DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COURSE SYLLABUS

EE 311: Electronics I

COURSE TITLE	*CODE & NUMBER*	*SUBJECT AREA*	**Contact Hours**			**Credit Units**
			Th.	*Pr.*	*Tr.*	
Electronics I	**EE 311**	Engineering and Design	3	3		4
Pre-requisites:	EE 250					
Course Role in Curriculum *(Required/Elective):*	Required Course					
Catalogue Description: Conduction in metals and semiconductors, P-N junctions, diode circuits. Field-effect and junction transistors. Low frequency equivalent circuits. Basic amplifiers.						

***Textbooks*:**
(Author, Title, Pub., year)

1. A. S. Sedra, K. C. Smith, T. C. Carusone, and V. Gaudet, *Microelectronic Circuits*, Oxford University Press, USA, 8th Edition, 2019
2. M. H. Rashid, *Microelectronic Circuits: Analysis and Design*, Cengage Learning Inc., 3rd Edition, 2017.
3. R. Boylestad, *Electronic Devices and Circuit Theory*, 11th Edition, 2019.

***Supplemental Materials*:** Course notes

***Course Learning Outcomes*:**

By the completion of the course the students should be able to:

1. Analyze diode circuits using different methods (models)
2. Design application circuits using diodes and explain physical operation of diode
3. Analyze BJT circuits: DC analysis, AC analysis
4. Design BJT amplifiers for certain gain, input and output resistance
5. Analyze frequency response of amplifier and design amplifier for certain bandwidth
6. Analyze FET circuits: DC analysis, AC analysis
7. Design FET amplifiers for certain gain, input and output resistance
8. Design and implement electronic circuit for practical application (Simulation & Hardware)
9. Setup experiments to measure and verify diode, BJT and FET circuits

***Topics to be Covered*:**	***Duration in Weeks***
1. Diode Circuit Analysis	1.5
2. Applications of diodes, physical explanation of diode operation	1.5

3.	Bipolar Junction Transistor (BJT) Introduction	1.0
4.	DC analysis of BJT circuit	1.0
5.	AC analysis of BJT circuit	1.0
6.	BJT amplifier analysis and design	1.5
7.	Frequency response analysis and design for amplifiers	1.0
8.	Metal Oxide Semiconductor Field Effect Transistor (MOSFET) Introduction	1.0
9.	DC analysis and AC analysis of MOSFET circuits	1.0
10.	MOSFET amplifier analysis and design	1.0
11.	Design and Implement Electronic Circuit for Practical Application	1.0
12.	Setup experiments to measure and verify semiconductor circuits	1.5

Key Student Outcomes addressed by the course: (Put a ✓ sign)

(1) An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	✓
(2) An ability to apply the engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	
(3) An ability to communicate effectively with a range of audiences	
(4) An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
(5) An ability to function effectively on a team whose members together provide leadership, creates a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	✓
(6) An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	✓
(7) An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	

Instructor or course coordinator: Dr. Md Shofiqul Islam
Last updated: Spring 2020