

# PROGRAM STRUCTURE

## I SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
1	171HS1T01	English - I		✓		Students are able to demonstrate communication skills express their thoughts fluently in both written as well as oral form of language which is very much essential for the career growth and enhances the language competency.
2	171BS1T01	Mathematics - I		✓		Students are able to demonstrate problem solving skills by modelling physical phenomenon using ordinary differential equations, system of linear equations in various engineering disciplines.
3	171HS1T02	Environmental Studies				
4	171BS1T05	Applied Chemistry				
5	171ES1T02	Engineering Mechanics		✓		Students are able to acquire skills related to principles of friction, kinetics, kinematics, resolving forces, trusses etc which forms the crux of design sciences.
6	171ES1T01	Computer Programming	✓			Students are able to acquire programming skills related to Structured programming, arrays, functions, pointers, structures and unions that enable them to be employed as a software developer.
7	171HS1L01	English Communication Skills Lab - I		✓		Students are able to demonstrate technical skills to express fluently in both written as well as oral forms of language which is very much essential for career growth.
8	171BS1L03	Applied Chemistry Lab				
9	171ES1L01	Computer Programming Lab	✓			Students are able to acquire programming skills related to Structured programming, arrays, functions, pointers, structures and unions enabling them to be employed as a software developer.

## II SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
10	171HS2T03	English - II		✓		Students are able to demonstrate communication skills express their thoughts fluently in both written as well as oral form of language which is very much essential for the career growth and enhances the language competency.
11	171BS2T02	Mathematics - II		✓		Students are able to demonstrate problem solving skills by modelling physical phenomenon using partial differential equations and their applications in various engineering disciplines.
12	171BS2T06	Mathematics - III		✓		Students are able to demonstrate problem solving skills by evaluating improper and vector integrals applicable in various engineering disciplines.
13	171BS2T04	Applied Physics				
14	171ES2T03	Engineering Drawing		✓		Students are able to acquire skills related to creating technical drawings by displaying from different angles of projection and adding dimensional information.
15	171EE2T01	Electrical Circuit Analysis - I	✓			Students are able to acquire skills related to design, synthesize and evaluate the performance of electric circuits or networks enabling them to be employed for designing and manufacturing of electrical circuits.
16	171HS2L02	English Communication Skills Lab - II		✓		Students are able to demonstrate technical skills to express fluently in both written as well as oral forms of language which is very much essential for career growth.
17	171BS2L04	Applied Physics Lab				
18	171ES2L02	Engineering Workshop and IT Workshop		✓		Students are able to acquire skills related to system troubleshooting, implement MS office tools, develop LaTeX documents and to work with Linux commands. Students are able to acquire skills related to building various joints in different trades for several applications.

## III SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
19	R1621021	Electrical Circuit Analysis - II	✓			Students are able to acquire skills related to design, synthesize and evaluate the performance of advanced electric circuits or networks enabling them to be employed for designing and manufacturing of advanced electrical circuits.
20	R1621022	Electrical Machines-I	✓			Students are able to acquire skills related to machines particularly in traction, electrical vehicles, etc. or as generators enabling them to be employed for controlling, designing and manufacturing in power station, wind turbines, etc
21	R1621023	Basic Electronics and Devices				
22	R1621024	Electro Magnetic Fields	✓			Students are able to acquire skills related to signal processing and digital communications which enables them to be employed in EMF application industries.
23	R1621025	Thermal and Hydro Prime Movers		✓		Students are able to acquire skills related to prime mover as an engine that converts fuel to useful work that enables them to get employed in locomotives industries.
24	R1621026	Managerial Economics & Financial Analysis			✓	Students are able to apply the knowledge of economic and financial management enabling them to become an entrepreneur in any domain of their choice.
25	R1621027	Thermal and Hydro Laboratory		✓		Students are able to acquire skills related to prime mover as an engine that converts fuel to useful work that enables them to get employed in locomotives industries.
26	R1621028	Electrical Circuits Laboratory	✓			Students are able to acquire skills related to design, synthesize and evaluate the performance of electric circuits or networks enabling them to be employed for designing and manufacturing of electrical circuits.

## IV SEMESTER



S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
27	R1622021	Electrical Measurements	✓			Students are able to acquire skills related to various types of electrical parameters that enable them to get employed in core (electrical) industry/company related to measurements of electrical parameters.
28	R1622022	Electrical Machines-II	✓			Students are able to acquire skills related to advanced machines particularly in traction, electrical vehicles, etc. or as generators enabling them to be employed for controlling, designing and manufacturing in power station, wind turbines, etc
29	R1622023	Switching Theory and Logic Design				
30	R1622024	Control Systems	✓			imparts foundations of control systems, which are helpful in controlling industrial and domestic processes, making the student employable.
31	R1622025	Power Systems-I	✓			Students are able to acquire skills related to how a well-designed power system ensures robust performance and maximizes plant availability under all operating conditions enabling them to be employed for assessing transient conditions like motor starting, non-linear loads and generator loss.
32	R1622026	Management Science			✓	Students are able to apply the knowledge of economic and financial management enabling them to become an entrepreneur in any domain of their choice.
33	R1622027	Electrical Machines -I Laboratory	✓			Students are able to acquire skills related to machines particularly in traction, electrical vehicles, etc. or as generators enabling them to be employed for controlling, designing and manufacturing in power station, wind turbines, etc
34	R1622028	Electronic Devices & Circuits Laboratory	✓			Students are able to acquire skills related to design, synthesize and evaluate the performance of electronic devices, electric circuits or networks enabling them to be employed for working and manufacturing of electronic devices industries.

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
35	RT31021	Electrical Measurements	✓			Students are able to acquire skills related to various types of electrical parameters that enable them to get employed in core (electrical) industry/company related to measurements of electrical parameters.
36	RT31022	Managerial Economics & Financial Analysis			✓	The subject helps the student to improve the ideas as it develops the managerial skills in the students, it also helps the student to understand various financial terms and analysis of it which help them to become an independent entrepreneur.
37	RT31023	Power Systems -II	✓			Students are able to acquire skills related to how a well-designed power system ensures robust performance and maximizes plant availability under all operating conditions enabling them to be employed for assessing transient conditions like motor starting, non-linear loads and generator loss.
38	RT31024	Electrical Machines - III	✓			Students are able to acquire skills related to machines particularly in traction, electrical vehicles, etc. or as generators enabling them to be employed for controlling, designing and manufacturing in power station, wind turbines, etc
39	RT31025	Power Electronics	✓			Students are able to acquire skills related to the various power electronic devices which enables them to get employed in semiconductor based industries such as in communications, computing, health care, military systems, transportation, clean energy, etc.
40	RT31026	Linear And Digital IC Applications		✓		Students are able to demonstrate technical solving skills by providing knowledge on ICs with growing penetration of smart electronics in strategic areas including Space, Defence and Nuclear energy.
41	RT31027	Electrical Machines-II Lab	✓			Students are able to acquire skills related to advanced machines particularly in traction, electrical vehicles, etc. or as generators enabling them to be employed for controlling, designing and manufacturing in power station, wind turbines, etc
42	RT31028	Control Systems Lab	✓			Students are able to acquire skills related to strategic methods to improving productivity and enhancing the best practices of the company

						that enables them to get employed in industries related to controlling of operations.
43	RT31016	IPR & Patents			✓	It helps the graduates safe guard the IP and innovations at their place of work.

## VI SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
44	RT32022	Switchgear and Protection	✓			Students are able to acquire skills related to mitigating some of the potential protection challenges imposed by the growth in non-dispatchable renewable generation on electric grids is an important consideration enabling them to be employed in protection of power system industry.
45	RT32021	Microprocessors & Microcontrollers		✓		Students are able to demonstrate technical solving skills by providing knowledge on microprocessors with growing penetration of smart electronics in strategic areas including Space, Defence and Nuclear energy.
46	RT32023	Utilization of Electrical Energy	✓			Students are able to acquire skills related to a judicious utilization of electrical energy without doing any power losses enabling them to be employed in optimisation sector of power industry.
47	RT32024	Power System Analysis	✓			Students are able to acquire skills related to how a well-designed power system ensures robust performance and maximizes plant availability under all operating conditions enabling them to be employed for assessing transient conditions like motor starting, non-linear loads and generator loss.
48	RT32025	Management Science			✓	Students are able to apply the knowledge of economic and financial management enabling them to become an entrepreneur in any domain of their choice.
49	RT32026	Power Semiconductor Drives	✓			Students are able to acquire skills related to the various power electronic drives which enables them to get employed in semiconductor based industries such as in communications, computing, health care, military systems, transportation, clean energy, etc.
50	RT32027	Power Electronics Lab	✓			Students are able to acquire skills related to the various power electronic devices which enables them to get employed in semiconductor based industries such as in communications, computing, health care, military systems, transportation, clean energy, etc.



51	RT32028	Electrical Measurements Lab	✓			Students are able to acquire skills related to various types of electrical parameters that enable them to get employed in core (electrical) industry/company related to measurements of electrical parameters.
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## VII SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
52	RT41021	Renewable Energy Sources and Systems	✓			Students are able to acquire skills related to various types of pivotal role in the development of a sustainable energy supply enabling the students to get employed in renewable energy generation sector.
53	RT41022	HVAC and DC Transmission	✓			Students are able to acquire skills related to mitigating some of the potential transmission of electrical power challenges imposed by the growth in non-dispatchable renewable generation on electric grids consideration that enables them to get employed in power transmission company.
54	RT41023	Power System Operation and Control	✓			Students are able to acquire skills related to a well-designed power system that ensures robust performance and maximizes plant availability under all operating conditions, including transient conditions like motor starting, non-linear loads and generator loss enabling them to get employed in electrical power sectors.
55	RT41024	Energy Audit and Conservation & Management			✓	the course focuses on the loss and profit studies and other company maintenance activities, creates the trust among the students to have own company.
56	RT41025	Instrumentation				
57	RT41026	Non-Conventional Sources of Energy	✓			Students are able to acquire skills related to various types of pivotal role in the development of a sustainable energy supply enabling the students to get employed in renewable energy generation sector.
58	RT41027	Optimization Techniques		✓		Students are able to acquire skills related to problem solving techniques of Optimization Techniques to achieve the "best" design relative to a set of prioritized criteria or constraints.
59	RT41028	VLSI Design	✓			Students are able to acquire skills related to design, synthesize and evaluate the performance of VLSI circuits enabling them to be employed for designing and manufacturing of complex electronic equipment in the fields of communications, control and instrumentation etc.

60	RT41029	Electrical Distributions Systems	✓			Students are able to acquire skills related to mitigating some of the potential distribution of electrical power challenges imposed by the growth in non-dispatchable renewable generation on electric grids that enables them to get employed in power distribution company.
61	RT41030	Optimization Techniques		✓		Students are able to acquire analytical skills in finding optimal solutions of different models using various decision making techniques.
62	RT4102L	Microprocessors and Microcontrollers Lab		✓		Students are able to demonstrate technical solving skills by providing knowledge on microprocessors with growing penetration of smart electronics in strategic areas including Space, Defence and Nuclear energy.
63	RT4102M	Electrical Simulation Lab	✓			Students are able to acquire skills related to various types of simulation of electrical components that enable them to get employed in core (electrical) industry/company related to designing of electrical components.
64	RT4102N	Power Systems Lab	✓			Students are able to acquire skills related to how a well-designed power system ensures robust performance and maximizes plant availability under all operating conditions enabling them to be employed for assessing transient conditions like motor starting, non-linear loads and generator loss.


## VIII SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
65	RT42021	Digital Control Systems	✓			Students are able to acquire skills related to how a well-designed power system ensures robust performance and maximizes plant availability under all operating conditions enabling them to be employed for assessing transient conditions like motor starting, non-linear loads and generator loss.
66	RT42022A	Advanced Control Systems		✓		The students are able to acquire technical skills in strategic advanced control methods to improving productivity and enhancing the best practices of the company.
67	RT42022B	Extra High Voltage Transmission				
68	RT42022C	Special Electrical Machines	✓			Students are able to acquire skills related to special machines particularly in traction, electrical vehicles, etc. or as generators enabling them to be employed for controlling, designing and manufacturing in power station, wind turbines, etc
69	RT42023A	Electric Power Quality	✓			Students are able to acquire skills related to high-quality power efficiency that enables them to be employed in industries focusing in saving money on electricity bill and carbon footprint.
70	RT42023B	Digital Signal Processing		✓		Students are able to acquire skills related to mathematics of signal processing that aids them in getting jobs in industries that use X-rays, MRIs and CT scans, allowing medical images to be analyzed and deciphered by complex data processing techniques.
71	RT42023C	FACTS: Flexible Alternating Current Transmission System	✓			Students are able to acquire skills related to mitigating some of the potential transmission of electrical power challenges that enables them to get employed in power transmission company.
72	RT42024A	OOPS through JAVA		✓		Students are able to demonstrate programming skill in java programming that helps them to gain problem-solving skills i.e. to solve a problem in a logical as well as creative way in an manner.
73	RT42024B	UNIX and Shell Programming		✓		Students are able to demonstrate programming skill for coding and building applications which is required for software industries.



74	RT42024C	AI Techniques		✓		Students are able to demonstrate coding skills related to various AI methods that helps to gain automatic problem-solving skills i.e. to solve a problem in an automatic manner without human intervention manner.
75	RT42024D	Power System Reforms	✓			Students are able to acquire skills related to analyze of reforms that is required to achieve government's vision of energy access, efficiency, sustainability and security that enables them to get employed in energy sectors.
76	RT42024E	Systems Engineering		✓		Students are able to demonstrate technical skills responsible for the functioning and working of a system as he is the one who takes care of all the phases of system engineering.
77	RT42025	Project	✓			students will be able to demonstrate problem identification, analysis, design solutions or applications in electronics and communication domain through the acquired technical, cognitive, communication and creative skills to address societal needs.
Total		77	39	23	6	

  
Program Coordinator

  
Head of the Department  
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