

**Manipal Institute of Technology**  
**School of Electrical Engineering**  
**B.Tech. in Electrical and Electronics Engineering**  
**Program Structure (2026 Scheme)**

Year	THIRD SEMESTER						FOURTH SEMESTER						
	Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C	
II	SMS 2107	Engineering Mathematics - III	2	1	0	3	SMS 2207	Probability and Optimization Techniques	2	1	0	3	
	EES 2101	Circuits and Signals	3	1	0	4	EES 2201	Control Systems	3	1	0	4	
	EES 2102	Analog System Design	3	1	0	4	EES 2202	Digital Signal Processing	3	1	0	4	
	EES 2103	Digital System Design	3	1	0	4	EES 2203	Microprocessor and microcontroller	4	0	0	4	
	EES 2104	Electromagnetic Waves	3	0	0	3	EEE 2201	Electrical Machines	3	1	0	4	
	EES 2111	Circuits and Signals Lab	0	0	3	1	EES 2211	Control and Signal Processing Lab	0	0	3	1	
	EES 2112	Analog System Design Lab	0	0	3	1	EES 2212	Microprocessor and Microcontroller Lab	0	0	3	1	
	EES 2113	Digital System Design Lab	0	0	3	1	EEE 2211	Electrical Machinery Lab	0	0	3	1	
<b>Total Contact Hours (L + T + P)</b>			<b>14</b>	<b>4</b>	<b>9</b>	<b>21</b>	<b>Total Contact Hours (L + T + P)</b>			<b>15</b>	<b>4</b>	<b>9</b>	<b>22</b>
<b>Total Contact Hours (L + T + P) + OE</b>			<b>27</b>			<b>Total Contact Hours (L + T + P) + OE</b>			<b>28</b>				
III	FIFTH SEMESTER						SIXTH SEMESTER						
	SMS 3002	Essentials of Management	3	0	0	3	SMS 3001	Engg. Economics and Financial Management	3	0	0	3	
	EEE 3101	Generation, Transmission and Distribution	3	1	0	4	EEE 3201	Industrial Drives and Control	3	0	0	3	
	EEE 3102	Power System Analysis	3	1	0	4	EEE 3202	Switchgear and Protection	3	0	0	3	
	EEE 3103	Power Electronics	3	0	0	3	E#P 4XXX	PE - 1 / Minor Specialization	3	0	0	3	
	EEE 3104	Measurements and Instrumentation	3	0	0	3	E#P 4XXX	PE - 2 / Minor Specialization	3	0	0	3	
	EEE 3111	Power Electronics Lab	0	0	3	1	EEE 3211	Drives and Control Lab	0	0	3	1	
	EEE 3112	Measurements and Instrumentation lab	0	0	3	1	EEE 3212	Power System Lab	0	0	3	1	
IOE 3XXX	Open Elective - 1	3	0	0	3	IOE 3XXX	Open Elective - 2	3	0	0	3		
<b>Total Contact Hours (L + T + P) + OE</b>			<b>18</b>	<b>2</b>	<b>6</b>	<b>22</b>	<b>Total Contact Hours (L + T + P) + OE</b>			<b>18</b>	<b>0</b>	<b>6</b>	<b>20</b>
<b>Total Contact Hours (L + T + P) + OE</b>			<b>26</b>			<b>Total Contact Hours (L + T + P) + OE</b>			<b>24</b>				
IV	SEVENTH SEMESTER						EIGHTH SEMESTER						
	E#P 4XXX	PE - 3 / Minor Specialization	3	0	0	3	EES 4299	Industrial Training (MLC)				1	
	E#P 4XXX	PE - 4 / Minor Specialization	3	0	0	3	EEE 4999	Project Work				12	
	EEP 4XXX	PE - 5	3	0	0	3	EEH 5999	Project Work (B Tech - Honours) **				20	
	EEP 4XXX	PE - 6	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 1** (V semester)				4	
	EEP 4XXX	PE - 7	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 2** (VI semester)				4	
	IOE 3XXX	Open Elective - 3	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 3** (VII semester)				4	
	*** 4199	Mini Project (Minor specialization) *				8							
<b>Total Contact Hours (L + T + P) + OE</b>			<b>18</b>	<b>0</b>	<b>0</b>	<b>18/26</b>	<b>Total Contact Hours (L + T + P) + OE</b>						<b>13/33**</b>
<b>Total Contact Hours (L + T + P) + OE</b>			<b>18</b>			<b>Total Contact Hours (L + T + P) + OE</b>							

\* Applicable to students who opted for minor specialization

\*\*Applicable to eligible students who opted for and successfully completed the B Tech - honours requirements

Minor Specializations (School Level)	Minor Specializations (Institute Level)	Program Electives
<b>I. Data Science and Computational Intelligence (EEE, ECE)</b> EEE 4301: Data Structure and Algorithms EEE 4302: Soft Computing Techniques EEE 4303: Data Science EEE 4304: Artificial Intelligence and Generative AI  <b>II. Power Electronics and Applications (EEE)</b> EEE 4305: Modern Power Converters EEE 4306: EV Motor Drives and Control EEE 4307: Power Quality Issues and Mitigation Techniques EEE 4308: Power Electronic Applications to Modern Power Systems	<b>I. Electric Vehicle Technology (SEE and SME)</b> EEE 4401: Electric and Hybrid Vehicles EEE 4402: Battery Technology and Charging Infrastructure EEE 4403: Automotive Power Trains EEE 4404: EV Vehicle Design and Analysis  <b>II. Energy Management and Auditing (SEE and SME)</b> EEE 4405: Advanced Energy Management EEE 4406: Energy Efficiency in Electrical Utilities EEE 4407: Energy Efficiency in Thermal Utilities EEE 4408: Energy Performance Assessment  <b>III. VLSI Design (EEE, INS, Mechatronics)</b> EEE 4409: CMOS Integrated Circuits EEE 4410: Semiconductor Devices and Manufacturing EEE 4411: System on Chip Design and Implementation EEE 4412: Digital Testing and Testability	EEP 4401: Design and Analysis of Electrical Machines EEP 4402: Power System Operation and Control EEP 4403: Microgrid Operation and Control EEP 4404: HVDC and FACTS EEP 4405: AI Applications in Electrical Engineering EEP 4406: Electric Vehicle Technology EEP 4407: Smart Grid Technologies EEP 4408: Advanced Control System EEP 4409: Data Structures and Algorithms EEP 4410: Embedded System Design EEP 4411: FPGA Based System Design EEP 4412: Advanced Computer Architecture EEP 4413: Data Science EEP 4414: Real Time Operating System EEP 4415: CMOS VLSI Design EEP 4416: Communication Systems

**Manipal Institute of Technology**  
**School of Electrical Engineering**  
**B.Tech. in Electronics and Communication Engineering**  
**Program Structure (2026 Scheme)**

Year	THIRD SEMESTER						FOURTH SEMESTER					
	Sub. Code	Subject Name	L	T	P	C	Sub. Code	Subject Name	L	T	P	C
II	SMS 2107	Engineering Mathematics - III	2	1	0	3	SMS 2208	Probability and Optimization Methods	2	1	0	3
	EES 2101	Circuits and Signals	3	1	0	4	EES 2201	Control Systems	3	1	0	4
	EES 2102	Analog System Design	3	1	0	4	EES 2202	Digital Signal Processing	3	1	0	4
	EES 2103	Digital System Design	3	1	0	4	EES 2203	Microprocessor and Microcontroller	4	0	0	4
	EES 2104	Electromagnetic Waves	3	0	0	3	EEC 2201	Analog and Digital Communication	3	1	0	4
	EES 2111	Circuits and Signals Lab	0	0	3	1	EES 2211	Control and Signal Processing Lab	0	0	3	1
	EES 2112	Analog System Design Lab	0	0	3	1	EES 2212	Microprocessor and Microcontroller Lab	0	0	3	1
	EES 2113	Digital System Design Lab	0	0	3	1	EEC 2211	Communication System Lab	0	0	3	1
			14	4	9	21			15	4	9	22
	<b>Total Contact Hours (L + T + P)</b>		27			<b>Total Contact Hours (L + T + P)</b>		28				
III	FIFTH SEMESTER						SIXTH SEMESTER					

	SMS 3002	Essentials of Management	3	0	0	3	SMS 3001	Engineering Economics and Financial Management	3	0	0	3
	EEC 3101	FPGA Based System Design and Verification	3	0	0	3	EEC 3201	Microwave and Antenna Engineering	4	0	0	4
	EEC 3102	Data Communication and Networks	3	0	0	3	EEC 3202	Artificial Intelligence for Signal Processing and Communication	3	0	0	3
	EEC 3103	VLSI Design	3	0	0	3	E#P 4XXX	PE1 / Minor 1	3	0	0	3
	EEC 3104	Wireless Communication	3	0	0	3	E#P 4XXX	PE2 / Minor 2	3	0	0	3
	EEC 3111	FPGA Based System Design and Verification Lab	0	0	3	1	EEC 3211	Microwave and Antenna Lab	0	0	3	1
	EEC 3112	Data Communication and Networks Lab	0	0	3	1	EEC 3212	Artificial Intelligence for Signal Processing and Communication Lab	0	0	3	1
	EEC 3113	VLSI Design Lab	0	0	3	1	IOE 3XXX	Open Elective - 2	3	0	0	3
	IOE 3XXX	Open Elective - 1	3	0	0	3						
			18	0	9	21			19	0	6	21
	<b>Total Contact Hours (L + T + P)</b>		<b>27</b>				<b>Total Contact Hours (L + T + P)</b>		<b>25</b>			
	<b>SEVENTH SEMESTER</b>						<b>EIGHTH SEMESTER</b>					
IV	E#P 4XXX	PE - 3 / Minor Specialization	3	0	0	3	EES 4299	Industrial Training (MLC)				1
	E#P 4XXX	PE - 4 / Minor Specialization	3	0	0	3	EEC 4999	Project Work				12
	E#P 4XXX	PE - 5	3	0	0	3	EEH 5999	Project Work (B Tech - Honours) **				20
	E#P 4XXX	PE - 6	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 1** (V semester)				4
	E#P 4XXX	PE - 7	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 2** (VI semester)				4
	IOE 3XXX	Open Elective-3	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 3** (VII semester)				4
	*** 4199	Mini Project (Minor specialization) *				8						
			18	0	0	18/26*						13/33**
	<b>Total Contact Hours (L + T + P) +OE</b>		<b>18</b>									

\*Applicable to students who opted for minor specialization

\*\*Applicable to eligible students who opted for and successfully completed the B Tech – honours requirements

Minor Specializations (School Level)	Minor Specializations (Institute Level)	Program Electives
<p><b>I. Embedded System (EEE, ECE, VLSIDT)</b>            EEC 4301: Embedded System design            EEC 4302: Real Time Operating System            EEC 4303: Internet of Things            EEC 4304: Edge AI for Embedded Systems</p> <p><b>II. Signal Processing (EEE, ECE, INS, CPS)</b>            EEC 4305: Advanced Digital Signal Processing            EEC 4306: Linear Algebra for Signal Processing            EEC 4307: Digital Speech Processing</p>		ECP 4401: 5G Software Development and Testing ECP 4402: Cognitive Radio Networks ECP 4403: Number theory and Cryptography ECP 4404: Information Theory and Coding ECP 4405: Error Control Coding ECP 4406: Radar and Navigation Technology ECP 4407: Software Technology for Embedded systems ECP 4408: Satellite Communications ECP 4409: Quantum Cryptography ECP 4410: VLSI for Signal Processing EVP 4401: System on Chip

EEC 4308: Digital Image Processing		EVP 4402: RF Microelectronics and IC Design EVP 4403: VLSI Design for Hardware Security EVP 4404: Electronics Packaging and Manufacturing EVP 4405: MEMS and NEMS Technology EVP 4406: Neuromorphic Circuit Design EVP 4407: Novel Semiconductor Devices EVP 4408: Photonic Materials and Devices EVP 4409: Semiconductor Materials Characterization Techniques EVP 4410: Flexible Electronics EVP 4411: Spintronics EVP 4412: Quantum Devices and Engineering EVP 4413: VLSI Data Converters
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**Manipal Institute of Technology**  
**School of Electrical Engineering**  
**B.Tech. in Electronics Engineering Specialization: Biomedical Engineering**  
**Program Structure (2026 Scheme)**

Year	THIRD SEMESTER						FOURTH SEMESTER						
	Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C	
II	SMS 2107	Engineering Mathematics - III	2	1	0	3	SMS 2208	Probability and Optimization Methods	2	1	0	3	
	EES 2101	Circuits and Signals	3	1	0	4	EES 2201	Control Systems	3	1	0	4	
	EES 2102	Analog System Design	3	1	0	4	EES 2202	Digital Signal Processing	3	1	0	4	
	EES 2103	Digital System Design	3	1	0	4	EES 2203	Microprocessor and Microcontroller	4	0	0	4	
	EES 2104	Electromagnetic Waves	3	0	0	3	EEB 2201	Human Anatomy and Physiology	4	0	0	4	
	EES 2111	Circuits and Signals Lab	0	0	3	1	EES 2211	Controls and Signal Processing Lab	0	0	3	1	
	EES 2112	Analog System Design Lab	0	0	3	1	EES 2212	Microprocessor and Microcontroller Lab	0	0	3	1	
	EES 2113	Digital System Design Lab	0	0	3	1	EEB 2211	Biomedical Computation Lab	0	0	3	1	
<b>Total Contact Hours (L + T + P) = 27</b>			<b>14</b>	<b>4</b>	<b>9</b>	<b>21</b>	<b>Total Contact Hours (L + T + P) = 28</b>			<b>16</b>	<b>3</b>	<b>9</b>	<b>22</b>
III	FIFTH SEMESTER						SIXTH SEMESTER						
	SMS 3002	Essentials of Management	3	0	0	3	SMS 3001	Engg Economics and Financial Management	3	0	0	3	
	EEB 3101	Basic Clinical Sciences	4	0	0	4	EEB 3201	Biomaterials	3	0	3	4	
	EEB 3102	Medical Devices and Regulations	3	0	0	3	EEB 32XX	Flexi Core 2	3	0	0	3	
	EEB 3103	Medical Image Processing	3	0	0	3	E#P 4XXX	PE - 1 / Minor Specialization	3	0	0	3	
	EEB 31XX	Flexi Core 1	3	0	3	4	E#P 4XXX	PE - 2 / Minor Specialization	3	0	0	3	
	EEB 3111	Biomedical Instrumentation and Data Acquisition Lab	0	0	3	1	EEB 3211	Clinical Data Analysis and Visualisation Lab	0	0	3	1	
	EEB 3112	Medical Image Processing Lab	0	0	3	1	IOE 3XXX	Open Elective-2	3	0	0	3	
IOE 3XXX	Open Elective	3	0	0	3								

			19	0	9	22				18	0	6	20	
	<b>Total Contact Hours (L + T + P) + OE</b>						<b>28</b>	<b>Total Contact Hours (L + T + P) + OE</b>						<b>24</b>
IV	<b>SEVENTH SEMESTER</b>						<b>EIGHTH SEMESTER</b>							
	E#P 4XXX	PE - 3 / Minor Specialization	3	0	0	3	EES 4299	Industrial Training (MLC)					1	
	E#P 4XXX	PE - 4 / Minor Specialization	3	0	0	3	EEB 4999	Project Work					12	
	EBP 4XXX	PE - 5	3	0	0	3	EEH 5999	Project Work (B Tech - Honours) **					20	
	EBP 4XXX	PE - 6	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 1** (V semester)					4	
	EBP 4XXX	PE - 7	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 2** (VI semester)					4	
	IOE 3XXX	Open Elective-3	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 3** (VII semester)					4	
	*** 4199	Mini Project (Minor specialization) *				8								
<b>Total Contact Hours (L + T + P) +OE</b>						<b>18</b>	<b>0</b>	<b>0</b>	<b>18/26*</b>				<b>13/33**</b>	

\*Applicable to students who opted for minor specialization

\*\*Applicable to eligible students who opted for and successfully completed the B Tech - honours requirements

<b>Flexi Core 1:</b> EEB 3104: Advanced Biomedical Signal Processing EEB 3105: Biochemistry and Molecular Biology		<b>Flexi Core 2:</b> EEB 3202: AI in Healthcare EEB 3203: Tissue Engineering	
<b>Minor Specialization (School Level)</b>	<b>Minor Specialization (Institute Level)</b>	<b>Program Electives</b>	
<b>Medical Informatics (BME)</b> EEB 4301: Data Structures for Biomedical Computing EEB 4302: Neural Networks and Deep Learning for Healthcare EEB 4303: Computer Vision in Diagnostics EEB 4304: Biomedical Interface Engineering	<b>Bioengineering (SEE, Biotechnology)</b> EEB 4401: Nanotechnology in Healthcare EEB 4402: Biomaterials and Characterization Techniques EEB 4403: Drug Delivery EEB 4404: Biofabrication	EBP 4401: Biofluids and Biomechanics EBP 4402: Rehabilitation Engineering EBP 4403: Neuroengineering EBP 4404: Internet of Medical Things EBP 4405: Health Information Systems EBP 4406: Functional Materials for Biomedical Engineering EBP 4407: Digital Pathology	

**Manipal Institute of Technology**  
**School of Electrical Engineering**  
**B.Tech. in Electronics Engineering Specialization: Cyber Physical Systems**  
**Program Structure (2026 Scheme)**

Year	THIRD SEMESTER						FOURTH SEMESTER					
	Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C
II	SMS 2107	Engineering Mathematics - III	2	1	0	3	SMS 2208	Probability and Optimization Methods	2	1	0	3
	EES 2101	Circuits and Signals	3	1	0	4	EES 2201	Control Systems	3	1	0	4
	EES 2102	Analog System Design	3	1	0	4	EES 2202	Digital Signal Processing	3	1	0	4
	EES 2103	Digital System Design	3	1	0	4	EES 2203	Microprocessor and Microcontroller	4	0	0	4

	EES 2104	Electromagnetic Waves	3	0	0	3	EI 2201	Sensor Technology	3	1	0	4
	EES 2111	Circuits and Signals Lab	0	0	3	1	EES 2211	Controls and Signal Processing Lab	0	0	3	1
	EES 2112	Analog System Design Lab	0	0	3	1	EES 2212	Microprocessor and Microcontroller Lab	0	0	3	1
	EES 2113	Digital System Design Lab	0	0	3	1	EI 2211	Sensors Lab	0	0	3	1
			14	4	9	21			15	4	9	22
	<b>Total Contact Hours (L + T + P)</b>		<b>27</b>				<b>Total Contact Hours (L + T + P)</b>		<b>28</b>			
III	<b>FIFTH SEMESTER</b>						<b>SIXTH SEMESTER</b>					
	SMS 3002	Essentials of Management	3	0	0	3	SMS 3001	Engineering Economics and Financial Management	3	0	0	3
	EI 3101	Embedded System Design	3	0	0	3	EI 3201	Data Analytics and Security	3	0	0	3
	EI 3102	Data Structures and Algorithms	3	0	0	3	EEY 3201	Cyber Physical System Design and Interface	3	0	0	3
	EEY 3101	Foundations of Cyber Physical Systems	3	0	0	3	E#P 4XXX	PE - 1 / Minor Specialization	3	0	0	3
	EEY 3102	Data Communication and Networks	3	0	0	3	E#P 4XXX	PE - 2 / Minor Specialization	3	0	0	3
	EI 3111	Embedded Systems Lab	0	0	3	1	EEY 3211	CPS Design and Interface Lab	0	0	3	1
	EEY 3111	Networking Lab	0	0	3	1	EEY 3212	Extended Reality Lab	0	1	3	2
	EEY 3112	Data Structures and Algorithms Lab	0	0	3	1	IOE 3XXX	Open Elective-2	3	0	0	3
	IOE 3XXX	Open Elective-1	3	0	0	3						
			18	0	9	21			18	1	6	21
	<b>Total Contact Hours (L + T + P) + OE</b>		<b>27</b>				<b>Total Contact Hours (L + T + P) + OE</b>		<b>25</b>			
IV	<b>SEVENTH SEMESTER</b>						<b>EIGHTH SEMESTER</b>					
	E#P 4XXX	PE - 3 / Minor Specialization	3	0	0	3	EES 4299	Industrial Training (MLC)				1
	E#P 4XXX	PE - 4 / Minor Specialization	3	0	0	3	EEY 4999	Project Work				12
	E#P 4XXX	PE - 5	3	0	0	3	EEH 5999	Project Work (B Tech - Honours) **				20
	E#P 4XXX	PE - 6	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 1** (V semester)				4
	E#P 4XXX	PE - 7	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 2** (VI semester)				4
	IOE 3XXX	Open Elective-3	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 3** (VII semester)				4
	*** 4199	Mini Project (Minor Specialization) *				8						
			18	0	0	18/26*						13/33
	<b>Total Contact Hours (L + T + P) +OE</b>		<b>18</b>									

\*Applicable to students who opted for minor specialization

\*\*Applicable to eligible students who opted for and successfully completed the B Tech - honours requirements

Minor Specializations (School Level)	Minor Specializations (Institute Level)	Program Electives
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	<b>Cyber Physical Systems (SCE, SME, SEE except CPS and ECE)</b> EEY 4401: Foundation of Cyber Physical Systems EEY 4402: Cyber Physical System Design and Interfacing EEY 4403: Extended Reality EEY 4404: Data Communication and Networks	EEP 4411: FPGA Based System Design EEP 4412: Advanced Computer Architecture EIP 4401: Electronic Measurement Systems EIP 4402: Biosensors and BioMEMS EIP 4403: Multi Sensor Data Fusion EIP 4404: Wireless Sensor Technology EYP 4401: Digital Twin EYP 4402: Reliability and Safety Engineering EYP 4403: Neural Network and Fuzzy Logic EYP 4404: Systems Engineering EYP 4405: Unsupervised Intelligence in CPS EYP 4406: Edge Intelligence for IoT and CPS
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**Manipal Institute of Technology**  
**School of Electrical Engineering**  
**B.Tech. in Electronics Engineering Specialization: Instrumentation**  
**Program Structure (2026 Scheme)**

Year	THIRD SEMESTER						FOURTH SEMESTER						
	Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C	
II	SMS 2107	Engineering Mathematics - III	2	1	0	3	SMS 2208	Probability and Optimization Methods	2	1	0	3	
	EES 2101	Circuits and Signals	3	1	0	4	EES 2201	Control Systems	3	1	0	4	
	EES 2102	Analog System Design	3	1	0	4	EES 2202	Digital Signal Processing	3	1	0	4	
	EES 2103	Digital System Design	3	1	0	4	EES 2203	Microprocessor and Microcontroller	4	0	0	4	
	EES 2104	Electromagnetic Waves	3	0	0	3	EEL 2201	Sensor Technology	3	1	0	4	
	EES 2111	Circuits and Signals Lab	0	0	3	1	EES 2211	Controls and Signal Processing Lab	0	0	3	1	
	EES 2112	Analog System Design Lab	0	0	3	1	EES 2212	Microprocessor and Microcontroller Lab	0	0	3	1	
	EES 2113	Digital System Design Lab	0	0	3	1	EEL 2211	Sensors Lab	0	0	3	1	
<b>Total Contact Hours (L + T + P)</b>			<b>14</b>	<b>4</b>	<b>9</b>	<b>21</b>	<b>Total Contact Hours (L + T + P)</b>			<b>15</b>	<b>4</b>	<b>9</b>	<b>22</b>
<b>Total Contact Hours (L + T + P)</b>			<b>27</b>			<b>Total Contact Hours (L + T + P)</b>			<b>28</b>				
III	FIFTH SEMESTER						SIXTH SEMESTER						
	SMS 3002	Essentials of Management	3	0	0	3	SMS 3001	Engineering Economics and Financial Management	3	0	0	3	
	EEL 3101	Embedded System Design	3	0	0	3	EEL 3201	Data Analytics and Security	3	0	0	3	
	EEL 3102	Data Structures and Algorithms	3	0	0	3	EEL 3202	Industrial Automation and Drives	3	0	0	3	
	EEL 3103	Industrial Instrumentation	3	0	0	3	E#P 4XXX	PE - 1 / Minor Specialization	3	0	0	3	
	EEL 3104	Process Instrumentation and control	3	0	0	3	E#P 4XXX	PE - 2 / Minor Specialization	3	0	0	3	
	EEL 3111	Embedded Systems Lab	0	0	3	1	EEL 3211	Data Structures Lab	0	0	3	1	
	EEL 3112	Process Control Lab	0	0	3	1	EEL 3212	Virtual Instrumentation Lab	0	0	3	1	
	EEL 3113	Industrial Instrumentation Lab	0	0	3	1	EEL 3213	Industrial Automation Lab	0	0	3	1	
IOE 3XXX	Open Elective-1	3	0	0	3	IOE 3XXX	Open Elective-2	3	0	0	3		

		18	0	9	21			18	0	9	21	
	<b>Total Contact Hours (L + T + P) + OE</b>	27				<b>Total Contact Hours (L + T + P) + OE</b>	27					
IV	<b>SEVENTH SEMESTER</b>					<b>EIGHTH SEMESTER</b>						
	E#P 4XXX	PE - 3 / Minor Specialization	3	0	0	3	EES 4299	Industrial Training (MLC)				1
	E#P 4XXX	PE - 4 / Minor Specialization	3	0	0	3	EEL 4999	Project Work				12
	E#P 4XXX	PE - 5	3	0	0	3	EEH 5999	Project Work (B Tech - Honours) **				20
	E#P 4XXX	PE - 6	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 1** (V semester)				4
	E#P 4XXX	PE - 7	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 2** (VI semester)				4
	IOE 3XXX	Open Elective-3	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 3** (VII semester)				4
	*** 4199	Mini Project (Minor Specialization) *				8						
		18	0	0	18/26*						13/33**	
	<b>Total Contact Hours (L + T + P) +OE</b>	18										

\*Applicable to students who opted for minor specialization

\*\*Applicable to eligible students who opted for and successfully completed the B Tech - honours requirements

Minor Specializations (School Level)	Minor Specializations (Institute Level)	Program Electives
<b>Control Systems (SEE)</b> EEI 4301: Nonlinear control theory EEI 4302: Digital Control Systems EEI 4303: System Identification EEI 4304: Robust Control		EEP 4411: FPGA Based System Design EEP 4412: Advanced Computer Architecture EEP 4414: Real Time Operating System EIP 4401: Electronic Measurement Systems EIP 4402: Biosensors and BioMEMS EIP 4403: Multi Sensor Data Fusion EIP 4404: Wireless Sensor Technology EIP 4405: Biomedical Instrumentation and Equipment EIP 4406: Analytical and Optical Instrumentation EYP 4402: Reliability and Safety Engineering EYP 4403: Neural Network and Fuzzy Logic EYP 4404: Systems Engineering EYP 4405: Unsupervised Intelligence in CPS EYP 4406: Edge Intelligence for IoT and CPS

**School of Electrical Engineering**  
**B.Tech. in Electronics Engineering (VLSI Design and Technology)**  
**Program Structure (2026 Scheme)**

Year	THIRD SEMESTER						FOURTH SEMESTER						
	Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C	
II	SMS 2107	Engineering Mathematics - III	2	1	0	3	SMS 2209	Mathematical Methods for VLSI Engineering	2	1	0	3	
	EES 2101	Circuits and Signals	3	1	0	4	EES 2201	Control Systems	3	1	0	4	
	EES 2102	Analog System Design	3	1	0	4	EES 2202	Digital Signal Processing	3	1	0	4	
	EES 2103	Digital System Design	3	1	0	4	EES 2203	Microprocessor and Microcontroller	4	0	0	4	
	EES 2104	Electromagnetic Waves	3	0	0	3	EEV 2201	Digital VLSI Design	3	1	0	4	
	EES 2111	Circuits and Signals Lab	0	0	3	1	EES 2211	Control and Signal Processing Lab	0	0	3	1	
	EES 2112	Analog System Design Lab	0	0	3	1	EES 2212	Microprocessor and Microcontroller Lab	0	0	3	1	
	EES 2113	Digital System Design Lab	0	0	3	1	EEV 2211	Digital VLSI Design Lab	0	0	3	1	
<b>Total Contact Hours (L + T + P)</b>			<b>14</b>	<b>4</b>	<b>9</b>	<b>21</b>	<b>Total Contact Hours (L + T + P)</b>			<b>15</b>	<b>4</b>	<b>9</b>	<b>22</b>
<b>FIFTH SEMESTER</b>						<b>SIXTH SEMESTER</b>							
III	SMS 3002	Essentials of Management	3	0	0	3	SMS 3001	Engineering Economics and Financial Management	3	0	0	3	
	EEV 3101	FPGA-based system design	3	0	0	3	EEV 3201	Analog and Mixed-signal IC Design	4	0	0	4	
	EEV 3102	Physics of Semiconductor Devices	3	0	0	3	EEV 3202	Verification using System Verilog	3	0	0	3	
	EEV 3103	VLSI Fabrication Technology	3	0	0	3	E#P 4XXX	PE - 1 / Minor Specialization	3	0	0	3	
	EEV 3104	VLSI Testing and Testability	3	0	0	3	E#P 4XXX	PE - 2 / Minor Specialization	3	0	0	3	
	EEV 3111	FPGA-based system design Lab	0	0	3	1	EEV 3211	Analog and Mixed-signal IC Design Lab	0	0	3	1	
	EEV 3112	Semiconductor Devices and Process Simulation Lab	0	0	6	2	EEV 3212	Semiconductor Fabrication and Characterization Lab	0	0	3	1	
	IOE 3XXX	Open Elective-1	3	0	0	3	IOE 3XXX	Open Elective-2	3	0	0	3	
<b>Total Contact Hours (L + T + P) + OE</b>			<b>18</b>	<b>0</b>	<b>9</b>	<b>21</b>	<b>Total Contact Hours (L + T + P) + OE</b>			<b>19</b>	<b>0</b>	<b>6</b>	<b>21</b>
<b>SEVENTH SEMESTER</b>						<b>EIGHTH SEMESTER</b>							
IV	E#P 4XXX	PE - 3 / Minor Specialization	3	0	0	3	EES 4299	Industrial Training (MLC)				1	
	E#P 4XXX	PE - 4 / Minor Specialization	3	0	0	3	EEV 4999	Project Work				12	
	E#P 4XXX	PE - 5	3	0	0	3	EEH 5999	Project Work (B Tech - Honours) **				20	
	E#P 4XXX	PE - 6	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 1** (V semester)				4	
	E#P 4XXX	PE - 7	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 2** (VI semester)				4	
	IOE 3XXX	Open Elective-3	3	0	0	3	EEH 5XXX	B Tech - Honours Theory - 3** (VII semester)				4	
	*** 4199	Mini Project (Minor specialization) *				8							
<b>Total Contact Hours (L + T + P) + OE</b>			<b>18</b>	<b>0</b>	<b>0</b>	<b>18/26*</b>	<b>Total Contact Hours (L + T + P) + OE</b>						<b>13/33**</b>

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\*\*Applicable to eligible students who opted for and successfully completed the B Tech - honours requirements

Minor Specializations (School Level)	Minor Specializations (Institute Level)	Program Electives
<p><b>I. Advanced VLSI Design and Technology (ECE, VLSIDT)</b>            EEV 4301: VLSI Physical Design            EEV 4302: Low-power VLSI circuits Design            EEV 4303: MOS Device Modelling and Simulation            EEV 4304: Logic Synthesis and Optimization theory</p> <p><b>II. Intelligent VLSI systems (ECE, VLSIDT)</b>            EEV 4305: Advanced Computer Architecture            EEV 4306: AI for VLSI Design Automation            EEV 4307: Hardware design for AI            EEV 4308: Scripting Language for VLSI</p>		ECP 4401: 5G Software Development and Testing ECP 4402: Cognitive Radio Networks ECP 4403: Number theory and Cryptography ECP 4404: Information Theory and Coding ECP 4405: Error Control Coding ECP 4406: Radar and Navigation Technology ECP 4407: Software Technology for Embedded systems ECP 4408: Satellite Communications ECP 4409: Quantum Cryptography ECP 4410: VLSI for Signal Processing EVP 4401: System on Chip EVP 4402: RF Microelectronics and IC Design EVP 4403: VLSI Design for Hardware Security EVP 4404: Electronics Packaging and Manufacturing EVP 4405: MEMS and NEMS Technology EVP 4406: Neuromorphic Circuit Design EVP 4407: Novel Semiconductor Devices EVP 4408: Photonic Materials and Devices EVP 4409: Semiconductor Materials Characterization Techniques EVP 4410: Flexible Electronics EVP 4411: Spintronics EVP 4412: Quantum Devices and Engineering EVP 4413: VLSI Data Converters