

**School of Electrical Engineering**  
**Proposed Course Structure for B. Tech Programme**  
**(Entry Batch 2023 onwards)**

<b>1<sup>st</sup> Semester (Odd)</b>							
<b>S. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Category</b>
1	MTL BS101	Engineering Mathematics-I	3	1	0	4	<b>BSC-1</b>
2	BTL BS 111	Applied Chemistry	3	0	0	3	<b>BSC 2</b>
3	BTP BS 111	Applied Chemistry Lab	0	0	2	1	<b>BSC 2</b>
4	CSL ES101	Introduction to 'C' Programming	3	0	0	3	<b>ESC-1</b>
5	CSP ES101	'C' Programming Lab	0	0	2	1	<b>ESC-1</b>
6	MEL ES101	Introduction to Engineering Mechanics	3	1	0	4	<b>ESC-2</b>
7	MEL SE101	Engineering Workshop	1	0	2	2	<b>SEC-1</b>
8		AEC-1 / VAC-1	0	0	4	2	<b>AEC/VAC</b>
		<b>Total Credits</b>	13	2	10	<b>20</b>	
<b>2<sup>nd</sup> Semester (Even)</b>							
<b>S. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Category</b>
1	MTL BS102	Engineering Mathematics II	3	1	0	4	<b>BSC 3</b>
2	PHL BS101	Engineering Physics	3	0	0	3	<b>BSC 4</b>
3	PHP BS101	Engineering Physics Lab	0	0	2	1	<b>BSC 4</b>
4	EEL DC102	Electrical Measurements and Instrumentation	3	0	0	3	<b>DCC-1</b>
5	EEP DC102	Electrical Measurements and Instrumentation Lab	0	0	2	1	<b>DCC-1</b>
6	EEL DC103	Network analysis & Synthesis	3	1	0	4	<b>DCC-2</b>
7	EEP SE101	MATLAB/Simulink / from the basket	1	0	2	2	<b>SEC-2</b>
8	EEP VA101	Electrical Wiring / from the basket	2	0	0	2	<b>VAC-2</b>
9	EEL AE	As available from the basket	0	0	4	2	<b>AEC-2</b>
10	PCL MA102	Universal Human Value-II (Mandatory)				NC	<b>MAC-I</b>
		<b>Total Credits</b>	15	2	10	<b>22</b>	
<b>3<sup>rd</sup> Semester (Odd)</b>							
<b>S. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Category</b>
1	ECL ESxxx	Digital Electronics	3	0	0	3	<b>ESC-3</b>
2	EEL DC201	Electrical Machines – I	3	0	0	3	<b>DCC-3</b>
3	EEL DC203	Signal & Systems	3	1	0	4	<b>DCC-4</b>
4	EEL DC205	Electronic Devices & Circuits	3	1	0	4	<b>DCC-5</b>
5	BTL BS102	Biology for Engineers	3	0	0	3	<b>BSC-5</b>
6	ECP ES103	Digital Electronics Lab	0	0	2	1	<b>ESC-3</b>
7	EEP DC201	Electrical Machines Lab - I	0	0	2	1	<b>DCC-3</b>
9	EEP SE201	Electrical Workshop / from the basket	0	0	4	2	<b>SEC-3</b>
10	EEI PR201	Summer Internship - I	0	0	2	1	<b>PR</b>
11		From the basket	0	0	4	2	<b>VAC-3</b>
		<b>Total Credits</b>	15	2	14	<b>24</b>	

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<b>4<sup>th</sup> Semester (Even)</b>							
<b>S. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Category</b>
1	EEL DC202	Electrical Machines - II	3	0	0	3	<b>DCC-6</b>
2	EEL DC204	Analog Electronics	3	0	0	3	<b>DCC-7</b>
3	EEL DC206	Microprocessors & Microcontrollers	3	0	0	3	<b>DCC-8</b>
4	EEL DC208	Electric System Design	3	1	0	4	<b>DCC-9</b>
5	EEL DC210	Electromagnetic Field Theory	3	1	0	4	<b>DCC-10</b>
6	EEP DC202	Electrical Machines Lab - II	0	0	2	1	<b>DCC-6</b>
7	EEL DC204	Analog Electronics Lab	0	0	2	1	<b>DCC-4</b>
8	EEP DC206	Microprocessors & Microcontrollers Lab	0	0	2	1	<b>DCC-8</b>
9		From the basket	0	0	4	2	<b>VAC-4</b>
10		Environmental studies	2	0	0	NC	<b>MAC-II</b>
		<b>Total Credits</b>	17	2	10	<b>22</b>	
<b>5<sup>th</sup> Semester (Odd)</b>							
<b>S. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Category</b>
1	EEL DC301	Control Systems	3	0	0	3	<b>DCC-11</b>
2	EEL DC303	Power System - I	3	0	0	3	<b>DCC-12</b>
3	EEL DC305	Power Electronics	3	0	0	3	<b>DCC-13</b>
4	EEP DC112	Control System Lab	0	0	2	1	<b>DCC-11</b>
5	EEP DC113	Power Systems Lab - I	0	0	2	1	<b>DCC-12</b>
6	EEP DC114	Power Electronics Lab	0	0	2	1	<b>DCC-13</b>
7	EEE DE3xx	Department Elective - 1	3	0	0	3	<b>DEC-1</b>
8		Generic Elective - 1	3	0	0	3	<b>GEC-1</b>
9	EED PR301	Project Work – I	0	0	4	2	<b>PR</b>
10	EEL PR 301	Summer Internship – II	0	0	2	1	<b>PR</b>
11		Universal Human Value-II / Indian Knowledge System	2	0	0	NC	<b>MAC-III</b>
		<b>Total Credits</b>	15	0	12	<b>21</b>	
<b>6<sup>th</sup> Semester (Even)</b>							
<b>S. No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Category</b>
1	EEL DC302	Power System - II	3	0	0	3	<b>DCC-14</b>
2	EEL DC304	AI and ML in Electrical Engineering	3	1	0	4	<b>DCC-15</b>
3	MB BSxxx	Entrepreneurship/Management	3	0	0	3	<b>AEC 3</b>
4	EEP DC302	Power System Lab - II	0	0	2	1	<b>DCC-14</b>
5	EEE DE3xx	Department Elective - 2	3	0	0	3	<b>DEC-2</b>
6	EEE DE3xx	Department Elective - 3	3	0	0	3	<b>DEC-3</b>
7		Generic Elective - 2	3	0	0	3	<b>GEC-2</b>
8	EED PR302	Project Work –II	0	0	4	2	<b>PR</b>
9	ESS PR302	Comprehensive Exam	0	0	0	NC	
		<b>Total Credits</b>	18	1	6	<b>22</b>	

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<b>7<sup>th</sup> Semester (Odd)</b>							
S. No.	Course Code	Course Title	L	T	P	C	Category
1	EEL DC401	Switchgear & Protection	3	1	0	4	<b>DCC-16</b>
2	EED PR401	Project Work –III	0	0	8	4	<b>PR</b>
3	EEI PR401	Internship - III	0	0	4	2	<b>PR</b>
4	EEE DE4xx	Department Elective - 4	3	0	0	3	<b>DEC-4</b>
5	EEP DE4xx	Department Elective - 5	3	0	0	3	<b>DEC-5</b>
6		Generic Elective - 3	3	0	0	3	<b>GEC-3</b>
		<b>Total Credits</b>	12	1	12	19	
<b>8<sup>th</sup> Semester (Even)</b>							
S. No.	Course Code	Course Title	L	T	P	C	Category
1	EED PR402/ EEI PR402	Project Work –IV (Major) / Internship	0	0	14	7	<b>DCC/PR</b>
2		Generic Elective – 4/NPTEL	3	0	0	3	<b>GEC-4</b>
						<b>10</b>	

**LIST OF DEPARTMENT ELECTIVE COURSES**

\*As per AICTE guidelines, the following five subjects have been included in list of DEC/GEC in the tables below:

1. Non-Conventional Energy Resources
2. High Voltage Engineering
3. HVDC Transmission
4. VLSI Technology
5. Digital Signal Processing

S. No.	Course Code	Course Title	L	T	P	C	Category
<b>DEC – 1</b>							
1	EEE DE301	Non-Conventional Energy Resources	3	1	0	4	DEC/GEC
2	EEE DE303	Electrical Materials	3	1	0	4	DEC/GEC
3	EEE DE305	Industrial Electrical Systems	3	1	0	4	DEC
4	EEE DE307	Electrical Machine Design	3	1	0	4	DEC/GEC
5	EEE DE309	Sensors & Actuators	3	1	0	4	DEC/GEC
<b>DEC – 2</b>							
1	EEE DE302	Advanced Electrical Machine	3	1	0	4	DEC
2	EEE DE304	Advanced Control Systems	3	1	0	4	DEC/GEC
3	EEE DE306	Power System Analysis and Control	3	1	0	4	DEC
4	EEE DE308	Electric Drives	3	1	0	4	DEC/GEC
5	EEE DE310	Power Utilisation and Traction	3	1	0	4	DEC

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DEC – 3							
1	EEE DE312	Internet of Things	3	1	0	4	DEC/GEC
2	EEE DE314	Digital Control Systems	3	1	0	4	DEC/GEC
3	EEE DE316	Digital Design with HDL	3	1	0	4	DEC/GEC
4	EEE DE318	Digital Signal Processing	3	1	0	4	DEC/GEC
5	EEE DE320	VLSI Technology	3	1	0	4	DEC/GEC
DEC – 4							
1	EEE DE401	Power Plant Engineering	3	1	0	4	DEC
2	EEE DE403	Advanced Power Electronics	3	1	0	4	DEC/GEC
3	EEE DE405	Biomedical Instrumentation	3	1	0	4	DEC/GEC
4	EEE DE407	Electric Vehicle	3	1	0	4	DEC/GEC
5	EEE DE409	FACTS Devices	3	1	0	4	DEC/GEC
6	EEE DE411	Embedded Systems	3	1	0	4	DEC/GEC
DEC – 5							
1	EEE DE413	HVDC Transmission Systems	3	1	0	4	DEC
2	EEE DE415	Robotics & Automation	3	1	0	4	DEC/GEC
3	EEE DE417	High Voltage Engineering	3	1	0	4	DEC
4	EEE DE419	Modelling and Analysis of Electric Distribution System	3	1	0	4	DEC
5	EEE DE421	Switch Mode Power Supply	3	1	0	4	DEC/GEC
6	EEE DE423	Electrical Energy Conservation and Auditing	3	1	0	4	DEC
7	EEE DE425	Power System Optimisation	3	1	0	4	DEC

**B. Tech. (Honours) Electrical Engineering**  
**Entry Batch [2023]**

**Proposed Course Structure as per AICTE (NEP) Guidelines**

**Additional requirements for B. Tech. (Honours) :**

The four-year B. Tech. (Honours) degree in the Major discipline will be awarded to those who completed the credit requirement of a four-year B.Tech. degree programme and earned 12 Additional Credits through DEC's.

The four-year **B. Tech. degree in the Major discipline will be awarded to those who completed a four-year degree programme with 172 credits** and have satisfied the credit requirement.

A student, who wishes to pursue a B. Tech. (Honours), shall earn 12 additional credits from the following **Departmental Elective Courses (DEC):**

S. No.	Course Code	Course Title	L	T	P	C	Category
DEC – 1							
1	EEE DE301	Non-Conventional Energy Resources	3	1	0	4	DEC/GEC
2	EEE DE303	Electrical Materials	3	1	0	4	DEC/GEC
3	EEE DE305	Industrial Electrical Systems	3	1	0	4	DEC
4	EEE DE307	Introduction to Python	3	1	0	4	DEC/GEC
5	EEE DE309	Digital Design with HDL	3	1	0	4	DEC/GEC

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DEC – 2							
1	EEE DE302	Electrical Machine Design	3	1	0	4	DEC
3	EEE DE304	Sensors & Actuators	3	1	0	4	DEC/GEC
2	EEE DE306	Advanced Control Systems	3	1	0	4	DEC/GEC
4	EEE DE308	Electric Drives	3	1	0	4	DEC/GEC
5	EEE DE310	Power Utilisation and Traction	3	1	0	4	DEC
6	EEE DE312	Power Plant Engineering	3	1	0	4	DEC
DEC – 3							
1	EEE DE314	Internet of Things	3	1	0	4	DEC/GEC
2	EEE DE316	Digital Control Systems	3	1	0	4	DEC/GEC
3	EEE DE318	Digital Design with HDL	3	1	0	4	DEC/GEC
4	EEE DE320	Digital Signal Processing	3	1	0	4	DEC/GEC
5	EEE DE322	VLSI Technology	3	1	0	4	DEC/GEC
DEC – 4							
1	EEE DE403	Advanced Power Electronics	3	1	0	4	DEC/GEC
2	EEE DE405	Biomedical Instrumentation	3	1	0	4	DEC/GEC
3	EEE DE407	Electric Vehicle	3	1	0	4	DEC/GEC
4	EEE DE409	FACTS Devices	3	1	0	4	DEC/GEC
5	EEE DE411	Embedded Systems	3	1	0	4	DEC/GEC
DEC – 5							
1	EEE DE413	HVDC Transmission Systems	3	1	0	4	DEC
2	EEE DE415	Robotics & Automation	3	1	0	4	DEC/GEC
3	EEE DE417	High Voltage Engineering	3	1	0	4	DEC
4	EEE DE419	Modelling and Analysis of Electric Distribution System	3	1	0	4	DEC
5	EEE DE421	Switch Mode Power Supply	3	1	0	4	DEC/GEC
6	EEE DE423	Electrical Energy Conservation and Auditing	3	1	0	4	DEC
7	EEE DE425	Power System Optimisation	3	1	0	4	DEC

### Generic Elective Courses (GEC) with Minor Specializations

#### **B.Tech (Electrical Engineering) with Minor Specialization**

The List of Generic Elective Courses (GEC) with two minor specializations namely:

1. B.Tech (Electrical Engineering) with Minor-I Specialisation in *Power Electronics & Drives (PED)*
2. B.Tech (Electrical Engineering) with Minor-II Specialisation in *System & Control (S&C)*

S. No.	Course Code	Course Title	Pre-requisites	L	T	P	C	Category	Semester	Minor Basket
GEC – 1										
1	EEE GE301	Digital Signal Processing	Engineering Mathematics	3	1	0	4	DEC/GEC	5th	S&C (1)
2	EEE GE303	Stochastic Techniques	Engineering Mathematics	3	1	0	4	DEC/GEC	5th	S&C (2)

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3	EEE GE305	Semiconductor Power Devices & Applications	Electronic Devices & Circuits	3	1	0	4	DEC/GEC	5th	PED (1)
4	EEE GE307	Microcontrollers and applications in Power Converters	Microprocessors	3	1	0	4	DEC/GEC	5th	PED (2)
<b>GEC – 2</b>										
1	EEE GE302	Advanced Control Systems	Control Systems	3	1	0	4	DEC/GEC	6th	S&C (3)
2	EEE GE304	Advanced System Engineering	Control Systems, MATLAB	3	1	0	4	DEC/GEC	6th	S&C (4)
3	EEE GE306	Electric Drives for Electric Vehicles	Power Electronics	3	1	0	4	DEC/GEC	6th	PED (6)
4	EEE GE308	Pulsewidth modulation for Power Converterers	Power Electronics	3	1	0	4	DEC/GEC	6th	PED (4)
<b>GEC – 3</b>										
1	EEE GE401	Smart Grid	Control Systems	3	1	0	4	DEC/GEC	7th	S&C (5)
2	EEE GE403	System Reliability	Control Systems	3	1	0	4	DEC/GEC	7th	S&C (6)
3	EEE GE405	Switch Mode Power Supplies	Power Electronics	3	1	0	4	DEC/GEC	7th	PED (5)
4	EEE GE407	FACT Devices	Power Electronics	3	1	0	4	DEC	7th	PED (3)
<b>GEC – 4</b>										
1	EEE DE402	Communication Techniques in Smart Grid	Control Systems	3	1	0	4	DEC/GEC	8th	S&C (7)
2	EEE DE404	Power Quality Improvement Techniques	Power Electronics	3	1	0	4	DEC/GEC	8th	PED (7)

**\*S&C stands for System & Control. Students aspiring for minor specialization in S&C shall have to earn 12 additional credits from the course S&C(1) to S&C(7).**

**\*PED stands for Power Electronics & Drives. Students aspiring for minor specialization in Information System Security shall have to earn 09 additional credits from the course PED(1) to PED(7).**



Head, SoEE