Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 8th

Sub: **Power System Protection** **Code -801**

3 hours/week Credit-3

Sl No.	Week/No. of classes	Topics
1	1st /1,2,3	Purpose of power system protection. **Criteria for detecting faults:** over current,
2	2nd / 4,5,6,	differential current, difference of phase angles
3	3rd/7,8,9	over and under voltages, power direction,
4	4th/ 10,11,12	Symmetrical components of current and voltages,.
5	5th /13,14,15	Impedance, frequency and temperature**.**
6	6th / 16,17,18	**Instrument transformers:** CT
7	7th/19,20,21	and PT.
8	8th/22,23,24	**Electromechanical, electronic and digital Relays:** basic modules, over current,
9	9th/25,26,27	differential, distance and directional. Trip circuits.
10	10th/28,29,30	**Unit protection schemes:** Generator, transformer, motor, bus bar,
11	11tth/ 31,32,33	transmission and distribution lines.
12	12th/ 34,35,36	**Miniature selection criteria and ratings of circuit breakers:** Principle of are extinction,
13	13th //37,38,39	selection criteria and ratings of circuit breakers,**.**
14	14th/40,41,42	types-air, oil, SF6 and vacuum.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 8th

Sub: Power System Operation and control Code: EEE-813

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	**Principles of power system operation:** SCADA,
2	2nd week	conventional and competitive environment.
3	3rd week	Unit commitment,
4	4th week	static security analysis
5	5th week	state estimation
6	6th week	optimal power flow and optimal control of power system.
7	7thweek	automatic generation control
8	8thweek	automatic generation control single area system
9	9thweek	automatic generation control multi area system
10	10thweek	Exciter and excitation system
11	11thweek	Governors
12	12thweek	Reactive power control
13	13thweek	**Economic power factor**
14	14thweek 1	dynamic security analysis

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 8th

Sub: Power System Reliability Code: EEE-807

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	Review of probability concepts.
2	2nd week	Binomial, Poisson, and Normal. Reliability concepts
3	3rd week	Failure rate, outage, mean time to failure
4	4th week	Failure rate, outage, mean time to failure
5	5th week	series and parallel systems and redundancy
6	6th week	series and parallel systems and redundancy
7	7thweek	Markov process
8	8thweek	Probabilistic generation and load models.
9	9thweek	Probabilistic generation and load models.
10	10thweek	Loss of load probability
11	11thweek	loss of energy probability
12	12thweek	Frequency and duration.
13	13thweek	Reliability evaluation techniques of single area system.
14	14thweek	Reliability evaluation techniques of single area system.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 8th

Sub: Control System II Code: EEE-819

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	Introduction To Digital Control System
2	2nd week	Compensation using pole placement technique
3	3rd week	State equations of digital systems with sample and hokd, state equation of digital systems, digital simulation and approximation
4	4th week	State equations of digital systems with sample and hokd, state equation of digital systems, digital simulation and approximation
5	5th week	Solution of discrete state equations: by z-transform, state equation and transfer function, state diagrams, state plane analysis, Stability of digital control systems
6	6th week	Solution of discrete state equations: by z-transform, state equation and transfer function, state diagrams, state plane analysis, Stability of digital control systems
7	7thweek	Digital simulation and digital redesign
8	8thweek	Time domain analysis
9	9thweek	Frequency domain analysis
10	10thweek	Controllability and observability. Optimal linear digital regulator design
11	11thweek	Digital state observer. Microprocessor control
12	12thweek	fuzzy control, adaptive control
13	13thweek	H.Contro, nonlinear control.
14	14thweek	Introduction to neural network

Mymensingh Engineering College, Mymensingh

Department: Electrical And Electronic Engineering

Lecture Plan Semester: 7th

Sub: Solid state Devices Code : EEE-701

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	Semiconductors in equilibrium: Energy bands, Intrinsic and extrinsic semiconductors
2	2nd week	Fermi levels, electron and hole concentrations, temperature dependence of carrier concentrations and invariance of Fermi level.
3	3rd week	Carrier transport processes and excess carriers :Drift and diffusions, generation recombination of excess carriers, built-in-field , Einstein relation,
4	4th week	Continuity and diffusion equations for holes and electrons and quasi-Farmi level.
5	5th week	PN junction: Basic structure , equilibrium condition, contact potential, equilibrium Fermi level, space charge ,
6	6th week	Non equilibrium condition, forward and reverse bias, carrier injection, minority and majority carrier currents
7	7thweek	Transient and AC conditions, time variation of stored charge, reverse recovery transient and capacitance.
8	8thweek	Bipolar Junction Transistor : Basic principle of PNP and NPN transistors.
9	9thweek 9	Emitter efficiency, base transport factor and current gain, diffusion equation in the base,
10	10thweek	Terminal currents, coupled –diode model and charge control analysis, Ebers-Moll equations and circuit synthesis.
11	11thweek	Metal-semiconductor junction : Energy band diagram of metal semiconductor junctions, rectifying and Ohmic contacts.
12	12thweek	**MOS structure**: MOS capacitor , energy band diagrams and flat band voltage, threshold voltage, threshold voltage and control of threshold voltage .
13	13thweek	Static C-V characteristics ,qualitative theory of MOSEFT operation, body effect and current- voltage relationship of a MOSFET.
14	14thweek	Junction Field-Effect-Transistor: Introduction, qualitative theory of operation, pinch-off voltage and current voltage relationship.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 7th

Sub: **Control System I** **Code -703**

3 hours/week Credit-3

Sl No.	Week/No. of classes	Topics
1	1st /1,2,3	**Introduction to control systems. Linear system models:** transfer function, block diagram and signal flow graph (SFG).
2	2nd / 4,5,6,	**Introduction to control systems. Linear system models:** transfer function, block diagram and signal flow graph (SFG).
3	3rd/7,8,9	**State variables:** SFG to state variables, transfer function to state variable and state variable to transfer function
4	4th/ 10,11,12	**State variables:** SFG to state variables, transfer function to state variable and state variable to transfer function
5	5th /13,14,15	**Feedback control system:** Closed loop systems, parameter sensitivity, transient characteristics of control systems
6	6th / 16,17,18	Effect of additional pole and zero on the system response
7	7th/19,20,21	System types and steady. Root stability criterion.
8	8th/22,23,24	**Analysis of feedback control system:**Polar Plot Method
9	9th/25,26,27	Root locus method
10	10th/28,29,30	Frequency response method
11	11tth/ 31,32,33	**Design of feedback control system:** Controllability and observability, root locus, frequency response and state variable methods.
12	12th/ 34,35,36	**Design of feedback control system:** Controllability and observability, root locus, frequency response and state variable methods.
13	13th //37,38,39	**Digital control systems:** introduction, sampled data systems
14	14th/40,41,42	Stability analysis in Z-domain.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 7th

Sub: Energy Conversion III Code -705
3 hours/week Credit-3

Sl No.	Week/No. of classes	Topics
1	1st /1,2,3	Special machines: series universal motor
2	2nd / 4,5,6,	Shaded pole motor
3	3rd /7,8,9	Permanent magnet DC motor
4	4th / 10,11,12	Unipolar and bipolar brush less DC motors
5	5th / 13,14,15	Stepper motor and control circuits
6	6th / 16,17,18	Reluctance and hysteresis , motors with drive circuits
7	7th/19,20,21	Switched reluctance motor, electro static motor, repulsion motor
8	8th/22,23,24	Electro static motor, repulsion motor
9	9th/25,26,27	Synchros and control transformers
10	10th/ 28,29,30	Permanent magnet synchronous motors.
11	11tth/ 31,32,33	Acyclic machines: Generators
12	12th/ 34,35,36	Cconduction pump and induction pump
13	13th //37,38,39	
14	14th/40,41,42	Magneto hydrodynamic generators.

Mymensingh Engineering College, Mymensingh

Department: Electrical And Electronic Engineering

Lecture Plan Semester: 7th

Sub: **Power Electronics** **EEE 711**

3 credits, 3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	**Power semiconductor switches and triggering devices:** BJT,
2	2nd week	MOSFET, SCR
3	3rd week	IGBT, GTO, TRIAC,
4	4th week	UJT and DIAC.
5	5th week	**Rectifiers:** Uncontrolled
6	6th week	and con and three phase. trolled
7	7thweek	single phase
8	8thweek	**Regulated power supplies:** Linear-series and shunt,
9	9thweek 9	**Regulated power supplies:** Linear-series and shunt,
10	10thweek	**Regulated power supplies:** Linear-series and shunt,
11	11thweek	boost and Cuk regulators.
12	12thweek	**AC voltage controllers:** single
13	13thweek	and three phase.
14	14thweek	Choppers, DC motor control. Single phase cycloconverter. **Inverters:** Stepper motor control. Resonance inverters. Pulse width

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 7th

Sub: **Power Plant Engineering** **Code -717**

3 hours/week Credit-3

Sl No.	Week/No. of classes	Topics
1	1st /1,2,3	**Power plants:** general layout and principles, steam turbine, gas turbine,
2	2nd / 4,5,6,	combined cycle gas turbine,
3	3rd/7,8,9	hydro and
4	4th/ 10,11,12	nuclear.
5	5th /13,14,15	Power plant instrumentation.
6	6th / 16,17,18	**Selection of location:** Technical, economical and
7	7th/19,20,21	**Instrument transformers:** CT
8	8th/22,23,24	environmental factors.
9	9th/25,26,27	Load forecasting.
10	10th/28,29,30	**Generation scheduling:**Practice and Problem solving
11	11tth/ 31,32,33	deterministic and probabilistic.
12	12th/ 34,35,36	**Electricity tariff:** formulation
13	13th //37,38,39	And types.
14	14th/40,41,42	Problem solving on and tariff

Mymensingh Engineering College, Mymensingh
Department: Electrical and Electronic Engineering

Lecture Plan Semester: 6th

Sub: **Communication Theory** **Code EEE- 601**

Sl No.	Week/No. of classes	Topics
1	1st /1,2,3	**Overview of communication systems:** Basic Principles, fundamental elements, system limitations,
2	2nd / 4,5,6,	message source, bandwidth requirements, transmission media types, bandwidth and transmission capacity.
3	3rd /7,8,9	**Noise:** Source, characteristics of various types of noise and signal to noise ratio. **Information theory:** Measure of information, source encoding, error free communication over a noisy channel,
4	4th / 10,11,12	channel capacity of a continuous system and channel capacity of a discrete memory less system.
5	5th / 13,14,15	**Communication systems:** Analog and digital. **Continuous wave modulation:** Transmission types-base-band transmission
6	6th / 16,17,18	**Crrier transmission:** amplitude modulation-introduction, double side band, single side band, vestigial side band, quadrate,
7	7th/19,20,21	spectral analysis of each type, envelope and synchronous detection; angle modulation-instantaneous frequency, frequency modulation (FM) and phase modulation (PM), spectral analysis, demodulation of FM and PM.
8	8th/22,23,24	**Pulse modulation:** Sampling-sampling theorem, Nyquist criterion, aliasing, instantaneous and natural sampling; pulse amplitude modulation-principle, bandwidth requirements;
9	9th/25,26,27	pulse code modulation (PCM)-quantization principle quantization noise, non-uniform quantization signal to quantization error ratio
10	10th/ 28,29,30	, differential PCM, demodulation of PCM; delta modulation (DM)-principle adaptive DM; line coding-formats and bandwidths.
11	11tth/ 31,32,33	.**Digital modulation:** Amplitude-shift Keying-principle, ON-OFF keying, bandwidth requirements, detection, noise performance; phase-shift keying (PSK)-principle, bandwidth requirements, detection,
12	12th/ 34,35,36	differential PSK, quadrature PSK, noise performance; frequency-shift keying (FSK)-principle, continuous and discontinuous phase FSK, minimum shift keying, bandwidth requirements, detection of FSK. Multiplexing:
13	13th //37,38,39	Time-division multiplexing (TDM)-principle, receiver synchronization, frame synchronization, TDM of multiple bit rate systems; frequency-division multiplexing (FDM)-principle, de-multiplexing; wavelength-division multiplexing, multiple-access network-time-division multiple-access (TDMA),
14	14th/40,41,42	frequency-division multiple access (FDMA); code-division multiple-access (CDMA)-spread spectrum multiplexing, coding techniques and constraints of CDMA. Communication system design: design parameters, channel selection criteria and performance simulation.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 6th

Sub: Industrial Management **IPE 601**

Sl No.	Time Schedule	Topics
1	1st week	**Management Functions and Organization:** Evolution, management function: organization, theory and structure
2	2nd week	**Management Functions and Organization:** Evolution, management function: organization, theory and structure
3	3rd week	span of control, authority delegation, manpower planning.
4	4th week	**Personal Management:** Importance, need hierarchy, motivation,
5	5th week	leadership, wage incentives, performance appraisal, participative management
6	6th week	**Operation Management:** Production planning and control (PPC) functions, quantitative methods applied in production, quality management,.
7	7thweek	location and layout planning safety and loss management.
8	8thweek	Cost and Financial Management: Elements of cost products, cost analysis, investment analysis, benefit cost analysis, risk analysis
9	9thweek	Cost and Financial Management: Elements of cost products, cost analysis, investment analysis, benefit cost analysis, risk analysis
10	10thweek	**Management Accounting:** Cost planning and control,
11	11thweek	budget and budgetary control.
12	12thweek	**Marketing Management:** Concepts, strategy, sales promotion, patent laws.
13	13thweek	**Technology Management:** Management of innovation and changes, technology life cycle.
14	14thweek	Case studies.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 6th

Digital Signal Processing I EEE 603

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	**Introduction to digital signal processing (DSP) :** Discrete-time signals and systems, analog to digital conversion,.
2	2nd week	impulse response, finite impulse response (FIR) and infinite impulse response (IIR) of discrete-time systems, difference equation, convolution, transient and steady state response
3	3rd week	**Discrete transformations:** Discrete Fourier series, discrete-time Fourier series, discrete Fourier transform (DFT) and properties,
4	4th week	fast Fourier transform (FFT),
5	5th week	inverse fast Fourier transform,
6	6th week	z-transformation-properties, transfer function, poles and zeros and inverse z-transform.
7	7thweek	**Correlation:** circular convolution, auto-zeros and inverse z-transform.
8	8thweek	**Digital Filters:** FIR filters- linear phase filters,
9	9thweek	specification, design using window,
10	10thweek	optimal and frequency sampling methods;
11	11thweek	IIR filters-specifications, design using impulse invariant, bi-linear z-transformation,
12	12thweek	least-square methods impulse invariant,
13	13thweek	bi-linear z-transformation
14	14thweek	least square methods and finite precision effects.

Mymensingh Engineering College, Mymensingh

Department: Electrical And Electronic Engineering

Lecture Plan Semester: 6th

Sub:**Microprocessor and Interfacing**
3 credits, 3 hours/week Code: EEE-605

Sl No.	Time Schedule	Topics
1	1st week	**Introduction to microprocessors**
2	2nd week	**Intel 8086 microprocessor:** Architecture, addressing modes,
3	3rd week	instruction sets
4	4th week	assemble language programming
5	5th week	system design and interrupt
6	6th week	**Interfacing:** programmable peripheral interface
7	7thweek	programmable timer
8	8thweek	serial communication interface
9	9thweek	programmable interrupt controller
10	10thweek	direct momory access
11	11thweek	,keyboard and display interface
12	12thweek	Introduction to micro-controllers
13	13thweek	Introduction to micro-controllers
14	14thweek	Introduction to micro-controllers

Mymensingh Engineering College, Mymensingh

Department: Electrical And Electronic Engineering

Lecture Plan Semester: 6th

Sub: **Power System II**

3 credits, 3 hours/week Code: EEE-607

Sl No.	Time Schedule	Topics
1	1st week 1st Class	**Transmission lines cables:** overhead and underground. **Stability:** swing equation,
2	2nd week 2nd Class	power angle equation,
3	3rd week 3rd Class	equal area criterion,
4	4th week 4th Class	multi-machine system,
5	5th week 5thClass	step by step solution of swing equation.
6	6th week 6th Class	Factors affecting stability.
7	7thweek 7th Class	Reactive power compensation.
8	8thweek8 th Class	Flexible ac Transmission
9	9thweek 9th Class	Flexible ac Transmission
10	10thweek 10th Class	Flexible ac Transmission
11	11thweek 11th Class	High voltage DC transmission
12	12thweek 12th Class	High voltage DC transmission
13	13thweek 13th Class	harmonics, power quality, sag and swell.
14	14thweek	sag and swell.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 5th

Sub: Continuous Signals and Linear SystemsCode: EEE-501

Sl No.	Time Schedule	Topics
1	1st week	**Classification of signals and systems:** signals-classification, basic operation on signals, elementary signals.
2	2nd week	**Classification of signals and systems:** signals-classification, basic operation on signals, elementary signals.
3	3rd week	**Representation of signals using impulse function:** Systems-classification. Properties of Linear Time Invariant (LTI) systems: Linearity, causality, time invariance, memory, stability, invertibility.
4	4th week	**Representation of signals using impulse function:** Systems-classification. Properties of Linear Time Invariant (LTI) systems: Linearity, causality, time invariance, memory, stability, invertibility
5	5th week	**Time domain analysis of LTI systems:** Differential equations-system representation, order of the system, solution techniques
6	6th week	zero state and zero input response, system properties; impulse response-convolution integral.
7	7thweek	**Determination of system properties:** State variable-basic concept, state equation and time domain solution.
8	8thweek	Frequency domain analysis of LTI systems: Fourier series-properties, harmonic representation, system response.
9	9thweek	Frequency domain analysis of LTI systems: Fourier series-properties, harmonic representation, system response.
10	10thweek	**Frequency response of LTI systems:** Fourier transformation-properties, system transfer function, system response and distortion-less systems.
11	11thweek	**Frequency response of LTI systems:** Fourier transformation-properties, system transfer function, system response and distortion-less systems.
12	12thweek	**Applications of time and frequency domain analyses:** solution of analog electrical and mechanical systems,.
13	13thweek	amplitude modulation and demodulation, time-division and frequency-division multiplexing
14	14thweek	Laplace transformation: properties, inverse transform, and frequency response and application.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 5th

Sub: Digital Logic Design Code:EEE-503

Sl No.	Time Schedule	Topics
1	1st week	**Introduction to number systems and codes**
2	2nd week	**Analysis and synthesis of digital logic circuits:** Basic logic functions, Boolean algebra, combinational logic design, minimization of combinational logic
3	3rd week	**Analysis and synthesis of digital logic circuits:** Basic logic functions, Boolean algebra, combinational logic design, minimization of combinational logic
4	4th week	**Implementation of basic static logic gates in CMOS and BiCMOS:** DC characteristics, noise margin and power dissipation.
5	5th week	**Implementation of basic static logic gates in CMOS and BiCMOS:** DC characteristics, noise margin and power dissipation
6	6th week	Power optimization of basic gates and combinational logic circuits.
7	7thweek	**Modular combinational circuit design:** pass transistor, pass gates, multiplexer, demultiplexer
8	8thweek	implementation in CMOS, decoder, encoder, comparators
9	9thweek	binary arithmetic elements and ALU design.
10	10thweek	**Programmable logic devices:** Logic arrays, fiesd programmable logic arrays and programmable read only memory.
11	11thweek	Sequential circuits: different types of latches, flip-flips and their design using ASM approach,
12	12thweek	Timing analysis and power optimization of sequential circuits.
13	13thweek	**Modular sequential logic circuit design:** shift registers, counters and their applications.
14	14thweek	**Modular sequential logic circuit design:** shift registers, counters and their applications.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 5th

Sub: Power System I Code: EEE-505

Sl No.	Time Schedule	Topics
1	1st week	**Network representation:** Single line and reactance diagram of power system
2	2nd week	**Network representation:** Single line and reactance diagram of power system
3	3rd week	Per unit Systems.
4	4th week	**Line representation:** Equivalent circuit of short, medium and long lines.
5	5th week	**Load flow:** Gauss-Siedel
6	6th week	Newton Raphson Methods.
7	7thweek	**Power flow control:** Tap changing transformer, phase shifting,
8	8thweek	booster and regulation transformer and shunt capacitor.
9	9thweek	**Fault analysis:** short circuit current and reactance of a synchronous machine.
10	10thweek	**Symmetrical fault calculation methods:** Symmetrical components, sequence networks.
11	11thweek	Unsymmetrical fault calculation.
12	12thweek	**Protection:** Introduction to relays, differential protection and distance protection.
13	13thweek	Introduction to relays, differential protection and distance protection. Introduction to circuit breakers.
14	14thweek	**Typical layout of a substation Load curves:** Demand factor, diversity factor, load duration curves, energy load curve, load factor, capacity factor and plant factor.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 5th

Sub: Electrical properties of materials Code: EEE-507

Sl No.	Time Schedule	Topics
1	1st week	Crystal structures: Types of crystals, lattice and basis, Bravice lattice and Miller indices.
2	2nd week	Classical theory of electrical and thermal condition: Scattering mobility and resistivity,
3	3rd week	Temperature dependence of metal resistivity, Mathiesen's rule, Hall effect, and thermal conductivity.
4	4th week	Introduction to quantum mechanics: Wave nature of electrons. Schrodinger's equation one-dimensional quantum problems , infinite quantum well.
5	5th week	Potential step and potential barrier , Heisenberg's uncertainty Principle and quantum box.
6	6th week	Band theory of solids: Band theory from molecular orbital , Blouch theorem,
7	7thweek	Krong-penny model, effective mass, density-of-states. Modern theory of metals: Determination Fermi energy and average energy of electrons.
8	8thweek	Classical and quantum mechanical calculation of specific heat. Dielectric properties of materials:
9	9thweek	Dielectric constant , polarization-electronic, iconic and orientation ; internal field, Clausius- Mosotti equation,
10	10thweek	Spontaneous polarization, frequency dependence of dielectric constant, dielectric loss and piezoelectricity.
11	11thweek	Magnetic Properties of materials: Magnetic moment , magnetization and relative permittivity, different types of magnetic materials
12	12thweek	Origin of ferromagnetism and magnetic domains. Introduction to superconductivity: Zero resistance and magnetic domains.
13	13thweek	Introduction to superconductivity: Zero resistance and Meissnereffect .
14	14thweek	Type I and type II superconductor and critical current density.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 4th

Sub: **Mechanical Engineering Fundamentals Code -401**

Sl No.	Week/No. of classes	Topics
1	1st /1,2,3	Introduction to sources of energy
2	2nd / 4,5,6,	Steam generating units with accessories and mountings
3	3rd/7,8,9	steam turbines
4	4th/ 10,11,12	Introduction to internal combustion engines and their cycles,
5	5th /13,14,15	Introduction to internal combustion engines and their cycles,
6	6th / 16,17,18	gas turbines
7	7th/19,20,21	Refrigeration and air conditioning: applications
8	8th/22,23,24	Refrigerants, different refrigeration methods.
9	9th/25,26,27	Different refrigeration methods.
10	10th/28,29,30	Fluid machinery: impulse and reaction turbines
11	11tth/ 31,32,33	Fluid machinery: impulse and reaction turbines
12	12th/ 34,35,36	Centrifugal pumps, fans,.
13	13th //37,38,39	Blowers and compressors
14	14th/40,41,42	Basics of conduction and convection: critical thickness of insulation

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 4th

Sub: **Elecctronics -II** **Code -403**

Sl No.	Week/No. of classes	Topics
1	1st /1,2,3	**Frequency response of amplifiers:** Poles, zeros and Bode plots, amplifier transfer function,
2	2nd / 4,5,6,	techniques of determining 3 dB frequencies of amplifier circuits, frequency of determining 3 dB frequencies of amplifier circuits,
3	3rd/7,8,9	frequency response of single-stage and cascade amplifiers, frequency response of differential amplifiers.
4	4th/ 10,11,12	**Operational amplifiers (Op-Amp):** Properties of ideal Op-Amps, non-inverting and inverting amplifiers, inverting integrators, differentiator,
5	5th /13,14,15	weighted summer and other applications of Op-Amp circuits, effects of finite open loop gain and bandwidth on circuit performance,
6	6th / 16,17,18	logic signal operation of Op-Amp, DC imperfections.
7	7th/19,20,21	**General purpose Op-Amp:** DC analysis, Small –signal analysis of different stages, gain
8	8th/22,23,24	Frequency response of 741 Op-Amp.
9	9th/25,26,27	**Negative feedback:** Properties, basic topologies, feedback amplifiers with different topologies, stability, frequency compensation
10	10th/28,29,30	**Negative feedback:** Properties, basic topologies, feedback amplifiers with different topologies, stability, frequency compensation
11	11tth/ 31,32,33	**Active filters:** Different types of filters and specifications, transfer, realization of first and second order low, high and band pass filters using Op-Amps.
12	12th/ 34,35,36	**Signal generators:** Basic principle of sinusoidal oscillation, Op-Amp RC oscillators,
13	13th //37,38,39	LC and crystal oscillators.
14	14th/40,41,42	**Power Amplifiers:** Classification of output stages, class A, B and AB output stages.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 4th

Sub: **Energy Conversion II** **Code -405**

Sl No.	Week/No. of classes	Topics
1	1st /1,2,3	**Synchronous Generator** : Excitation System, equivalent circuit. EMF equation.
2	2nd / 4,5,6,	Vector diagrams at different loads, factors affecting voltage regulation, problem solution.
3	3rd/7,8,9	Synchronous impedance , synchronous impedance method of predicting voltage regulation and its limitations.
4	4th/ 10,11,12	Parallel operation: necessary conditions.
5	5th /13,14,15	Synchronizing, circulating current and vector diagram.
6	6th / 16,17,18	**Synchronous motor :** operation, effect of loading under different excitation condition.
7	7th/19,20,21	Effect of changing excitation, problem solution.
8	8th/22,23,24	V-curves and starting methods.
9	9th/25,26,27	**DC generator**: Types, EMF equation, No load voltage characteristics.
10	10th/28,29,30	Voltage build up of a self excited generator.
11	11tth/ 31,32,33	No load and load characteristics and voltage regulation.
12	12th/ 34,35,36	**DC Motor:** torque, counter EMF.
13	13th //37,38,39	Speed, torque speed characteristics, starting and speed regulation.
14	14th/40,41,42	Introduction to wind turbine generator, introduction and basic characteristics of solar cells.

Mymensingh Engineering College, Mymensingh

Department: Electrical And Electronic Engineering

Lecture Plan Semester: 4th

Sub: Engineering Electromagnetic Code: EEE 407

Sl No.	Time Schedule	Topics
1	1st week	**Static electric field:** Postulates of electrostatics, Coulomb's law for discrete and continuously distributed charges, Gauss's law and its application.
2	2nd week	Electric potential due to charge distribution, conductors and dielectrics in static electric field, flux density-boundary conditions; capacitance-electrostatic energy and forces, energy in terms of field equations.
3	3rd week	Capacitance-electrostatic energy and forces, energy in terms of field equations. **Steady electric current:** Ohm's law, continuity equation, Joule's law, resistance calculation.
4	4th week	**Capacitance calculation of different geometries:** Boundary value problems-Poisson's and Laplace's equations in different co-ordinate systems.
5	5th week	**Static Magnetic field:** Postulates of magneto statics, Biot-Savart's law, Ampere's law and applications, vector magnetic potential, magnetic dipole,
6	6th week	Magnetization, magnetic field intensity and relative permeability, boundary conditions for magnetic field,
8	8thweek	**Time varying fields and Maxwell's equations:** Faraday's law of electromagnetic induction, Maxwell's equations-differential and integral forms,
9	9thweek	Boundary conditions, potential functions: time harmonic fields and Pointing theorem.
10	10thweek	**Plane electromagnetic wave:** Plane wave in loss less media-Doppler effect, transverse electromagnetic wave.
11	11thweek	**Polarization of plane wave:** Plane wave in lossy media-low-loss dielectrics
12	12thweek	good conductors; group velocity, instantaneous and average power densities
13	13thweek	Normal and oblique incidence of plane waves at plane boundaries for different polarization.
14	14thweek	Magnetic energy, magnetic forces, torque

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 3rd

Subject:Electronics I **EEE-301**

Sl No.	Time Schedule	Topics
1	1st week	**P-N junction as a circuit element:** Intrinsic and extrinsic semiconductors, operational principle of p-n junction diode.
2	2nd week	Contact potential, current-voltage characteristics of a diode, simplified DC and AC diode models, dynamic resistance and capacitance.
3	3rd week	**Diode circuits:** Half wave and full wave rectifiers, rectifiers with fulter capacitor,
4	4th week	Characteristics of a Zener diode, Zener shunt regulator, clamping and clipping circuits.
5	5th week	**Bipolar Junction Transistor (BJT) as a circuit element:** current components, BJT characteristics and regions of operation, amplifier.
6	6th week	BJT as an amplifier, biasing the BJT for discrete circuits,
7	7thweek	small signal equivalent circuit models, BJT as a switch.
8	8thweek	**Single stage mid-band frequency BJT amplifier circuits:** Voltage and current gain,
9	9thweek	input and output impedance of a common base, common emitter and common collector amplifier circuits.
10	10thweek 1	**Metal Oxide Semiconductor Field Effect Transistor (MOSFET) as circuit element:** structure and physical operation of an enhancement MOSFET
11	11thweek 1	threshold voltage, Body effect, current-voltage characteristics of an enhancement MOSFET,
12	12thweek 12th Class	biasing discrete and integrated MOS amplifier circuits, single-stage MOS amplifiers, MOSFET as a switch, CMOS inverter.
13	13thweek	**Junction Field-Effect-Transistor (JFET):** Structure and physical operation of JFET, transistor characteristics, pinch-off voltage.
14	14thweek	**Differential and multistage amplifiers:** Description of differential amplifiers, small-signal operation, differential and common mode gains, RC coupled mid-band frequency

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 3rd

Sub: Energy Conversion I Code –EEE 303
3 hours/week Credit 1.5

Sl No.	Week/No. of classes	Topics
1	1st /1,2,3	Transformer Ideal transformer- transformation ratio, no-load and load vector diagrams:
2	2nd / 4,5,6,	Actual transformer-equivalent circuit, regulation,.
3	3rd /7,8,9	short circuit and open circuit tests
4	4th / 10,11,12	Three phase induction motor: Rotating magnetic field,
5	5th / 13,14,15	equivalent circuit, vector diagram,
6	6th / 16,17,18	torque-speed characteristics
7	7th/19,20,21	effect of changing rotor resistance and,
8	8th/22,23,24	reactance on torque-speed curves
9	9th/25,26,27	
10	10th/ 28,29,30	motor torque and developed rotor power
11	11tth/ 31,32,33	no load test, blocked rotor test,
12	12th/ 34,35,36	starting and braking and speed control.
13	13th //37,38,39	Single phase induction motor: Theory of operation,
14	14th/40,41,42	equivalent circuit and starting

Mymensingh Engineering College, Mymensingh

Department: Electrical And Electronic Engineering

Lecture Plan Semester: second

Sub: **Electrical Circuits II** Code: **EEE 201**

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	**Sinusoidal functions:** Instantaneous current, voltage, power
2	2nd week	effective current and voltage, average power,
3	3rd week	phasors and complex quantities,
4	4th week	impedance, real and reactive power,
5	5th week	phasors and complex quantities, impedance
6	6th week	real and reactive power, power factor. .
7	7thweek	**Analysis of single phase AC circuits:** Series and parallel RL,
8	8thweek	RC and RLC circuits,
9	9thweek	nodal and mesh analysis,
10	10thweek	application of network theorems in AC circuits,
11	11thweek	circuits with non-sinusoidal excitations, transients in AC circuits, passive filters.
12	12thweek	Resonance in AC circuits: Series and parallel resonance. Magnetically coupled circuits.
13	13thweek	**Analysis of three phase circuits:** Three phase supply
14	14thweek	balanced and unbalanced circuits, power calculation

Mymensingh Engineering College

Semester Plan

Sub: Social Studies Code: SS 101

Class 01	Introductory Class
Class 02	Anthropology
Class 03	Anthropology
Class 04	Anthropological background of Bangladesh
Class 05	Archaeological heritage of Bangladesh
Class 06	Family
Class 07	Family
Class 08	Family
Class 09	Marriage
Class 10	First class test
Class 11	Culture
Class 12	Culture & Civilization
Class 13	Culture of Bangladesh
Class 14	Social structure
Class 15	Social Stratification
Class 16	Social stratification
Class 17	Social Stratification of Bd
Class 18	Religion
Class 19	Religion
Class 20	Religion
Class 21	2nd Class test
Class 22	Bangladesh Profile
Class 23	Bangladesh Profile
Class 25	Gender issue & Development
Class 26	Gender issue & Development
Class 27	Bangla Literature
Class 28	Bangla Literature
Class 29	3rd class test

Mymensingh Engineering College, Mymensingh

Department: Electrical And Electronic Engineering

Lecture Plan Semester: 1st

Sub: **Electrical Circuits I** **Code: EEE 101**

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	**Circuit variables and elements:** Voltage, current, power, energy, independent and dependent sources, resistance.
2	2nd week	**Basic laws** : Ohm's law, Kirchoffs current and voltage laws.
3	3rd week	**Simple resistive circuits:** Series and parallel circuits, voltage and current division, wye-delta transformation.
4	4th week 4th Class	**Techniques of circuit analysis:** Nodal and mesh analysis including super node and super mesh.
5	5th week	**Network theorems:** Source transformation, Thevenin's, Norton's and superposition theorems with applications in circuits having independent and dependent sources, maximum power transfer condition and reciprocity theorem.
6	6th week	**Energy storage elements:** Inductors and capacitors, series parallel combination of inductors and capacitors.
7	7thweek Class	**Responses of RL and RC circuits:** Natural and step responses.
8	8thweek	**Magnetic quantities and variables:** Flux, permeability and reluctance, magnetic field strength, magnetic potential, flux density, magnetization curve. **Laws in magnetic circuits:** Ohm's law and Ampere's circuital law.
9	9thweek	**Magnetic circuits:** series, parallel and series-parallel circuits.
10	10thweek	**Responses of RL and RC circuits:** Natural and step responses.
11	11thweek	**Responses of RL and RC circuits:** Natural and step responses.
12	12thweek	**Magnetic quantities and variables:** Flux, permeability and reluctance, magnetic field strength, magnetic potential, flux density, magnetization curve.
13	13thweek	**Laws in magnetic circuits:** Ohm's law and Ampere's circuital law.
14	14thweek	**Magnetic circuits:** series, parallel and series-parallel circuits.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 1st

Sub: Computer Programming Code: CSE 101

3 class/week

Sl No.	Time Schedule	Topics
1	1st week	**Introduction to digital computers.**
2	2nd week	Programming languages,
3	3rd week	algorithms and flow charts.
4	4th week	Integer, floating point constant.
5	5th week	Library functions
6	6th week	Operators, expressions, loops
7	7thweek	control statements, functions, arrays, pointers
8	8thweek	**Structured Programming using C:** Variables and constants.
9	9thweek	Structure unions,
10	10thweek	user defined data types
11	11thweek	Input -output and files
12	12thweek	Object-oriented Programming using C++:;
13	13thweek	introduction, classes and objects polymorphism
14	14thweek	. function and operator overloading

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: 2nd

Sub **Electricity and Magnetism, Modern Physics and Mechanics PHY 211**

3 class/week

Sl No.	Time Schedule	Electricity and Magnetism: electric charge and Coulomb's law
1	1st week	Electric field, concept of electric flux and the Gauss's law-some applications of Gauss's law, Gauss's law in vector form,
2	2nd week	Electric potential, relation between electric field and electric potential, capacitance and dielectrics,
3	3rd week	gradient, Laplace's and Poisson's equations, Current,
4	4th week	Current density, relativity, the magnetic field, gradient, Laplace's and Poisson's equations
5	5th week	Biot-Savart law and their applications, Laws of electromagnetic induction-Maxwell's equation
6	6th week	**Modern physics:** Galilean relativity and Einstein's special theory of relativity; Lorentz transformation equations,
7	7thweek	Length contraction, Time dilation and mass-energy relation, photoelectric effect, Compton effect; De Broglie matter waves and its success in explaining Bohr's theory, Pauli's exclusion principle,
8	8thweek	Constituent of atomic nucleus, Nuclear binding energy, different types of radioactivity,
9	9thweek	radioactive decay law; Nuclear reactions, nuclear fission, nuclear fusion, atomic power plant.
10	10thweek	Constituent of atomic nucleus, Nuclear binding energy, different types of radioactivity, radioactive decay law;
11	11thweek	Nuclear reactions, nuclear fission, nuclear fusion, atomic power plant.
12	12thweek	conservation of linear momentum of a particle, angular momentum of a system of particles, **Mechanics:** Linear momentum of a particle, linear momentum of a system of particles,
13	13thweek	Kepler's law of planetary motion, the law of universal Gravitation, the motion planets and satellites, introductory quantum mechanics; Wave functio; Uncertainty principle, postulates, Schrodinger time independent
14	14thweek	introductory quantum mechanics; Wave functio; Uncertainty principle, postulates, Schrodinger time independent

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: First

Sub: Waves and Oscillations, Optics and Thermal Physics Code: PHY iii

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	Waves and oscillations: Differential equation of simple harmonic oscillator, total energy and average energy, combination of simple harmonic oscillations,
2	2nd week	spring mass system, torsional pendulum; two body oscillation
3	3rd week	reduced mass, damped oscillation, forced oscillation, resonance, progressive wave, power and intensity of wave, stationary wave, group and phase velocities.
4	4th week	**Optics:** Defects of images: spherical aberration, astigmatism, coma, distortion,
5	5th week	curvature, chromatic aberration. Theories of light; Interference of light: Young's double slit experiment,
6	6th week	displacement of fringes and its uses, Fresnel bi-prism, interference in thin films, Newton's rings,
7	7thweek	interferometers; Diffraction: Diffraction by single slit, diffraction from a circular aperture, resolving power of optical instruments, diffraction at double slit and N-slits,
8	8thweek	diffraction mean free path, Maxwell's distribution of molecular speeds, reversible and irreversible processes, Carnot's cycle,
9	9thweek	second law thermodynamics, Carnot's theorem, entropy, Thermodynamic functions, Maxwell relations, Clausius and Clapeyron equation. ting; polarization: Production and analysis of polarized light,
10	10thweek 1	Brewster's law, Malus law, polarization by double refraction, Nicol prism, optical activity, Polarimeters.
11	11thweek 1	**Thermal Physics:** Heat and work-the first law of thermodynamics and its applications; Kinetic Theory of gases-Kinetic interpretation of temperature
12	12thweek 12th Class	specific heats of ideal gases, equipartition of energy, mean free path, Maxwell's distribution of molecular speeds,
13	13thweek	reversible and irreversible processes, Carnot's cycle, second law thermodynamics,
14	14thweek	Carnot's theorem, entropy, Thermodynamic functions, Maxwell relations, Clausius and Clapeyron equation.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: First

Sub: Mechanical Engineering Fundamentals ME 401

Sl No.	Time Schedule	Topics
1	1st week	Introduction to sources of energy: Steam generating units with accessories and mountings;
2	2nd week	
3	3rd week	steam turbines.
4	4th week	Introduction to internal combustion engines
5	5th week	steam turbines.
6	6th week	Introduction to internal combustion engines and their cycles,
7	7thweek	gas turbines.
8	8thweek	Refrigeration and air conditioning: applications;
9	9thweek	refrigerants, different refrigeration methods.
10	10thweek 1	Fluid machinery: impulse and reaction turbines;
11	11thweek 1	centrifugal pumps, fans, blowers
12	12thweek 12th Class	and compressors
13	13thweek	. Basics of conduction and convection:
14	14thweek	critical thickness of insulation.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: First

Sub :Ordinary and Partial Differential Equations : MATH 215

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	**Ordinary Differential Equations:** Degree and order of ordinary differential equations,
2	2nd week	formation of differential equations.
3	3rd week	Solution of first order differential equations by various methods
4	4th week	.Solution of general linear equation
5	5th week	**Ordinary Differential Equations:** Degree and order of ordinary differential equations,
6	6th week	Degree and order of ordinary differential equations,
7	7thweek	equations of second and higher orders with constant coefficients
8	8thweek	. equations of second and higher orders with constant coefficients
9	9thweek	.Solution of homogeneous linear equations
10	10thweek 1	.Solution of homogeneous linear equations
11	11thweek 1	Solution of differential equations of the higher order when the dependent or independent variables are absent
12	12thweek 12th Class	Solution of differential equations of the higher order when the dependent or independent variables are absent
13	13thweek	.Solution of differential equation by the method based on the factorization of the operators.Frobenius method.
14	14thweek	.Solution of differential equation by the method based on the factorization of the operators.Frobenius method.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: First

Sub: English Language ENG 201

3 hours/week

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	General discussion: Introduction, various approaches to learning English.
2	2nd week	**Grammatical Problems:** Construction of sentences, grammatical errors, sentence variety and style, conditionals, vocabulary and diction.
3	3rd week	**Reading Skill:** Discussion readability, scan and skin reading, generating ideas through purposive reading, reading of selected stories.
4	4th week	**Writing Skill:** Principles of effective writing; Organization, planning and development of writing; Composition, précis writing, amplification.
5	5th week	**General strategies for the writing process:** Generating ideas, identifying audiences and
6	6th week	purposes, construction arguments, stating problems, drafting and finalizing.
7	7thweek	**Approaches to Communication:** Communication today, business communica different types of business communication.
8	8thweek	**Listening Skill:** The phonemic systems and
9	9thweek	correct English pronunciation.
10	10thweek 1	**Report Writing:** Defining a report, classification of reports,
11	11thweek 1	structure of a report, and writing of reports.
12	12thweek 12th Class	**Speaking Skill:** Practicing dialogue
13	13thweek	Story telling
14	14thweek	Effective oral presentation

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: First

Sub: Numerical Methods EEE 821

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	**Introduction:** Motivation and errors in numerical techniques.
2	2nd week	**Taylor series, Finite difference calculus:** Forward, backward, divided, and central difference and difference of a polynimial.
3	3rd week	**Interpolation:** Newton's formula, Lagrange, spline, Chebyshev and inverse.
4	4th week	**Extrapolation. Nonlinear equations:** Iteration, bisection, false position, Raphson, secant and Muller's methods.
5	5th week	**Simultaneous linear algebraic equations:** Cramer's Cramer's rule, inversion of matrices, Gauss elimination, Gauss-Jordan method,
6	6th week	factorization and Gauss-Siedel iteration methods.
7	7thweek	**Curve Fitting:** Linear and polynomial regression, fitting power,
8	8thweek	exponential and trigonometric functions.
9	9thweek	**Ordinary differential equations:** Initial value problem, Taylor's series method
10	10thweek 1	, Picard's method of successive approximation, Euler's method and.
11	11thweek 1	RungeKutta method
12	12thweek 12th Class	**Boundary value problems.** Numerical integration:
13	13thweek	general quadrature formula, trapezoidal rule and
14	14thweek	Simpson's rule. Numerical differentiation.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: First

Sub: Chemistry I CHEM-211

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	Atomic Structure, quantum numbers,
2	2nd week	electronic configuration, periodic table.
3	3rd week	Properties and uses of noble gases.
4	4th week	Different types of chemical bonds and their properties.
5	5th week	Different types of chemical bonds and their properties.
6	6th week	Molecular structures of compounds. Selective organic reactions.
7	7thweek	Different types of solutions and their compositions.
8	8thweek	Phase rule,.
9	9thweek	phase diagram of mono component system
10	10thweek 1	Properties of dilute solutions. Thermo chemistry,
11	11thweek 1	chemical kinetics,
12	12thweek 12th Class	chemical equilibrium.
13	13thweek	Ionization of water and pH concept.
14	14thweek	Electrical properties of solution.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: First

Sub: Calculus II MATH 113

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	**Complex Variable:** Complex number system. General functions of a complex variable. Limits and continuity of a function of complex variable
2	2nd week	and related theorems. Complex differentiation
3	3rd week	and the Cauchy-Reimann equations. Infinite series. Convergence and uniform convergence. Line integral of a complex function. Cauchy's integral formula. Liouville's theorem.Taylor's and Laurent's theorem. Singular points. Residue. Cauchy's residue theorem.
4	4th week	**Vector Analysis:** Multiple product of vectors. Linear dependence and independence of vectors.
5	5th week	Differentiation and integration of vectors.
6	6th week	Differentiation and integration of vectors together with elementary applications.
7	7thweek	Line, surface and volume integrals.
8	8thweek	Gradient of a scalar function,
9	9thweek	divergence and curl of a vector function,
10	10thweek 1	various formulae. Integral forms of gradient,
11	11thweek 1	divergence and curl. Divergence theorem.Stoke's theorem, Green's
12	12thweek 12th Class	theorem and Gauss's theorem. divergence and curl of a vector function,
13	13thweek	various formulae. Integral forms of gradient, divergence and curl.
14	14thweek	Divergence theorem. Stoke's theorem, Green's theorem and Gauss's theorem.

Mymensingh Engineering College, Mymensingh

Department: Electrical and Electronic Engineering

Lecture Plan Semester: First

SubLinear Algebra MATH 317

3 hours/week

Sl No.	Time Schedule	Topics
1	1st week	**3 credits, 3 hours/week** Introduction to systems of linear equations.
2	2nd week	Gaussian elimination.Definition of matrices.
3	3rd week	Algebra of matrices. Transpose of a matrix and inverse of matrix. Factorization.
4	4th week	Determinants.Quadratic forms.
5	5th week	Matrix polynomials.Euclidean n-space.
6	6th week	Linear transformation formIR^n to IR^m.
7	7thweek	Properties of linear transformation from IR^n to IR^m.
8	8thweek	Real vector spaces and subspaces.
9	9thweek	Basis and dimension.Rank and nullity.
10	10thweek 1	Inner product spaces.Gram-Schmidt process and QR-decomposition.
11	11thweek 1	Eigenvalues and eigenvectors
12	12thweek 12th Class	Diagonalization , Liner transformations.
13	13thweek	Kernel and Range.
14	14thweek	Application of linear algebra to electric networks.

3 credits, 3 hours/week