

1.	Title of the course	Introduction to Electronic Systems
2.	Course number	ES108L
3.	Structure of credits (L-T-P-C)	2-0-0-2
4.	New course/modification to	New
5.	To be offered by	Electrical Engineering
6.	Prerequisite	None
7.	Course Objective(s): To discuss the fundamental principles of electronic circuits that can be designed using basic analog and digital electronic devices/components.	
8.	Course Content: Diode circuits: introduction, rectifier circuits, peak detector, limiting and clamping circuits, voltage doubler, Zener diodes; Transistors: current-voltage characteristics, transistor as an amplifier and a switch; Operational Amplifiers (Op-Amps): ideal op-amp, differential and common mode signals, op-amp in inverting and non-inverting configurations, difference amplifier, super diode, instrumentation amplifier, integrators and differentiators, Schmitt trigger; Digital circuits: introduction, Boolean algebra, combinational circuits, sequential circuits, shift registers, counters, Digital-to-Analog Converters (DACs), Analog-to-Digital Converters (ADCs); Introduction to sensors, actuators, microcontroller, microprocessor, Internet of Things (IoT) and communication systems.	
9.	Textbook(s): 1. Sedra A S and Smith K C, Microelectronic Circuits, 7th Edition, Oxford University Press (2016). 2. Mano M M and Ciletti M D, Digital Design, 5th Edition, Pearson Education (2013).	
10.	Reference(s): 1. Boylestad R L and Nashelsky L, Electronic Devices and Circuit Theory, 11th Edition, Pearson Education (2013). 2. Clarence S W D, Sensors and Actuators: Engineering System Instrumentation, 2nd edition, CRC Press (2016). 3. Bahga A and Madisetty V, Internet of Things: A Hands-On Approach, Orient Blackswan Private Limited (2015).	