Department	EE
Course Code	EMM 101
Title of Course	Advanced Engineering Mathematics
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	3L + 1T
Total Contact Hours	40
Course Out Come	CO1: Ability to analyse complex variables. CO2: Analyse to analyse nonlinear analysis. CO3: Analyse to analyse optimization techniques. CO4: Ability to analyse linear algebra.

Department	EE
Course Code	PSM 101
Title of Course	Advanced Power System Analysis
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	3L + 1T
Total Contact Hours	40
Course Out Come	CO1: Ability to analyse power system network and admittance matrix. CO2: Ability to analyse different types of load flow studies. CO3: Ability to analyse power system stability

Department	EE
Course Code	PSM 102
Title of Course	High Voltage Transmission System
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	40
Course Out Come	CO1: To describe the property, planning and recent trends in HVDC Transmission system. CO2: To explain the principle of operation of converter. CO3: To design the transmission line parameters. CO4: Field calculation by FDM

Department	EE
Course code	PSM 103A
Title of the course	Power System Planning And Reliability
Nature of the course	Elective
Type of the course	Lecture
Contact Hours	4L
Total contact Hours	40
Course Outcomes	CO1: To implementation of different power system Tools and Techniques like ANN, Fuzzy logic, MATLAB'S etc in Load Forecasting. CO2: To design the planning of Power System. CO3: Ability to analysis Reliability of Generation Systems. CO4: Ability to analysis for high voltage transmission lines.

Department	EE
Course Code	PSM-103B
Title of Course	Power System Apparatus
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	36
Course Out Come	CO1: Ability to analyse different types of Circuit breaker. CO2: Ability to analyse different types of surge absorber and surge arrestor. CO3: Ability to analyse different types of FACTS devices. CO4: Ability to analyse static and series compensator.

Department	EE
Course Code	PSM-103C
Title of Course	Power Quality
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	40
Course Out Come	CO1: Ability to analyse electric power quality and its disturbances. CO2: Ability to analyse transient phenomenon of power system. CO3: Ability to analyse harmonics.

Department	EE
Course Code	PSM 104 (A)
Title of Course	Optimization Techniques
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	36
Course Out Come	CO1: Ability to analyse single-objective and Multi-objective optimization by Lagrangian Multiplier method and to apply Neural Network technique in solving complex engineering problems. CO2: Ability to apply Linear programming, Simplex method and Revised simplex method in solving complex engineering problems. CO3: Ability to utilise soft computing techniques such as Genetic Algorithm, Particle Swarm Optimization, Differential Evolution etc. to yield Economic Load Dispatch.

Department	EE
Course Code	PSM-104 (B)
Title of Course	Soft Computing Technique
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	36
Course Out Come	CO1: Ability to analyse the basic concept of soft computing CO2: Ability to analyse the basic idea behind fuzzy CO3: Ability to utilise the idea behind artificial neural network. CO4: Ability to operational concept of genetic algorithm

Department	EE
Course Code	PSM-104 (C)
Title of Course	Digital Signal Processing
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	36
Course Out Come	CO1: Understanding about the characteristics of deferent signals and systems both in time and frequency domain. CO2: Learning about the anatomy of digital filters. CO3: Learning about the techniques of Optimal and adaptive filters and its applications. CO4: Understanding the Spectrum estimation and analysis. CO5: Learning about Wavelet Transforms and its advantages over other transforms.

Department	EE
Course Code	PSM-104 (D)
Title of Course	Object Oriented Programming
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	36
Course Out Come	CO1: Understanding about the characteristics of objective oriented programming paradigm. CO2: Learning about the procedural oriented approach to C++. CO3: Learning about the techniques of Polymorphism and inheritance. CO4: Understanding the concept of case studies in electrical engineering.

Department	EE
Course Code	PSM-191
Title of Course	M Tech EE Power System, Laboratory I
Nature of Course	Compulsory
Type of Course	Laboratory
Contact Hours	3P
Total Contact Hours	30
Course Out Come	CO1: Ability to analyses the different characteristics of ON and OFF relays. CO2: Ability to analyse of different characteristics of CT and PT. CO3: Ability to analyse different characteristics of under voltage, over current and earth fault relay. CO4: Ability to analyse the dielectric strength of solid materials.

Department	EE
Course Code	PSM-192
Title of Course	M Tech EE Power System, Laboratory II
Nature of Course	Compulsory
Type of Course	Laboratory
Contact Hours	3P
Total Contact Hours	30
Course Out Come	CO1: Ability to calculate different bus parameters for AC and DC load flow using various methods. CO2: Ability to optimize of economic load dispatch using classical or derivative methods. CO3: Ability to analyse different transformer, alternator, motor, feeder protection using simulation.

Department	EE
Course Code	PSM-193
Title of Course	Seminar-I
Nature of Course	Compulsory
Type of Course	Sessional
Contact Hours	3P
Total Contact Hours	30
Course Out Come	CO1: Ability to show competence in working with a methodology, structuring their oral work, and synthesizing information. CO2: Ability to judge when to speak and how much to say, speak clearly and audibly in a manner appropriate to the subject, ask appropriate questions, use evidence to support claims, respond to a range of questions. CO3: Ability demonstrate that they have paid close attention to what others say and can respond constructively CO4: Ability to synthesize, evaluate and reflect on information. Students will be able to demonstrate use of appropriate methodologies, test the strength of their thesis statement, show insight into a topic, appropriate signposting, and clarity of purpose. CO5: Engaging them into works that are widely held to be significant in the field of study, while recognizing cultural diversity and the ever-changing nature of what is regarded as important.

Department	EE
Course Code	PSM-201
Title of The Course	Power System Operation and Control
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	3L+1T
Total Contact Hours	42
Course Outcomes	CO1: Ability to explain the objective of power system operation andenvironmental aspect of electric power generation and dispatch. CO2: Ability to explain automatic generation and control. CO3: Ability to explain the economic operation of power system like hydro-thermal scheduling, unit commitment etc. CO4: Ability to explain power system security. CO5: Ability to explain power system state estimation.

Department	EE
Course Code	PSM-202
Title of The Course	Power System Instrumentation
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	3L+1T
Total Contact Hours	36
Course Outcomes	CO1: Ability to explain and analyze the operating principle of different types of power plant (Thermal, Hydel, Nuclear, Wind). CO2: Ability to explain the operational mechanism of different components of thermal power plant. CO3: Ability to explain the operational mechanism of different components of Hydro power plant. CO3: Ability to explain the operational mechanism of different components of Wind power plant power plant. CO5: Abilty to explain the fault detection and moisture removing technique from oil of transformer. CO6: Ability to explain and analyze the voltage and current level measurement in high voltage transmission line. CO7: Ability to explain different method of tariff in power system. CO8: Ability to explain the operational mechanism of a local dispatch centre in a interconnected grid.

Department	EE
Course Code	PSM-203
Title of Course	Advanced Power System Protection
Nature of Course	Compulsory
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	40
Course Out Come	CO1: Ability to analyse different protection instruments. CO2: Analyse the different protective measures implemented for protection of Alternators and large motors. CO3: Analyse the different protective measures implemented for protection of Transformers. CO4: Ability to analyse different protection schemes for bus-bar, feeder and transmission line protection. CO5: Ability to analyse the details of static relay protections CO6: Ability to analyse the details of digital relay protections

Department	EE
Course Code	PSM-204A
Title of Course	Power System Transient
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	36
Course Out Come	CO1: Ability to analyse various types of Power system transient. CO2: Ability to analyse lightning surge and switching surge CO3: Ability to analyse different types of conversion equipment

Department	EE
Course Code	PSM 204B
Title of Course	Flexible A.C. Transmission System
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	45
Course Out Come	CO1: Describe FACTS device CO2: Explain the principle of operation of shunt and series compensator. CO3: Compute parameters and operating points for mid-point , sending and receiving end point compensation ,UPFC, CO4: Design the FACTS controllers. CO5: Application of FACTS devices in power system

Department	EE
Course Code	PSM-204C
Title of Course	Advanced Electrical Drives
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	40
Course Out Come	CO1: Ability to analyse modern electric drives. CO2: Ability to analyse speed control of induction motor drives. CO3: Ability to analyse brushless D.C motor drives. CO4: Introduction of micro controller based electric drives

Department	EE
Course Code	PSM-205A
Title of Course	Advanced Control System
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	40
Course Out Come	CO1: Ability to analyse overview of control system. CO2: Ability to analyse control system performance. CO3: Ability to analyse digital control systems. CO4: Ability to analyse non-linear system. CO5: Ability to analyse optimal control

Department	EE
Course Code	PSM-205B
Title of Course	Modelling and Simulation of Dynamic Systems
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	40
Course Out Come	CO1: Ability to analyse pole placement controller, full order and reduce observer design. CO2: Ability to analyse sensor modelling. CO3: Ability to analyse numerical modelling techniques.

Department	EE
Course Code	PSM-205C
Title of Course	Advanced Microprocessor and Microcontroller
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	4L
Total Contact Hours	28
Course Out Come	CO1: Recapitulation of the Architecture & Organization of 8085 Microprocessor. CO2: Understanding the Architecture & Organization of 8086 Microprocessor and its different modes of operations. CO3: Learning about the Architecture & Operations of deferent peripheral devices used to develop microprocessor based system. CO4: Learning about the applications of microprocessor based system in relays, instrumentation and protection (smart grid). CO5: Understanding the Architecture & Organization of microcontroller and developing its programming skills.

Department	EE
Course Code	PSM 291
Title of Course	M Tech EE Power System, Laboratory III
Nature of Course	Compulsory
Type of Course	Laboratory
Contact Hours	3P
Total Contact Hours	12
Course Out Come	CO1: To study the protection scheme of 3 phase Induction Motor against different electrical fault using MICOM relay CO2: To study the protection scheme of 3 phase Induction Motor against unbalance and overload conditions using MICOM relay

Department	EE
Course Code	PSM-292
Title of Course	M Tech EE Power System, Laboratory IV
Nature of Course	Compulsory
Type of Course	Laboratory
Contact Hours	3P
Total Contact Hours	30
Course Out Come	CO1: Ability to analyses different types of load flow problem using Gauss-Seidel, Newton-Raphson and Fast decoupled load flow method by Mi-Power simulation. CO2: Ability to optimise of economic load dispatch using classical or derivative methods by Mi-Power simulation. CO3: Ability to analyse short circuit study using Mi-Power software. CO4: Ability to analyse transient stability study using Mi-Power software.

Department	EE
Course Code	PSM-293
Title of Course	Seminar-II
Nature of Course	Compulsory
Type of Course	Sessional
Contact Hours	3P
Total Contact Hours	30
Course Out Come	CO1: Progress oral and written communication skills. CO2: Self learning on some topic of interest &reviewing of existing literature on selected topic. CO3: Distinguish and integrate differing forms of knowledge and academic disciplinary approaches with that of the student's own academic discipline to address current, real-world issues. CO4: Presentation of seminar report before evaluation committee and defending questions.

Department	EE
Course code	EMM-301
Title of the course	Introduction to management
Nature of the course	Compulsory
Type of the course	Lecture
Contact Hours	4L
Total contact Hours	40
Course Outcomes	CO1: Ability to analyse fundamental of pedagogy and classroom management. CO2: Ability to analyse research method and different types of tools. CO3: Ability to analyse intellectual property right and parent laws.

Department	EE
Course code	PSM 301(A)
Title of the course	Non-conventional energy
Nature of the course	Elective
Type of the course	Lecture
Contact Hours	3L+1T
Total contact Hours	40
Course Outcomes	CO1: Ability to analyse solar energy system with solar radiation. CO2: Ability to analyse wind energy conversion system. CO3: Ability to analyse bio-mass energy conversion system. CO4: Ability to analyse geothermal, wave and tidal energy conversion system. CO5: Ability to explain power conditioning converter with harmonics reduction techniques.

Department	EE
Course Code	PSM-301(B)
Title of Course	Power System Harmonics
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	3L +1T
Total Contact Hours	36
Course Out Come	CO1: Ability to analyse harmonics analysis. CO2: Ability to analyse analysis of sources of harmonic effect disturbance in power system. CO3: Ability to analyse limits of harmonic distortion and elimination in power system harmonics

Department	EE
Course Code	PSM-301C
Title of Course	Energy Management and Audit
Nature of Course	Elective
Type of Course	Lecture
Contact Hours	3L +1T
Total Contact Hours	36
Course Out Come	CO1: Ability to energy scenario, global, sub continental and Indian, energy economy scenario. CO2: Ability to understand the concept of demand management system. CO3: Ability to analyse idea behind energy audit and energy savings, energy control centres. CO4: Ability to analyse integration of distributed and renewable energy systems to power grid.

Department	EE
Course Code	PSM-391
Title of Course	Pre-submission Defense of Dissertation
Nature of Course	Compulsory
Type of Course	Sessional
Contact Hours	
Total Contact Hours	
Course Out Come	CO: Ability to define a project proposal based on literature perspective duly vetted by Supervisor.

Department	EE
Course Code	PSM-392
Title of Course	Dissertation (Part-I)
Nature of Course	Compulsory
Type of Course	Sessional
Contact Hours	
Total Contact Hours	20
Course Out Come	CO: Ability to present the proposal in front of technical board

Department	EE
Course Code	PSM-491
Title of Course	Dissertation (Completion)
Nature of Course	Compulsory
Type of Course	Sessional
Contact Hours	
Total Contact Hours	24
Course Out Come	CO: Ability to submit complete Thesis work

Department	EE
Course Code	PSM-492
Title of Course	Post Submission Defense of Dissertation
Nature of Course	Compulsory
Type of Course	Sessional
Contact Hours	
Total Contact Hours	
Course Out Come	CO: Ability to present the thesis in front of technical board

Department	EE
Course Code	PSM-294
Title of Course	Comprehensive Viva-Voce
Nature of Course	Compulsory
Type of Course	Sessional
Contact Hours	
Total Contact Hours	
Course Out Come	CO: Ability to face technical interview