BACHELOR OF TECHNOLOGY

Electrical and Computer Science Engineering Department

Semester - V

Course Scheme

Semester - V

Course Code	Course Name	Lecture hours	Tutorial hours	Practical hours	Credit
EE 203001	Power Electronics-I	3	1	3	5.5
EE 203002	Microprocessors	3	0	3	4.5
EE 203003	Electromagnetic Waves	3	0	0	3
EE 21xx01	Control Systems	3	1	3	5.5
HS 203001	Advanced English (HSS-3)	3	0	0	3
	Total	**15**	**2**	**9**	**21.5**

I	Course Code	EE 203001			
II	Course Title	Power Electronics-I			
III	Credit Structure	L	T	P	C
		3	1	3	5.5
IV	Prerequisite (If any forthe student)				
V	Course Content	• Power semiconductor devices – construction, characteristics, datasheet interpretation, driver and protection circuits; • AC-DC converters – topologies, operation principle, performance analysis, applications; DC-DC converters – topologies, operation principle, performance analysis, applications; • DC-AC converters – topologies, operation principle, performance analysis, applications;			
VI	Text/References	1. Andrzej M. Trzynadlowski, Introduction to Modern Power Electronics, Wiley-India, second edition, 2011. 2. Philip T. Krein, Elements of Power Electronics, Oxford University Press, 2012. 3. Ned Mohan, Tore M. Undeland, William P. Robbins, Power Electronics: Converters, Applications and Design, Wiley-India, 2007. 4. Muhammad H. Rashidnces			

I	Course Code	EE 203002			
II	Course Title	Microprocessors			
III	Credit Structure	L	T	P	C
		3	0	3	4.5
IV	Prerequisite (If any forthe student)				
V	Course Content	A block diagram view of a general-purpose processor; elements of hardware and software architectures; Introductory data and control paths concepts, registers and memory organization. Instruction set basics and assembly language programming: Instruction structure and addressing modes, instruction encoding, detailed study of 8085A instruction set and interfacing basics: Memory interfacing, principles of I/O interfacing, polled and interrupts I/O handshaking principles. Examples of I/O devices: parallel port, serial port, keypad, display, etc. Introductory micro controllers: architectures, instruction set, programming, input-output interfacing, interrupts. **Laboratory**: Supplements the theory 8085-microprocessor kit-based experiments: Software experiments demonstrate the use of the instruction set and assembly language programming. Hardware experiments for memory interfacing, parallel port, serial ports, interrupt driven I/O Simple microcontrollers-based experiments.			

I	Course Code	EE 203003			
II	Course Title	Electromagnetic Waves			
III	Credit Structure	**L**	**T**	**P**	**C**
		3	0	0	3
IV	Prerequisite (If any forthe student)				
V	Course Content	• Transmission line equations. Impedance of loaded and unloaded transmission lines. Reflections and VSWR. Smith chart and its use in impedance matching and other transmission line problems. • Propagation of electromagnetic waves in different media. Reflection and refraction at different boundaries. Total reflection and polarizing angle. Ground wave and sky wave propagation. Parallel plane and rectangular waveguides. • Attenuation in wave guides. Radiation of electromagnetic waves. Dipole and array of dipoles for medium wave and short-wave transmission			
VI	Text/References	1. R K Shevgaonkar, Electromagnetic Waves, McGraw Hill Education, India 2006. 2. E.C. Jordon and E.G. Balmain, Electro-magnetic Waves and Radiation Systems, 2nd Ed.Prentice Hall India, 1986.			

I	Course Code	EE 21xx01			
II	Course Title	Control Systems			
III	Credit Structure	**L**	**T**	**P**	**C**
		3	1	3	5.5
IV	Prerequisite (If any forthe student)				
V	Course Content	• Basic concepts: Notion of feedback; open- and closed-loop systems. Modeling and representations of control systems: • Ordinary differential equations; Transfer functions; Block diagrams; Signal flow graphs; State-space representations, Performance and stability: Time-domain analysis; Second-order systems; • Characteristic-equation and roots; Routh-Hurwitz criteria, Frequency domain techniques: Root-locus methods; Frequency responses; Bode-plots; Gainmargin and phase-margin; • Nyquist plots; Compensator design: Proportional, PI and PID controllers; Lead-lag compensators. State-space concepts: Controllability; Observability; pole placement result; Minimal representations.			
VI	Text/References	1. Automatic Control Systems by Benjamin C.Kuo, 8th Edition, Farid Golnaraghi, John Wiley & Sons. 2. Modern Control Engineering by Katsuhiko Ogata, 4th Edition, Prentice Hall of India. 3. Control Systems Engineering by Norman Nise, 6th Edition, Wiley India Pvt. Ltd. 4. Control System: Principals and Design by M Gopal, 3rd Edition, Tata McGraw Hill. 5. Linear System Theory and Design by C T Chen, Oxford, 4th Edition, Oxford University Press. 6. Modern Control Systems by Richard C. Dorf, Robert H. Bishop, 12th Edition, Prentice Hall of India.			