Shree Santkrupa Institute of Engineering and Technology

Department of Electrical Engineering

Academic Year: 2019-20

Semester: III

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTBSC301	ENGG MATHS 3-M3	3	1	0	4
2	BTEEC302	NETWORK ANALYSIS & SYNTHESIS	3	1	0	3
3	BTEEC303	FLUID MEACHANICS & THERMAL ENGG	2	1	0	3
4	BTEEC304	MEASUREMENT & INSTRUMENTATION	2	1	0	3
5	BTEEEE305C	SIGNALS & SYSTEMS	3	0	0	3
6	BTHM3401	BASIC HUMAN RIGHTS	2	0	0	Audit
7	BTHM306	ENGG ECONOMICS	2	0	0	2
8	BTEEL307	NETWORK ANALYSIS & SYNTHESIS LAB	0	0	2	1
9	BTEEL308	MEASUREMENT & INSTRUMENTATION LAB	0	0	4	2
10	BTEEM309	ELECTRICAL WORKSHOP/MINI PROJECT	0	0	2	1
11	BTEEF310	FIELD TRAINING	0	0	0	1

Semester: IV

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTEEC401	ELECTRICAL MACHINE-I	3	1	0	4
2	BTEEC402	POWER SYSTEM-I	2	1	0	3
3	BTEEC403	ELECTRICAL INSTALLATION & ESTIMATION	2	1	0	3
4	BTEEC404	NUMERICAL METHODS & PROGRAMMING	2	1	0	3
5	BTEEE406A	SOLID STATE DEVICES	2	0	0	2
6	BTID405	PRODUCT DESIGN (ONLINE COURSE)	2	0	0	2
7	BTEEOE407B	NON-CONVENTIONAL ENERGY SOURCES	2	0	0	2
8	BTEEL408	ELECTRICAL MACHINE-I LAB	0	0	2	1
9	BTEEL410	NUMERICAL METHODS & PROGRAMMING LAB	0	0	2	1
10	BTEEL409	POWER SYSTEM-I LAB	0	0	2	1
11	BTEEEL411	SOLID STATE DEVICES LAB	0	0	2	1

Semester: V

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTEEC501	ELECTRICAL MACHINE-II	3	1	0	4
2	BTEEC502	POWER SYSTEM-II	3	1	0	4
3	BTEEC503	MICROPROCESSOR & MICROCONTROLLER	3	0	0	3
4	BTHM504	VALUE EDUCATION HUMAN RIGHTS & LEGISLATIVE PROCEDURE	2	0	0	Audit
5	BTEEE505C	TESTING & MAINTENANCE OF ELECTRICAL EQUIPMENTS	3	0	0	3
6	BTEEE506B	POWER PLANT ENGG	3	0	0	3
7	BTEEL507	ELECTRICAL MACHINE-II LAB	0	0	4	2
8	BTEEL508	POWER SYSTEM-II LAB	0	0	2	1
9	BTEEL509	MICROPROCESSOR & MICROCONTROLLER LAB	0	0	2	1
10	BTEEL510	IND.TRAINING	0	0	0	1

Semester: VI

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTEEC601	CONTROL SYSTEM	3	1	0	4
2	BTEEC602	PRINCIPLES OF ELECTRICAL MACHINE DESIGN	3	0	0	3
3	BTEEC603	POWER ELECTRONICS	3	1	0	4
4	BTEEE604A	IND AUTOMATION & CONTROL	3	0	0	3
5	BTEEE605A	SWITCHGEAR & PROTECTION	3	0	0	3
6	BTEEOE606B	PROJECT MANAGEMENT	3	0	0	3
7	BTEEL607	CONTROL SYSTEM LAB	0	0	2	1
8	BTEEL608	PRINCIPLES OF ELECTRICAL MACHINE DESIGN LAB	0	0	2	1
9	BTEEL609	POWER ELECTRONICS LAB	0	0	4	2

Course Outcomes

Semester : III		
Course Name		**Engineering Mathematics – III**
Course Code		**BTBSC301**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Explain the application of the Laplace Transform to find solutions of system of linear equations arising in many engineering problem	
CO 2	Demonstarte and apply the concept Laplace Transform	
CO 3	Interpret Computation of Fourier Transform and their applications to engineering problems	
CO 4	Identify Partial Differential Equations and Their Applications.	
CO 5	Evaluate Functions of Complex Variables.	
Semester : III		
Course Name		**Engineering Economics**
Course Code		**BTHM306**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Define Micro and Macro Economics,Economic Development	
CO 2	Expalin concept of time value of money	
CO 3	Comapre demand in detail	
CO 4	Illustrate Meaning of Production and factors of production	
CO 5	Relate Meaning of market,Supply and law of supply	
CO 6	Find Indian Economy, nature and characteristics	
Semester : III		
Course Name		**Network Analysis & Synthesis**
Course Code		**BTEEC302**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Discuss and explain D.C. circuits	
CO 2	Compare A.C and D.C circuits as complex engineering problems using first principle of mathematics	
CO 3	Demonstrate and formulate a solution plan and methodology for electrical circuit analysis using 'Network Theorems	
CO 4	Justify response of first& second order circuits, two port networks to step and sinusoidal input "	
Semester : III		
Course Name		**Network Analysis & Synthesis Lab**

Course Code		BTEEL307
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Develop relationship between measured data and Network Theorem to analyze the D.C. circuits	
CO 2	Differentiate measured data for trends and correlations to find step response of RC and RL circuit	
CO 3	Demonstrate proficiency in using Network Theorems to find required parameters of the circuit	
CO 4	Design Network analysis techniques to determine parameters of Two Port Networks and their inter connections	
Semester : III		
Course Name		Measurement & Instrumentation
Course Code		BTEEC304
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Illustrate various types and applications of electronic instrument.	
CO 2	Compare various errors present in measuring instruments	
CO 3	Identify the condition of balance bridge to find unknown values.	
CO 4	Explain the working principle, selection criteria and applications of various transducers used in measurement systems.	
Semester : III		
Course Name		Measurement & Instrumentation Lab
Course Code		BTEEL308
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Explain working and applications of C.R.O., Digital Storage C.R.O., C.R.O. Probes, Meggar, Tong-tester, P.F. Meter and Phase Shifter.	
CO 2	Measure power and power factor in 3-phase load by Two-wattmeter method.Measure low resistance by Crompton potentiometer, Kelvin's double bridge, and measure earth	
CO 3	Illustrate a single-phase energy meter by phantom loading at different power factors.	
CO 4	Determine the working principle, selection criteria and applications of various transducers used in measurement systems.	
CO 5	Examine various types of electronic instrument suitable for specific measurement.	
Semester : III		
Course Name		SIGNALS & SYSTEMS
Course Code		BTEEEE305C
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Classify of signals and system	
CO 2	Analyze different types of time signal	
CO 3	Summerize and resolve the signals in frequency domain using Fourier series and Fourier transforms.	
CO 4	Analyze signal and system properties like stability and causality using Laplace and Z transforms	
CO 5	Develop input output relationship for linear shift invariant system and understand the convolution operator for continuous and discrete time system.	
Semester : III		
Course Name		ELECTRICAL WORKSHOPS/MINI PROJECT
Course Code		BTEEM309
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Practice acquired knowledge within the chosen area of technology for project development.	
CO 2	Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach.	
CO 3	Reproduce, improve and refine technical aspects for engineering projects.	
CO 4	Work as an individual or in a team in development of technical projects.	
CO 5	Communicate and report effectively project related activities and findings.	
Semester : III		

Course Name		BASIC HUMAN RIGHTS
Course Code		BTHM 3401
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Expain the history of human rights.	
CO 2	Recall responsibilities of others caste, religion, region and culture.	
CO 3	Remember the importance of groups and communities in the society.	
CO 4	Analyse the philosophical and cultural basis and historical perspectives of human	
CO 5	Aware of their responsibilities towards the nation.	
Semester : III		
Course Name		FLUID MEACHANICS & THERMAL ENGG
Course Code		BTEEC303
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Dfine fluid and various properties of the fluid. Determine hydrostatic forces on the plane and curved surfaces.	
CO 2	Explain the stability of floating bodies, several types of flow and the construction and working of Centrifugal and reciprocating pumps. Determine the acceleration of fluid	
CO 3	Explain First & second Law of Thermodynamics, the Concept of Entropy & Enthalpy. Detremine indicated power and thermal efficiency of internal combustion engines.	
CO 4	Interpret the operating principles of air compressors, Identify the common types of compressors and their applications.	
CO 5	Illustrate the fundamental principles and applications of refrigeration and air conditioning systems and the basic air conditioning processes on psychometric charts.	
Semester : IV		
Course Name		ELECTRICAL MACHINE-I
Course Code		BTEEC401
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Describe construction, working and application of single phase transformer & three phase transformer	
CO 2	Demonstrate energy conservation principles	
CO 3	Implement construction, working and application of DC generator	
CO 4	Organize behavior of DC motor	
CO 5	Use a special machine for a particular application	
Semester : IV		
Course Name		Electrical Installation & Estimation
Course Code		BTEEC403
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Evaluate estimates and costing of electrical installations of power system	
CO 2	Develop the estimation of underground and overhead service mains	
CO 3	Analysis of design and estimation of motor installation	
CO 4	Implement procedures of contracting and purchase	
CO 5	Examine the erection, repairing and jointing of power lines	
CO 6	Analyze the substation symbols, electrical connections, single line diagram & equipments of substation	
Semester : IV		
Course Name		SOLID STATE DEVICES
Course Code		BTEEE406A
Course Outcome No	Course Outcome Statement	By the end of the course, the student will be able to:
CO 1	Estimate Semiconductor Devices and their applications	
CO 2	Identify various Signal and Power Amplifiers	
CO 3	Analyze the working of Operational Amplifiers	

CO 4	Explain different Active Filters and Oscillators	
CO 5	Design Various Converters and IC applications	
Semester : IV		
Course Name		**NUMERICAL METHODS & PROGRAMMING**
Course Code		**BTEEC404**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Solve Ordinary Differential Equations (ODE) by using MATLAB Programming	
CO 2	Demonstrate Approximations and Errors	
CO 3	Evaluate problems on Numerical Differentiation and Integration:	
CO 4	Identify Numerical methods to solve Linear and Nonlinear Equations	
CO 5	Analize the concept of Regression and Interpolation	
Semester : IV		
Course Name		**Power System-1**
Course Code		**BTEEC402**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Define the general structure of power system	
CO 2	Develop the knowledge of generation of electricity based on conventional and nonconventional energy sources	
CO 3	Utilize the concept of microgrid and distributed generation	
CO 4	Examine the mechanical and electrical design aspects of transmission system	
CO 5	Evaluate the different types of distribution systems and its design	
Semester : IV		
Course Name		**Power System Lab**
Course Code		**BTEEL409**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Define the considerations of different type of power plant and electrical equipment.	
CO 2	Explain the various components of distribution system	
CO 3	Analyze various types of transmission line parameter to design transmission line and understand the sending end and receiving end circle diagram.	
CO 4	Utilize the knowledge of substation, various electrical equipment, high voltage testing of electrical equipment, and flashover voltage testing of insulators	
CO 5	Apply techniques to evaluate capacitance and dielectric loss of an insulating material.	
Semester : IV		
Course Name		**ELECTRICAL MACHINE-I Lab**
Course Code		**BTEEL408**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Describe the construction, working and application of Three phase transformer	
CO 2	Illustrate construction, working and application of DC Machine	
CO 3	Implement operational behaviour of DC Motor by taking different test	
CO 4	Categorize behavior of Single Phase Machine performing test	
Semester : IV		
Course Name		**Solid State Devices Lab**
Course Code		**BTEEEL411**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Explain characteristics of zener diode	
CO 2	Analyze the working of Clippers and Clampers.	
CO 3	Analyze the characteristics of transistors and amplifires	

CO 4	Identify the working of different IC's	
CO 5	Analyze the working of integrator and differentiator.	
Semester : IV		
Course Name		**NUMERICAL METHODS & PROGRAMMING LAB**
Course Code		**BTEEL410**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Apply numerical methods to solve problems from various scientific and engineering disciplines, including linear and nonlinear equations, interpolation, numerical	
CO 2	Make use of high-level programming language, such as Python or MATLAB, to implement and solve mathematical models, and to develop algorithms that solve complex	
CO 3	Analyze the accuracy and convergence properties of numerical algorithms, and evaluate the performance of different numerical methods for a given problem.	
CO 4	Develop effective computational strategies and techniques for solving large-scale problems, and use modern software tools and libraries to perform data analysis,	
CO 5	Communicate technical ideas and results effectively, both orally and in writing, using appropriate mathematical notation, terminology, and visualization tools, and work	
Semester : IV		
Course Name		**Non Conventional Energy Sources**
Course Code		**BTEEOE 407B**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Demonstrate the generation of electricity from various Non-Conventional sources of energy, have a working knowledge on types of fuel cells.	
CO 2	Estimate the solar energy, Utilization of it, Principles involved in solar energy collection and conversion of it to electricity generation	
CO 3	Explore the concepts involved in wind energy conversion system by studying its components, types and performance.	
CO 4	Illustrate ocean energy and explain the operational methods of their utilization.	
CO 5	Acquire the knowledge on Geothermal energy.	
Semester : IV		
Course Name		**Product Design**
Course Code		**BTID405**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to**
CO 1	Explore the fundamental concepts of probability theory, statistics and commonly used probability distributions.	
CO 2	Identify joint distributions and calculate the different moments in addition to establishing goodness of fit	
CO 3	Analyze the effect of display size, shape, color and function in industrial products	
CO 4	Apply industrial design methodology while designing new products.	
CO 5	Evaluate products for its function, ergonomics and aesthetics	
Semester : V		
Course Name		**ELECTRICAL MACHINE-II**
Course Code		**BTEEC501**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Describe basic concept for AC machine	
CO 2	Summarize Synchronous machine	
CO 3	Illustrate construction & working of 3 phase Induction machine	
CO 4	Analyze different frictional kilowatt motors	
CO 5	Implement a special machine for a particular applicationr application	
Semester : V		
Course Name		**Testing & Maintenance of Electrical Equipment**
Course Code		**BTEEE505C**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Explain the process of testing	

CO 2	Prepare the steps of various maintenance methods / techniques	
CO 3	Suggest the trouble shooting methods to improve life of electrical equipment	
CO 4	Use required testing procedure for different equipment using proper tools and methods.	
Semester : V		
Course Name		**Power Plant Engineering**
Course Code		**BTEEE506B**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Recall the basics of Power Plants.	
CO 2	Compare the power generation by renewable and non-renewableenergy resources"	
CO 3	Classify the different types of cycles and natural resources used in powerplants and their applications. "	
CO 4	Illustrate the principle of construction and operation of different conventional power plants.	
CO 5	Determine basic components of power system, energy sources	
Semester : V		
Course Name		**MICROPROCESSOR AND MICROCONTROLLER**
Course Code		**BTEEC503**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Explain the architecture of Microprocessor 8085 and its operation.	
CO 2	Identify the different ways of interfacing memory and I/O with 8085 microprocessor	
CO 3	Design microprocessor I/O ports in order to interface the processor tovarious devices .	
CO 4	Explain the architecture, operation and instruction set of microcontroller(8051)	
CO 5	Identify the different ways of interfacing and programming with microcontroller.	
Semester : V		
Course Name		**MICROPROCESSOR AND MICROCONTROLLER LAB**
Course Code		**BTEEL509**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Explain the architecture of Microprocessor 8085 and its operation.	
CO 2	Design and implement Assembly language programs on 8085 microprocessor.	
CO 3	Design interfacing circuits with 8085	
CO 4	Design and implement programs on 8085 microprocessor	
CO 5	Design programs on Arithmetic Operations.	
Semester : V		
Course Name		**Electrical Machine- II (LAB)**
Course Code		**BTEEL507**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Demonstrate construction, working and application of Sunchronous by performing various test	
CO 2	Determine operation of induction motor by performing blocked rotor test	
CO 3	Illustrate Starting & Speed controling methods of Induction motors	
Semester : V		
Course Name		**VALUE EDUCATION HUMAN RIGHTS & LEGISLATIVE PROCEDURE**
Course Code		**BTHM504**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Understand value of education and self-development	
CO 2	Develop good values and character	
CO 3	Know Human right and legislative procedure	

CO 4	Expain the history of human rights.	
CO 5	Remember the importance of groups and communities in the society.	
Semester : V		
Course Name		**POWER SYSTEM-II**
Course Code		**BTEEC502**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Know the fundamental concepts of power system.	
CO 2	To study different parameters of power system operation and control	
CO 3	Analyze load flow and Diff. methods of reactive power control.	
CO 4	Evaluate diff. methods of fault analysis	
CO 5	Know the fundamental concepts of power system.	
Semester : V		
Course Name		**POWER SYSTEM-II LAB**
Course Code		**BTEEL508**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Know the fundamental concepts of power system.	
CO 2	Analyze different types of short-circuit faults which occur in power systems	
CO 3	To study load flow and Diff. methods of reactive power control.	
CO 4	Evaluate diff. methods of fault analysis and stability study using MATLAB	
CO 5	To solve optimal power flow problem.	
Semester : VI		
Course Name		**PRINCIPLES OF ELECTRICAL MACHINE DESIGN**
Course Code		**BTEEC602**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Memorize principles of electric machine design.	
CO 2	Estimate design different electric apparatus	
CO 3	Evaluate design of AC & DC windings	
CO 4	Implement concepts of heating, cooling & Ventilation	
CO 5	Analyuze the knowledge of design of Transformer, by using CAD.	
Semester : VI		
Course Name		**Switchgear and Protection**
Course Code		**BTEEE605A**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Explain principles of protective relaying, Different types of switchgear	
CO 2	Explain principle of construction, operation and selection of different type of circuit breaker used in power system	
CO 3	Interprt Digital And Numerical Protection	
CO 4	Construct Bus bar & relay	
CO 5	Experiment of Protection of Alternators and Transformers	
CO 6	Function Insulation co-ordination and over current protection	
Semester : VI		
Course Name		**Project Management**
Course Code		**BTEEOE606B**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Write concepts of project management.	

CO 2	Evaluate a project plan.	
CO 3	Develop the project implementation strategy.	
CO 4	Analyze post project affects.	
Semester : VI		
Course Name		**Power Electronics**
Course Code		**BTEEC603**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Recall principle of construction,operation and characteristics of basic semiconductor device	
CO 2	Explain knowledge about various power semiconductor devices	
CO 3	Apply and analyze performance of DC to DC converters,DC to AC convert	
CO 4	Analyze performance of AC voltage controller.	
CO 5	Build performance of controlled and uncontrolled converters.	
Semester : VI		
Course Name		**PRINCIPLES OF ELECTRICAL MACHINE DESIGN LAB**
Course Code		**BTEEL608**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Identify all electrical Symbols & Electrical Installation	
CO 2	Synthesis design of DC Machine	
CO 3	Implement design of AC Machine	
CO 4	Illustrate Design of Transformer	
Semester : VI		
Course Name		**Power Electronics Lab**
Course Code		**BTEEL609**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Illustrate the characteristics of various power electronics devices.	
CO 2	Analyze different phase controlled converter	
CO 3	Analyze three phase bridge inverter	
CO 4	Simulation of Single phase controlled converter	
CO 5	Simulation of Single phase inverter	
Semester : VI		
Course Name		**Industrial Automation and Control**
Course Code		**BTEEE604A**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Analyze different methods of industrial measurement.	
CO 2	Know the new trends in industrial process control.	
CO 3	Familiar with various automation technologies in manufacturing and process industries.	
CO 4	Familiar with various communication technologies in manufacturing and process industries.	
CO 5	Design and implement electro-pneumatic/hydraulic solutions for automated systems	
Semester : VI		
Course Name		**Control System**
Course Code		**BTEEC601**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Identify components of a control system & Solve the Transfer Function	
CO 2	Analyse Time Domain Responce	

CO 3	Analyse Frequency Domain Responce & Build the root locus, Bode Plot,polar plot	
CO 4	Classify & design PID controller.	
CO 5	Analyse state variable technique. Solve Variable Technicque	
Semester : VI		
Course Name		**Control System Lab**
Course Code		**BTEEL607**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, the student will be able to:**
CO 1	Creat & Solve the Programme of Transfer Function	
CO 2	Creat & Solve the Programme of Transfer Function Test Signals	
CO 3	Creat & Solve the Programme of Transfer Function Bode Plot &Nyquist Plot using MATLAB	
CO 4	Design The PID Controllers	
CO 5	Creat & Solve the Programme of Sate Space Model	