MODULE DESCRIPTION FORM

Module Information

Module Title	**Electronic**	Module Delivery
Module Type	Core	☒ Theory
Module Code	**BBE-211**	☒ Lecture
ECTS Credits	**7**	☒ Lab
SWL (hr/sem)	**175**	☒ Tutorial
		☒ Practical
		☐ Seminar

Module Level	1	Semester of Delivery	1
Administering Department	Biomedical engineering	**College**	College of engineering
Module Leader	Ali Mohammed	**e-mail**	Ali.mohammed@uowa.edu.iq
Module Leader's Acad. Title	Assistant Teacher	**Module Leader's Qualification**	Ph.D.
Module Tutor	Ali Mohammed	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

Module Aims	1. To develop problem solving skills and understanding of electronic circuit through the application of techniques. 2. To understand diode circuits analysis and application. 3. To understand clipper, clamper and zener diode circuits. 4. This course deals with the basic concept of electronic circuits. 5. To understand the main types of transistor and analyzing them. 6. To perform an analysis for cascaded connection of transistor.
Module Learning Outcomes	1. Recognize how electronic elements works in electronic circuits. 2. List the various terms associated with electronic circuits. 3. Summarize what is meant by a basic electronic circuit. 4. Describe the different types of diode and transistor. 5. Identify the basic electronic elements and their applications. 6. Learn about the practical applications of diode in terms of wave cutting and wave modification. 7. Learn about Zener diode, its properties and composition 8. Learn about the bipolar Junction Transistor, its structure and working principle.
Indicative Contents	Indicative content includes the following. Semiconductor: N-type, P-type, P-N junction, V-I characteristics, Diode Applications, half-wave rectifier, full-wave rectifier, power supply with filters and regulators, clippers, clampers, Zener Diode: construction, characteristics and circuits, applications, Other Types of Diodes: Varactor diodes, current regulator diode, tunnel diode, schottky diode, PIN diode, Bipolar Junction Transistor(BJT): transistor structure, BJT connection configuration, biasing, characteristics, amplification parameters, D.C. load line, Q-point and waveform distortion, BJT switch operation, BJT amplifier operation, H-Parameters, equivalent circuits for C.C., C.B. and C.E. with its circuit's applications.

Learning and Teaching Strategies
Strategies — Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)

Structured SWL (h/sem)	109	**Structured SWL (h/w)**	7
Unstructured SWL (h/sem)	91	**Unstructured SWL (h/w)**	6
Total SWL (h/sem)	200		

Module Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Semiconductor: N-type, P-type, P-N junction, V-I characteristics,
Week 2	Diode Applications, half-wave rectifier, fullwave rectifier,
Week 3	parameters, D.C. load line, Q-point and waveform distortion
Week 4	power supply with filters and regulators, clippers, clampers,
Week 5	Zener Diode:construction, characteristics and circuits, applications,
Week 6	Bipolar Junction Transistor(BJT): transistor structure,

Week 7	Mid-term Exam
Week 8	BJT connection configuration, biasing, characteristics, amplification
Week 9	BJT switch operation,
Week 10	BJT amplifier operation,
Week 11	H-Parameters, equivalent circuits
Week 12	H-Parameters, equivalent circuits for C.C.
Week 13	H-Parameters, equivalent circuits for C.B.
Week 14	H-Parameters, equivalent circuits C.E. with its circuit's applications.
Week 15	Darlington's amplifier
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Lab 1: Diode characterstics
Week 2	Lab 2: Rectifiers and filters
Week 3	Lab 3: Clippers, clampers and voltage amplifiers
Week 4	Lab 4: Zener diode as voltage regulator
Week 5	Lab 5: BJT characteristics and DC Biasing
Week 6	Lab 6: common Emitter Amplifier
Week 7	Lab 7: common Collector Amplifier

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Boylestad, R.L., and Nashelsky, L., Electronic Devices and circuit Theory, 9th Ed., Pearson Education, Inc., 2013.	Yes
Recommended Texts	Floyd, Thomas L., Electronic devices: Electron Flow Version, 11th Ed., Pearson Education, Inc., 2012.	No

		Grading Scheme		
Group	**Grade**	**Marks (%)**		**Definition**
Success Group (50 - 100)	**A** - Excellent	90 - 100		Outstanding Performance
	B - Very Good	80 - 89		Above average with some errors
	C - Good	70 - 79		Sound work with notable errors
	D - Satisfactory	60 - 69		Fair but with major shortcomings
	E - Sufficient	50 - 59		Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	(45-49)		More work required but credit awarded
	F – Fail	(0-44)		Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.