Gautam Buddha University

Electrical Engineering Department, School of Engineering

4-Year B. Tech. (Electrical Engineering with specialization in Computer Engineering) Programme (For 2023-2027 batches onwards)

List of Electives

(With a specialization in Computer Engineering)

Dept. Elective-I

1. Control System Design
2. Digital Image Processing
3. Data Analysis Using SQL
4. Applied Computational Statistics
5. Computer-Aided Machine Design
6. Smart Transducers & Sensors
7. Mobile App Development
8. Software Testing

Dept. Elective-II

1. Applied Artificial Intelligence & Expert System
2. Big Data Analysis
3. Deep Learning
4. Introduction to Image Processing and Recognition
5. Cyber- Security
6. Wavelet Application to Engineering
7. JAVA Programming
8. Pattern Recognition

Dept. Elective-III & IV

1. Embedded System
2. Block Chain
3. Reinforcement Learning
4. Advanced deep learning & Computer Vision
5. Computer Graphics
6. Computer Based Numerical and Statistical Techniques
7. Autonomous Mobility
8. Web Development using PHP

Dept. Elective- V &VI

1. Artificial Intelligence for Robotics
2. Intelligent Autonomous System
3. IoT & its applications
4. Computational Linguistics and Natural Language processing
5. Quantum Computing
6. LINUX Programming
7. Computer Vision
8. Automation testing

Electives Offered to other Departments

- Soft Computing Techniques
- Renewable Energy Sources
- Fundamentals of Robotics Engineering
- Linear Control System
- MATLAB Programming (1-0-3)
- Special Electrical Machine
- Conservation of Energy & Audit
- Power Plant Engineering
- Engineering Materials
- Electrical Machine & Control System

Open Elective-I, II & III

- Any subject offered by other department relevant to the students of EED

Gautam Buddha University

Electrical Engineering Department, School of Engineering

4-Year B. Tech. (Electrical Engineering with specialization in Instrumentation and Automation) Programme
(For 2023-2027 batches onwards)

List of Electives

(With a specialization in Instrumentation and Automation)

Dept. Elective-I

1. PLC & SCADA
2. Smart Transducer and Sensors
3. Adaptive control
4. Fundamental of Robotics

Dept. Elective-II

1. Nonlinear control
2. Digital Instrumentation
3. Industrial Process Control
4. Biomedical Instrumentation

Dept. Elective-III & IV

1. Digital control system
2. Robotics and Control
3. Embedded System
4. Intelligent control

Dept. Elective- V &VI

1. Machine learning for Robotics
2. Industrial Instrumentation and Automation
3. Optimal Control Theory
4. IoT and its applications

Electives Offered to other Departments

- Soft Computing Techniques
- Renewable Energy Sources
- Fundamentals of Robotics Engineering
- Linear control System
- MATLAB Programming (1-0-3)
- Special Electrical Machine
- Conservation of Energy & Audit
- Power Plant Engineering
- Engineering Materials
- Electrical Machine & Control System

Open Elective-I, II & III

- Any subject offered from other department relevant to the students of EED

Gautam Buddha University

Electrical Engineering Department, School of Engineering

4-Year B. Tech. (Electrical Engineering with specialization in Electric Vehicle) Programme
(For 2023-2027 batches onwards)

List of Electives

(With a specialization in Electric Vehicle)

Dept. Elective-I

1. Energy Storage System and Management System
2. Power Electronics for Automobiles
3. EV Batteries & Charging System

Dept. Elective-II

1. Fuel Cell Technology and Hydrogen Storage System
2. Automotive Electrical and Electronic Systems
3. Power Train Management System

Dept. Elective-III & IV

1. Vehicles dynamics
2. Autotronics

Dept. Elective- V &VI

1. Micro Electro Mechanical Systems
2. Electric & Hybrid Vehicles

Electives Offered to other Departments

- Soft Computing Techniques
- Renewable Energy Sources
- Fundamentals of Robotics Engineering
- Linear control System
- MATLAB Programming (1-0-3)
- Special Electrical Machine
- Conservation of Energy & Audit
- Power Plant Engineering
- Engineering Materials
- Electrical Machine & Control System

Open Elective-I, II & III

- Any subject offered from other department relevant to the students of EED

Gautam Buddha University

Electrical Engineering Department, School of Engineering

4-Year B. Tech. (Electrical Engineering with specialization in Artificial Intelligence & Machine Learning) Programme
(For 2023-2027 batches onwards)

List of Electives

(With specialization in Artificial Intelligence & Machine Learning)

Dept. Elective-I

1. Introduction to Artificial Intelligence & Machine Learning
2. Fuzzy Sets and Applications
3. Data Analysis Using SQL
4. Applied Computational Statistics

Dept. Elective-II

1. Applied Artificial Intelligence & Expert System
2. Big Data Analysis
3. Deep Learning
4. Introduction to Image Processing and Recognition

Dept. Elective-III & IV

1. Embedded System
2. Block Chain
3. Reinforcement Learning
4. Advanced deep learning & Computer Vision

Dept. Elective- V &VI

1. Artificial Intelligence for Robotics
2. Intelligent Autonomous System
3. IoT & its Application
4. Computational Linguistics and Natural Language processing

Electives Offered to other Departments

- Soft Computing Techniques
- Renewable Energy Sources
- Fundamentals of Robotics Engineering
- Linear control System
- MATLAB Programming (1-0-3)
- Special Electrical Machine
- Conservation of Energy & Audit
- Power Plant Engineering
- Engineering Materials
- Electrical Machine & Control System

Open Elective-I, II & III

- Any subject offered from other department relevant to the students of EED

Gautam Buddha University

Electrical Engineering Department, School of Engineering

4-Year B. Tech. (Electrical Engineering with specialization in Biomedical Engineering) Programme
(For 2023-2027 batches onwards)

List of Electives

(With specialization in Biomedical Engineering)

Dept. Elective-I

1. Introduction to Bioengineering applications
2. Soft Computing Techniques
3. Virtual Instrumentation

Dept. Elective-II

1. Biomedical Instrumentation
2. Artificial Intelligence in bio-medical
3. Biosensors and Biomaterials

Dept. Elective-III & IV

1. Bio-Signal Processing
2. Introductions to Biomechanics
3. Machine learning and Deep learning in Biomedical
4. Biomedical data acquisition and Telemetry

Dept. Elective- V &VI

1. Biomedical Image Processing
2. Microprocessor based bio-medical instruments
3. Biomechanics and Robotics
4. Biomedical Quality Control

Gautam Buddha University, School of Engineering, Electrical Engineering Department

B.Tech. Electrical Engineering with Minor Degree for Batch 2022-26 onwards

I Semester						
S. No.	**Course Code**	**Name of Course**	**L-T-P**	**Credits**	**UGC**	**AICTE**
Theory Courses						
1	CY101/ PH102	Engineering Chemistry/ Engineering Physics	3-1-0	4	FC	BSC
2	MA 101	Engineering Mathematics –I	3-1-0	4	FC	BSC
3	EC 101/ EE 102	Basic Electronics Engineering/ Basic Electrical Engineering	3-1-0	4	FC	ESC
4	CS 101/ ME101	Fundamentals of Computer Programming/ Engineering Mechanics	3-1-0	4	SEC	ESC
5	BS 101	Human Values & Buddhist Ethics	2-0-0	2	AECC	HSMC
6	EN 101	English Proficiency	2-0-0	2	AECC	HSMC
Practical Courses						
7	CE103*/ ME102	Engineering Graphics/ Workshop Practice	1-0-2	2	SEC	ESC
8	CY 103/ PH 104	Engineering Chemistry Lab/ Engineering Physics Lab	0-0-2	1	FC	BSC
9	CS 181/ EN 151	Computer Programming Lab/ Language Lab	0-0-2	1	SEC	ESC
10	EC 181/ EE 104	Basic Electronics Engineering Lab/ Basic Electrical Engineering Lab	0-0-2	1	FC	ESC
11	GP	General Proficiency		NC		
		Total Contact Hours/Credits	**29**	**25**		

II Semester						
S. No.	**Course Code**	**Name of Course**	**L-T-P**	**Credits**	**UGC**	**AICTE**
Theory Courses						
1	CY 101/ PH 102	Engineering Chemistry/ Engineering Physics	3-1-0	4	FC	BSC
2	MA 102	Engineering Mathematics –II	3-1-0	4	FC	BSC
3	EC 101/ EE 102	Basic Electronics Engineering/ Basic Electrical Engineering	3-1-0	4	FC	ESC
4	CS 101/ ME101	Fundamentals of Computer Programming/ Engineering Mechanics	3-1-0	4	SEC	ESC
5	ES 101	Environmental Studies	4-0-0	4	AECC	HSMC
Practical Courses						
6	CE103*/ ME 102	Engineering Graphics/ Workshop Practice	1-0-2	2	SEC	ESC
7	CY 103/ PH 104	Engineering Chemistry Lab/ Engineering Physics Lab	0-0-2	1	FC	BSC
8	CS 181/ EN 151	Computer Programming Lab/ Language Lab	0-0-2	1	SEC	ESC
9	EC 181/ EE 104	Basic Electronics Engineering Lab/ Basic Electrical Engineering Lab	0-0-2	1	FC	ESC
10	GP	General Proficiency		NC		
		Total Contact Hours/Credits	**29**	**25**		

**This is a lab course*

B.Tech. Electrical Engineering with Minor Degree
For Batch 2022-26 onwards

SEMSTER -III					
S. No.	**Subject Code**	**Course**	**L-T-P**	**Credit**	**Course Type**
Theory Courses					
1	MA-201	Engineering Mathematics-III	3-1-0	4	CC/BSC
2	EE-201	Network Theory	3-1-0	4	CC/PCC
3	EE-203	Electrical Engineering Materials & Nano Materials	3-0-0	3	CC/PCC
4	EE-205	Electrical Measurement & Measuring Instruments (EMMI)	3-1-0	4	CC/PCC
5	EE-207	Electrical Machine-I	3-1-0	4	CC/PCC
6	CS-205	Data Structures and Algorithms	3-0-0	3	SEC/ESC
Practical Courses					
7	EE-211	Network Lab	0-0-2	1	CC/PCC
8	EE-213	EMMI Lab	0-0-2	1	CC/PCC
9	EE-215	Electrical Machine Lab-I	0-0-2	1	CC/PCC
10	GP	General Proficiency	-	NC	
		Total Contact Hours/Credits	**29**	**25**	

SEMSTER -IV					
S. No.	**Subject Code**	**Course**	**L-T-P**	**Credit**	**Course Type**
Theory Courses					
1	EE-202	Measurement and Instrumentation	3-0-0	3	CC/PCC
2	EE-204	Electronic Devices & Circuits	3-1-0	4	CC/PCC
3	EE-206	Signals & Systems	3-1-0	4	CC/PCC
4	EE-208	Elements of Power System	3-1-0	4	CC/PCC
5	EE-210	Electrical Machine-II	3-1-0	4	CC/PCC
6	-	Open Elective-I	3-0-0	3	AECC/HSMS
Practical Courses					
7	EE-214	Electronic Devices & Circuits Lab	0-0-2	1	CC/PCC
8	EE-216	Electrical Machine Lab- II	0-0-2	1	CC/PCC
9	EE-218	Simulation Lab	0-0-2	1	SEC/LC
10	-	General Proficiency		NC	
		Total Contact Hours/Credit	**28**	**25**	

B.Tech. Electrical Engineering with Minor Degree
For Batch 2022-26 onwards

SEMSTER -V					
S. No.	**Subject Code**	**Course**	**L-T-P**	**Credit**	**Course Type**
Theory Courses					
1	EE-301	Power System Analysis	3-1-0	4	CC/PCC
2	EE-303	Electromagnetic Field Theory	3-1-0	4	CC/PCC
3	EE-305	Linear Control System	3-1-0	4	CC/PCC
4	EE-307	Power Electronics	3-1-0	4	CC/PCC
5	EE-309	Digital Electronics	3-1-0	4	CC/PCC
6		Dept. Elective-I	0-0-3	3	
Practical Courses					
7	EE-311	Power System Lab	0-0-2	1	CC/PCC
8	EE-313	Control System Lab	0-0-2	1	CC/PCC
9	EE-315	Power Electronics Lab	0-0-2	1	CC/PCC
10	EE-317	Digital Electronic Lab	0-0-2	1	CC/PCC
11	EE-319	Industrial Training	-	1	SEC/PW
12	GP	General Proficiency	-	NC	
		Total Contact Hours/Credits	**31**	**28**	

**Students will do industrial training of four weeks after fourth semester and evaluation will be done in fifth semester.*

SEMSTER -VI					
S. No.	**Subject Code**	**Course**	**L-T-P**	**Credit**	**Course Type**
Theory Courses					
1	EE-302	Electric Drives	3-1-0	4	CC/PCC
2	EE-304	Switchgear and Protection	3-1-0	4	CC/PCC
3	EE-306	Advance Control System	3-1-0	4	CC/PCC
4	EE-308	Microprocessor & Microcontrollers	3-1-0	4	CC/PCC
5		Dept. Elective-II	0-0-3	3	CC/PCC
6		Open Elective- II	3-0-0	3	AECC/HSMS
Practical Courses					
7	EE-312	Electric Drives Lab	0-0-2	1	CC/PCC
8	EE-314	Switchgear and Protection Lab	0-0-2	1	CC/PCC
9	EE-316	Microprocessor & Microcontrollers Lab	0-0-2	1	CC/PCC
10	EE-318	Simulation Lab-II	0-0-2	1	SEC/LC
11	GP	General Proficiency	-	NC	GP
		Total Contact Hours/Credit	**30**	**26**	

B.Tech. Electrical Engineering with Minor Degree
For Batch 2022-26 onwards

EMESTER-VII					
S. No.	**Subject Code**	**Courses**	**L-T-P**	**Credit**	**Course Type**
		Theory Courses			
1.	EE401/ EE 403	Engineering Optimization / Modelling & Simulation	3-1-0	4	E-GE3
2.	EE 405	Digital Signal Processing	3-1-0	4	EDSE1
3.		Dept. Elective-III	3-0-0	3	EDSE2
4.		Dept. Elective-IV	3-0-0	3	EDSE3
5.		Open Elective-III	3-0-0	3	OE/HSME
		Practical Courses			
6.	EE483	DSP Lab	0-0-2	1	CC/PCC
7.	EE485	Industrial Training	-	1	SEC/PW
8.	EE485	Seminar	0-0-3	2	SEC/PW
9.	EE497	Project-I	0-0-8	4	DP/PW
10.	GP	General Proficiency	-	NC	
		Total Contact Hours/Credits	30	**26**	

**Students will do industrial training of six weeks after sixth semester and evaluation will be done in seventh semester.*

SEMSTER -VIII					
S. No.	**Subject Code**	**Course**	**L-T-P**	**Credit**	**Course Type**
		THEORY			
	--	Dept. Elective-V	3-0-0	3	OE/HSME
	--	Dept. Elective-VI	3-0-0	3	CC/PCC
	--	Open Elective-IV	3-0-0	3	CC/PCC
	--	Open Elective-V	3-0-0	3	CC/PCC
		PRACTICAL			
	EE-498	Project-I	0-0-16	8	CC/PCC
	GP	General Proficiency	-	NC	
		Total Contact Hours /Credit	**28**	**20**	

Grand Total Credits of 4 Year B. Tech. Degree = 200

B. Tech. Electrical Engineering with minor degree in Industrial Automation
(For 2022-2026 batches onwards)

List of Electives

Dept. Elective-I

1. PLC & SCADA
2. Adaptive control
3. Digital Instrumentation

Dept. Elective-II

1. Fundamental of Robotics
2. Nonlinear control Systems
3. IoT and its applications

Dept. Elective-III & IV

1. Industrial Process Control
2. Dries for Control & Robotics
3. Digital Control system
4. Embedded System

Dept. Elective- V &VI

1. Machine learning for Robotics
2. Industrial Instrumentation and Automation
3. Robotics and Control
4. Intelligent Control

B. Tech. Electrical Engineering with minor degree in Electric Vehicles
(For 2022-2026 batches onwards)

List of Electives

Dept. Elective-I

1. Energy Storage and Management System
2. Power Electronics for Automobiles
3. EV Batteries & Charging System

Dept. Elective-II

1. Fuel Cell Technology and Hydrogen Storage System
2. Automotive Electrical and Electronic Systems
3. Power Train Management System

Dept. Elective-III & IV

1. Vehicles dynamics
2. Autotronics
3. Sensors and Control in EV
4. Embedded Systems for Automobiles

Dept. Elective- V &VI

1. Micro Electro Mechanical Systems
2. Electric & Hybrid Vehicles
3. Safety in Electric Vehicles
4. Machine Learning for Automobiles

List of Electives (with minor degree in Computer Science Engineering)

Dept. Elective-I

1. Operating System
2. IOT & Embedded System
3. AI & Machine Learning

Dept. Elective-II

1. Database Management Systems
2. Computer Networks
3. Theory of Computation

Dept. Elective-III & IV

1. Java Programming & Web Design
2. Algorithm Analysis & Design
3. Computer Architecture & Design
4. Computer Graphics
5. Web development using PHP

Dept. Elective- V &VI

1. Compiler Design
2. LINUX Programming
3. Cloud Computing
4. Quantum Computing
5. Mobile Computing

B. Tech. Electrical Engineering with minor degree in AI & ML
(For 2022-2026 batches onwards)

List of Electives

Dept. Elective-I

1. Introduction to Artificial Intelligence & Machine Learning
2. Fuzzy Sets and Applications
3. Data Analysis Using SQL
4. Applied Computational Statistics

Dept. Elective-II

1. Applied Artificial Intelligence & Expert System
2. Big Data Analysis
3. Deep Learning
4. Introduction to Image Processing and Recognition

Dept. Elective-III& IV

1. Embedded System
2. Block Chain
3. Reinforcement Learning
4. Advanced deep learning & Computer Vision
5. Computational methods in power systems

Dept. Elective- V &VI

1. Artificial Intelligence for Robotics
2. Intelligent Autonomous System
3. IoT & its Application
4. Computational Linguistics and Natural Language processing
5. Artificial Intelligence in power systems