

Vardhaman College of Engineering (Autonomous)
Department of Electrical and Electronics Engineering

NAME OF THE PROGRAM: B. TECH (EEE)

REGULATIONS: R21

Course Outcomes

A7201 - Electrical Circuits

After the completion of the course, the student will be able to:

- A7201.1 Apply network reduction techniques to calculate current, Voltage and Power for complex circuits.
- A7201.2 Analyze electrical circuits using nodal analysis, mesh analysis and Network Theorems.
- A7201.3 Analyze series resonance and transient response of series RL, RC and RLC circuits.
- A7201.4 Evaluate two-port network parameters and self and mutual inductances of magnetic circuits.

A7202 - Basic Electrical Engineering

- A7202.1. Apply network reduction techniques to calculate current, Voltage and Power for complex circuits.
- A7202.2. Analyze electrical circuits using nodal analysis, mesh analysis and Network Theorems.
- A7202.3. Analyze series resonance and transient response of series RL, RC and RLC circuits.
- A7202.4. Evaluate two-port network parameters, self and mutual inductances of magnetic circuits.

A7203 - Elements of Electrical Engineering

- A7203.1 Apply network reduction techniques and knowledge of alternating quantities to calculate current, Voltage and Power for complex circuits.
- A7203.2 Analyze the electrical circuits using Nodal Analysis, Mesh Analysis and Network Theorems.
- A7203.3 Analyze the characteristics of DC machines, AC Machines and 1-Phase Transformers.
- A7203.4 Test the performance of DC Machines, 1-Phase Transformers and AC Machines.

A7204 - Fundamentals of Electrical Engineering

- A7204.1 Apply network reduction techniques and knowledge of alternating quantities to calculate current, Voltage and Power for complex circuits.
- A7204.2 Analyze the electrical circuits using Nodal Analysis, Mesh Analysis and Network Theorems.
- A7204.3 Analyze the characteristics of DC machines, AC Machines and 1-Phase Transformers.
- A7204.4 Test the performance of DC Machines, 1-Phase Transformers and AC Machines.

A7205 - Electrical Power Generation

After the completion of the course, the student will be able to:

- A7205.1 Identify the different components of an electric power system.
- A7205.2 Categorize the methods of generating electrical power to meet the required Load demand.
- A7205.3 Develop a layout and single line diagram for a given substation.
- A7205.4 Model a power system to reduce economic losses.

A7206 - Control Systems

After the completion of the course, the student will be able to:

- A7206.1 Develop the transfer function and state space models of dynamic systems.
- A7206.2 Analyze performance indices of linear and nonlinear control systems.
- A7206.3 Apply Routh's and Nyquist stability criterion to analyze and design of feed-back control systems.
- A7206.4 Examine the performance of feedback control system by using graphical techniques.
- A7206.5 Design the various compensators and controllers for time invariant systems.

A7207 - Electrical Machines - I

After the completion of the course, the student will be able to:

- A7207.1 Apply the basic laws of electrical circuits to study the operation of DC machines and Single Phase Transformers.
- A7207.2 Apply speed control techniques and starting methods for DC motors.

A7207.3 Select suitable test to determine the performance parameters of electrical machines.

A7207.4 Analyze the characteristics of DC machines and Single Phase Transformers.

A7208 - Power System Transmission and Distribution

After the completion of the course, the student will be able to:

A7208.1 Apply the knowledge of Electromagnetic fields to calculate the transmissionline parameters.

A7208.2 Analyze the voltage regulation and efficiency of different power transmission lines.

A7208.3 Analyze the sag and corona in transmission lines.

A7208.4 Categorize the types of insulators based on string efficiency and grade the underground cables based on application.

A7208.5 Analyze the different topologies of AC and DC distribution system.

A7210 - Basic Electrical and Electronics Engineering

A7209.1 Apply network reduction techniques and knowledge of alternating quantities to calculate current, Voltage and Power for complex circuits.

A7209.2 Analyze the electrical circuits using Nodal Analysis, Mesh Analysis and Network Theorems.

A7209.3 Test and analyze the characteristics of DC machines.

A7209.4 Analyze the operation and characteristics of electronic devices.

A7209.5 Apply theorems of Boolean algebra to simplify a digital circuit.

A7210 - Electrical Machines - II

After the completion of the course, the student will be able to:

A7210.1 Apply the basic laws of electrical circuits to study the construction and operation of Induction motors and Alternators.

A7210.2 Analyze the characteristics and performance of Induction motors and Alternators.

A7210.3 Apply suitable test to determine the performance parameters of Synchronous machines and Induction motors.

A7210.4 Compare various methods to find voltage regulation of Alternators.

A7211 - Electromagnetic Field Theory

After the completion of the course, the student will be able to:

A7211.1 Apply the basic knowledge of electric circuits to understand the physical

laws related to static electric fields.

A7211.2 Apply the basic knowledge of magnetic circuits to understand the physical laws related to static magnetic fields.

A7211.3 Analyze electric fields in static and time varying fields.

A7211.4 Analyze magnetic fields in static and time varying fields.

A7211.5 Examine Maxwell's equations for static and time varying fields.

A7212 - Power Electronics

After the completion of the course, the student will be able to:

A7212.1 Apply the knowledge of electronic devices and circuit analysis to study the characteristics of thyristors.

A7212.2 Analyze the performance of converters for a multi-quadrant application.

A7212.3 Analyze and design the power electronic converters to meet specific requirements.

A7212.4 Calculate the performance parameters of Converters for specified applications.

A7212.5 Apply PWM techniques to enhance the performance of power electronic converters.

A7213 - Power System Switchgear and Protection

After the completion of the course, the student will be able to:

A7213.1 Analyze the operational aspects of different types of circuit breakers.

A7213.2 Distinguish various types of relaying schemes such as differential, distance, over current /under voltage, Instantaneous, DMT and IDMT relays.

A7213.3 Develop protection schemes for generators, bus-bars, feeders and transformers.

A7213.4 Analyze different neutral grounding methods and protection schemes against over voltages.