowed (extra columns for weight or other elements) **provided** this is made consistent for all CI at program/school/faculty level.*

**Up to 5 CLO*

*Refer **Taxonomies of Learning and ***UTM's Graduate Attributes for UG and Generic Skills for PG, where applicable for measurement of outcomes achievement*

*****T – Test; Q – Quiz; HW – Homework; Asg – Assignment; PR – Project; Pr – Presentation; F – Final Exam etc.*

Details on Innovative T&L practices:

No.	Type	Implementation
1.	Active learning	Conducted through in-class activities
2.	Project-based learning	Conducted through design assignments. Students in a group of 3 are given 2 design projects that require power electronics solutions involving the design calculations and verification using MATLAB/Simulink. Compliance to the design specifications need to be given in the form of written reports.

Weekly Schedule:

Week 1	Introduction to Electricity SI units. Voltage, current and resistance. Electrical symbols. Sources and batteries. Power and energy.
Week 2	Electrical measuring instruments
Week 3	DC Circuit Principles Resistance, colour code, series and parallel connections
Week 4	Ohm's Law, Kirchhoff's Laws, voltage and current dividers, network theorems
Week 5	AC Principles AC voltage and current, waveform characteristics, phasor representation, inductors and capacitors,
Week 6	AC Analysis: Series and parallel RLC circuits, power in AC circuits
Week 7	Electrical Power Technology Magnetic circuits, DC/AC motors and generators, three phase systems, transformers, power regulation and efficiency
Week 8	Mid semester break
Week 9	Electronic Circuits and Devices Solid state devices, diodes and transistors; types and uses; FETs and MOSFETs, thyristors, triacs and SCRs, Zeners diodes; regulator circuits.

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Week 10	Common optical devices (LEDs, LCDs, etc.); Photovoltaic cells; photodiodes and photo transistors; Common amplifier devices; Usages and classes of amplifiers; Operational amplifiers
Week 11	Wiring and Cabling Wire types and characteristics. Coaxial and fiber optic cable. Impedance characteristics. Effects of proper and improper termination.
Week 12	Purposes of grounding. Conductor wiring techniques. Testing methods for different types of cables; Fittings and connectors used in cabling. Some basic safety practices and precautions.
Week 13	Electrical Safety Electrical shock causes and physiological reaction; First Aid.
Week 14	The National Electric Code; Fuses and circuit breakers. Static causes and CMOS damage.
Week 15	Safe use of tools in the workplace. Management of electrical hazards.

Transferable skills (generic skills learned in course of study which can be useful and utilised in other settings):

Team working
Written communication

Student learning time (SLT) details:

Distribution of student Learning Time (SLT) Course content outline					Teaching and Learning Activities		TOTAL SLT
	Guided Learning (Face to Face)				Guided Learning Non-Face to Face	Independent Learning Non-Face to face	
CLO	L	T	P	O			
CLO 1	4h			6h	5.5h	13h	28.5h
CLO 2	9h			15h	10h	30.5h	64.5h
CLO3	3h			5h	6h	10h	24h
Total SLT	16h			26h	21.5h	53.5h	117h

Continuous Assessment		PLO (Code)	Percentage	Total SLT
1	Quiz 1	PLO1 (KW)	10	30m
2	Quiz 2	PLO2 (THPA)	10	30m

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3	Test 1	PLO1 (KW)	15	1h
4	Test 2	PLO2 (THPA)	15	1h
Summative Assessment			Percentage	Total SLT
1	Post Module Assignment	PLO2 (THPA) PLO3 (GSE)	30 20	Asin CLO2 (15h) Asin CLO3 (5h)
Grand Total			100	120h

L: Lecture, T: Tutorial, P: Practical, O: Others

Special requirement to deliver the course (e.g: software, nursery, computer lab, simulation room):

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Learning resources:

Main references

Tooley, Mike. Electronic circuits: fundamentals and applications. Routledge, 2019.
Boylestad, Robert L., and Louis Nashelsky. "Electronic Devices and Circuit Theory 11th ed." (2018).
Hughes, Edward, et al. Hughes electrical and electronic technology. Pearson education, 2016.
Cadick, John. Electrical safety handbook. McGraw-Hill Professional, 2012.

Online

[quizizz.com](https://www.quizizz.com)

Academic honesty and plagiarism: (Below is just a sample)

Assignments are individual tasks and NOT group activities (UNLESS EXPLICITLY INDICATED AS GROUP ACTIVITIES)
Copying of work (texts, simulation results etc.) from other students/groups or from other sources is not allowed.
Brief quotations are allowed and then only if indicated as such. Existing texts should be reformulated with your own words used to explain what you have read. It is not acceptable to retype existing texts and just acknowledge the source as a reference. Be warned: students who submit copied work will obtain a mark of **zero** for the assignment and disciplinary steps may be taken by the Faculty. It is also unacceptable to do somebody else's work, to lend your work to them or to make your work available to them to copy.

Other additional information (Course policy, any specific instruction etc.):

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Disclaimer:

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Note:

This template has been filled in as a **sample** for a UG engineering program, please use the proper PLO code for other academic programs (Refer [Hasil Pembelajaran Program \(PLO\) UTM berdasarkan MQF 2.0](#) at CIDU web page).