Barrackpore Rastraguru Surendranath College

Teaching Plan

Department of Electronic Science

2022-23

NAME OF THE PROGRAMME

B.Sc. (Hons.) CBCS in Electronic Science

PROGRAMME OUTCOME

(i) Teaching & Learning

(ii) Higher Studies & subsequent Research

(iii) Job in MNCs

(iv) Job in Govt. organizations

(v) Self Employment

Notes:
You can merge cells in between and add students' seminars and class tests / internal assessment.
For incorporating PO / CO at UG level, you may refer to your WBSU CBCS syllabus.
If not there you can refer to the UGC model syllabus
https://www.ugc.ac.in/ugc_notices.aspx?id=MTA3Nw==

Semester			**I**		
Course Title	**Core Course Theory + Practical**				
Course Code	**ELSACOR01T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Basic Circuit Concepts , Resistors , Inductors Capacitors	13
2	Circuit Analysis , DC Transient Analysis	13

3	AC Circuit Analysis , Power in AC Circuits , Passive Filters	18
4	Network Theorems , Tow Port Networks	16

Semester			**I**		
Course Title	**Core Course Theory + Practical**				
Course Code	**ELSACOR02T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Ordinary Differential Equations , Series solution of Differential Equations and Special Functions, Integral Calculus	14
2	Matrices	14
3	Sequences and Series	14

4	Complex variables and Functions	16

Semester			**II**		
Course Title	**Core Course Theory + Practical**				
Course Code	**ELSACOR03T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75
Course Mapping					

Units	Course Content	Lecture Hour (Cumulative)
1	Semiconductor Basics , Carrier Transport Phenomena	14
2	P-N Junction Diode	14
3	Bipolar Junction Transistors (BJT)	14
4	Field Effect Transistors , Power Devices	18

	Semester	**II**	
Course Title	**Core Course Theory + Practical**		
Course Code	**ELSACOR04T+P**	**Credit**	**04+02**
Course Outcome	**Teaching & Learning**		

Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Quantum Physics , Basic postulates and Formalism of Quantum Mechanics	18
2	Microstates and Macro states , Classical-Statistics, Quantum Statistics , Phonon and lattice specific heat of solids , Fermi-Dirac Distribution Law	18
3	Thermal Properties	12
4	Electric and Magnetic Properties	12

Semester			**III**		
Course Title	**Core Course Theory + Practical**				
Course Code	**ELSACOR05T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Diode Circuits , Rectifiers , Filters	14
2	Bipolar Junction Transistors (BJT)	15
3	Feedback Amplifiers	13

4	MOSFET Circuits , Power Amplifiers , Single tuned amplifiers	18

		Semester	**III**		
Course Title	**Core Course Theory + Practical**				
Course Code	**ELSACOR06T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11

Instruction Mode	Offline Teaching , Online Teaching , Hands on Training				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Number System and Codes , Logic Gates and Boolean algebra , Digital Logic families	11
2	Combinational Logic Analysis and Design	13
3	Sequential logic design , Programmable Logic Devices	18
4	Introduction to Verilog , Introduction to Language ,Data flow Modelling and BehaviouralModelling , Behavioural Modelling , Gate level modelling	18
	(OR)	
	Introduction to VHDL , Introduction to Language Elements , BehaviouralModelling , Sequential Processing , Data types	

	Semester	**III**	
Course Title	**Core Course Theory + Practical**		
Course Code	**ELSACOR07T+P**	**Credit**	**04+02**
Course Outcome			

	Teaching & Learning				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	C Programming Language , Variables	12
2	Decision making , branching & Looping , Functions , Structures , Introduction to C++	19
3	Data Structures	15
4	Searching and Sorting , Trees	14

Semester			**III**		
Course Title	**Skill Enhancement Course - 1**				
Course Code	**ELSASEC01**	**Credit**	**02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	30	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Hands on Teaching**				
Scheme of Examination					
Maximum Score		**Internal**		**End Semester**	20

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)

1	PCB Fundamentals Classification of PCB	9
2	Schematic & Layout Design	9
3	Technology OF PCB	9
4	PCB Technology	3

	Semester	**IV**	
Course Title	**Core Course Theory + Practical**		
Course Code	**ELSACOR08T+P**	**Credit**	**04+02**
Course Outcome	**Teaching & Learning**		

Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	7uBasic Operational Amplifier , Op-Amp parameters	18
2	Op-Amp Circuits , Comparators , Signal generators	18
3	Multivibrators (IC 555) , Phase locked loops (PLL) , Fixed and variable IC regulators , IC LM317	18
4	Signal Conditioning Circuits , Active Filters	12

Semester		**IV**
Course Title	**Core Course Theory + Practical**	
Course Code	**ELSACOR09T+P**	**Credit**	**04+02**
Course Outcome	**Teaching & Learning**	

Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				

Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Signals and Systems	17
2	Linear Time -Invariant Systems (LTI)	13
3	Fourier Series Representation of Periodic Signals ,Properties of continuous Time ,	18

	Fourier Transform	
4	Laplace Transform	12

		Semester	**IV**		
Course Title	**Core Course Theory + Practical**				
Course Code	**ELSACOR10T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11

Instruction Mode	Offline Teaching , Online Teaching , Hands on Training				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Qualities of Measurement ,Basic Measurement Instruments , Connectors and Probes	15
2	Measurement of Resistance and Impedance ,A-D and D-A Conversion	15
3	Oscilloscopes ,Signal Generators	16
4	Transducers and sensors	14

Semester	IV		
Course Title	**Skill Enhancement Course - 2**		
Course Code	**ELSASEC02**	**Credit**	**02**

Course Outcome	Teaching & Learning

Scheme of Instruction					
Total Duration	30	**Class/Week**	11	**Hours/week**	11
Instruction Mode	Hands on Teaching				

Scheme of Examination					
Maximum Score		**Internal**		**End Semester**	20

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Programming Environments	8
2	Actuators Sensors	7
3	LCD interfacing with the robot (2 x 16 Characters LCD)Other indicators , Timer / Counter operations , Communication	8
4	Interfacing to PIC16F887	7

Semester			**V**		
Course Title	**Core Course Theory + Practical**				
Course Code	**ELSACOR11T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Introduction to Microprocessor , Microprocessor 8085 , 8085 Instructions	18

2	Microcontrollers	10
3	PIC16F887 Microcontroller	18
4	Interfacing to PIC16F887	14

	Semester	**V**	
Course Title	**Core Course Theory + Practical**		
Course Code	**ELSACOR12T+P**	**Credit**	**04+02**
Course Outcome	**Teaching & Learning**		

Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Vector Analysis , Electrostatic Fields	16
2	Poisson's Equation and Laplace's Equation , Solution of Laplace's Equation , Magnetostatics	14
3	Time-Varying Fields and Maxwell's Equations	13
4	Electromagnetic Wave Propagation , Guided Electromagnetic Wave Propagation	17

Semester	**V**

Course Title	**Discipline Specific Elective - 1**				
Course Code	**ELSADSE01T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Power Devices Silicon Controlled Rectifier (SCR)	12
2	Diac and Triac , Insulated Gate Bipolar Transistors (IGBT) Application of SCR , Power MOSFETS	14
3	Power Inverters , Choppers	17

4	Electromechanical Machines	17

Semester	**V**				
Course Title	**Discipline Specific Elective - 2**				
Course Code	**ELSADSE02T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75
Course Mapping					

Units	Course Content	Lecture Hour (Cumulative)
1	Electromagnetic Wave Propagation	15
2	Transmission Lines	17
3	Waveguides and Waveguide Devices	13
4	Radiation of electromagnetic waves , Antenna Parameters , Types of Antenna	15

Semester		**VI**	
Course Title	**Core Course Theory + Practical**		
Course Code	**ELSACOR13T+P**	**Credit**	**04+02**
Course Outcome	**Teaching & Learning**		

Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Electronic communication	10
2	Amplitude Modulation , Angle modulation	20
3	Pulse Analog Modulation Pulse Code Modulation	14
4	Digital Carrier Modulation Techniques	16

Semester			**VI**		
Course Title	**Core Course Theory + Practical**				
Course Code	**ELSACOR14T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Light as an Electromagnetic Wave , Interaction of electromagnetic waves with dielectrics , Interference , Diffraction	22

2	Polarization	13
3	Light Emitting Diodes , Lasers , Photodetectors , LCD Displays	13
4	Guided Waves and the Optical Fiber	12

		Semester	**VI**		
Course Title	**Discipline Specific Elective - 3**				
Course Code	**ELSADSE04T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction	**Offline Teaching , Online Teaching , Hands on**				

Mode	Training				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75
Course Mapping					

Units	Course Content	Lecture Hour (Cumulative)
1	Advanced Digital Modulation Technique	16
2	Optical Communication	10
3	Cellular Communication	17
4	Satellite communication , Local area networks (LAN)	17

Semester	**VI**

Course Title	**Discipline Specific Elective - 4**				
Course Code	**ELSADSE06T+P**	**Credit**	**04+02**		
Course Outcome	**Teaching & Learning**				
Scheme of Instruction					
Total Duration	60-60	**Class/Week**	11	**Hours/week**	11
Instruction Mode	**Offline Teaching , Online Teaching , Hands on Training**				
Scheme of Examination					
Maximum Score	40+10	**Internal**	10+15	**End Semester**	75

Course Mapping

Units	Course Content	Lecture Hour (Cumulative)
1	Discrete Time systems	15
2	Z-Transform , System Function	15
3	Discrete Fourier Transform	15

4	Digital Filters	15