LESSON PLAN

Name of Faculty : NEHA GUPTA

Discipline : **ECE**

Semester : **4th**

Subject : **Analog Electronics**

Lesson Plan Duration : 15 weeks (From Jan 2018 to Apr 2018)

**Workload (lecture/ practical) per week (in hours): lectures (3), Practical's(6).

Weeks	Theory		Practical's	
	Lecture day	Topic (including assignment/test)	Practical day	Topic
1st	1st	Review of P-N junction and Characteristic	1st	Introduction of lab equipments and discussion about safety measures
	2nd	P-N junction as a rectifier	2nd	……..do……..
	3rd	Switching characteristics of Diode	3rd	……..do……..
2nd	1st	Diode as a circuit element, the load-line concept	1st	Study of lab equipments and components: CRO, Multimeter, Function Generator, Power supply- Active, Passive Components & Bread Board.
	2nd	Half-wave and full wave rectifiers	2nd	…….do……..
	3rd	Centre tapped Full wave Rectifiers	3rd	…….do……..
3rd	1st	Bridge Rectifier	1st	P-N Junction Diode: Characteristics of PN Junction diode-Static and dynamic resistance Measurement from graph.
	2nd	Numerical Problems	2nd	……do……
	3rd	Clipping circuits, clamping circuits,	3rd	……do……
4th	1st	Filter circuits, peak to peak detector	1st	Applications of PN junction diode: Half & Full wave rectifier- Measurement of Vrms, Vdc, and ripple factor-use of filter-ripple reduction (RC Filter)-Clipper & Clamper
	2nd	Voltage multiplier circuits.	2nd	…….do…….
	3rd	CLASS TEST	3rd	…….do…….
5th	1st	Review of MOSFET structure operation and V-I characteristics	1st	Properties of junctions Zener diode characteristics. Heavy doping alters the reverse characteristics. Graphical measurement of forward and reverse resistance
	2nd	Circuits at DC, MOSFET as Amplifier and switch,	2nd	……..do……

	3rd	Biasing in MOS amplifier circuits,	3rd	……..do……..
6th	1st	Small-signal operation and models,	1st	Application of Zener diode: Zener diode as voltage regulator. Measurement of percentage regulation by varying load resistor
	2nd	Single stage MOS amplifier,	2nd	…….do…….
	3rd	Assignment	3rd	……..do……
7th	1st	MOSFET internal capacitances and high frequency model,	1st	Characteristic of BJT : BJT in CB and CE configuration- Graphical measurement of h parameters from input and output characteristics. Measurement of Av, AI, Ro and Ri of CE amplifier with potential divider biasing
	2nd	Numerical problems on biasing of MOSFET	2nd	…….do……..
	3rd	Frequency response of CS Amplifier	3rd	…….do……..
8th	1st	1st Sessional Exam	1st	Characteristic of FET: FET in common source configuration. Graphical measurement of its parameters gm, rd & m from input and output characteristics.
	2nd	1st Sessional Exam	2nd	……do……..
	3rd	1st Sessional Exam	3rd	…….do……..
9th	1st	BJT: Review of device structure operation and V-I characteristics	1st	Characteristic of silicon-controlled rectifier.
	2nd	BJT circuits at DC	2nd	……do…….
	3rd	BJT as amplifier and Switch	3rd	……do……..
10th	1st	Biasing in BJT amplifier circuit	1st	To plot V-I Characteristics of DIAC
	2nd	Small-signal operation and models	2nd	……do…….
	3rd	Single stage BJT amplifier	3rd	……do…….
11th	1st	BJT internal capacitances and high frequency mode	1st	To draw V-I characteristics of TRIAC for different values of Gate Currents.
	2nd	Numerical Problems on BJT biasing	2nd	……do……..
	3rd	CLASS TEST	3rd	……do……..
12th	1st	Frequency response of CE amplifier	1st	Study of frequency response of active filters LP, HP & BP.
	2nd	ASSIGNMENT on BJT numerical problems	2nd	……..do…….
	3rd	Presentation and discussion on assignment	3rd	……..do……..

13th	1st	Operational Amplifier: Inverting and non-inverting configurations	1st	Practical revision and Problems
	2nd	Difference amplifier, Effect of finite open loop gain and bandwidth on circuit performance,	2nd	……do…….
	3rd	Large signal operation of op-amp.	3rd	…….do…….
14th	1st	Feedback: The general feedback structure, properties of negative feedback, the four basic feedback topologies,	1st	Practical revision and Problems
	2nd	The series-shunt feedback amplifier, the series-series feedback amplifier,	2nd	……..do…….
	3rd	The shunt-shunt and shunt series feedback amplifier.	3rd	…….do……
15th	1st	Differential Amplifier: MOS differential pair, small signal operation of the MOS differential pair,	1st	Internal Viva Voce
	2nd	BJT differential pair, other non-ideal characteristic of the Differential amplifier (DA), DA with active load	2nd	……do……
	3rd	CLASS TEST	3rd	……..do……..

Name of Subject: **COMMUNICATION ENGINEERING**

Name of faculty: **PRERANA**

Semester: **4th Semester(B.TECH)**

Paer Code: **EE-206-F**

week		Theory		Practical
	Lecture day	**Topic (Including Assignment/Test)**	**Practical Day**	**Topic (02 period per day)**
1st	1st	Type of signal and Their representation	1st	Introduction to Lab tools and kits (1st Group)
	2nd	Essentials of Communication System	2nd	- do- (2nd Group)
	3rd	Modes and medias of Communication	3rd	-do- (3rd Group)
2nd	1st	System	1st	Generation of DSB-SC AM signal using balanced modulator
	2nd	Classifications of Signals and Systems	2nd	- do- (2nd Group)
	3rd	Numerical problems	3rd	-do- (3rd Group)
3rd	1st	Fourier Analysis of Signals	1st	Generation of SSB AM signal
	2nd	Analog Communication & Digital Communication	2nd	- do- (2nd Group)
	3rd	Multiplexing and De-multiplexing	3rd	-do- (3rd Group)
4th	1st	Numerical problems and Revision	1st	To study envelop detector for demodulation of AM signal and observe diagonal peak clipping effect
	2nd	Amplitude Modulation	2nd	- do- (2nd Group)
	3rd	Generation of AM Wave	3rd	-do- (3rd Group)
5th	1st	Generation of AM Wave	1st	To generate a FM Signal using various modulation methods
	2nd	Demodulation of AM Wave	2nd	- do- (2nd Group)

	3rd	Generation of DSBSC AM Wave	3rd	-do- (3rd Group)
6th	1st	Coherent detection of DSBSC AM Wave	1st	Detection of FM Signal
	2nd	Single Side Band Modulation & generation	2nd	- do- (2nd Group)
	3rd	Demodulation of SSB Wave	3rd	-do- (3rd Group)
7th	1st	Vestigial Sideband Modulation (VSB)	1st	To study the circuit of PAM/PWM/PPM modulator
	2nd	Generation of VSB wave	2nd	- do- (2nd Group)
	3rd	De-modulation of VSB wave	3rd	-do- (3rd Group)
8th	1st	Definition of Angle modulation, PM and FM	1st	To study the circuit of PAM/PWM/PPM Demodulator
	2nd	Narrow Band FM and Wideband FM	2nd	- do- (2nd Group)
	3rd	Generation of FM waves	3rd	-do- (3rd Group)
9th	1st	Demodulation of FM Waves	1st	Study of 4 channel Time Division Multiplexing system.
	2nd	Relation between FM and PM	2nd	- do- (2nd Group)
	3rd	Introduction to PAM, Sampling Theory	3rd	-do- (3rd Group)
10th	1st	Sampling and Hold circuit and their working	1st	Study Sampling Theorem.
	2nd	Time Division Multiplexing and Frequency Division Multiplexing	2nd	- do- (2nd Group)
	3rd	Generation of PAM	3rd	-do- (3rd Group)
11th	1st	Demodulation of PAM	1st	Revision
	2nd	Generation of PTM	2nd	- do- (2nd Group)
	3rd	Demodulation of PTM	3rd	-do- (3rd Group)
12th	1st	Introduction to Pulse digital modulation Coding & decoding techniques	1st	Revision
	2nd	Elements of PCM and Noise in PCM systems	2nd	- do- (2nd Group)

	3rd	Measure of Information, Channel Capacity and Channel Capacity of PCM	3rd	-do- (3rd Group)
13th	1st	Generation and demodulation of DPCM	1st	Revision
	2nd	Generation and demodulation of DM	2nd	- do- (2nd Group)
	3rd	Generation and demodulation of ASK	3rd	-do- (3rd Group)
14th	1st	Generation and demodulation of BPSK	1st	Revision
	2nd	Generation and demodulation of FSK	2nd	- do- (2nd Group)
	3rd	Generation and demodulation of QPSK	3rd	-do- (3rd Group)
15th	1st	PC to PC Data communication	1st	Revision
	2nd	External Noise and Internal Noise S/N Ration and Noise Figure	2nd	- do- (2nd Group)
	3rd		3rd	-do- (3rd Group)

Lesson Plan

Name of Faculty : JYOTI SEHGAL

Discipline : Electronics and communication Engineering

Semester : 4th

Subject : Digital Electronics (ECE)

Lesson Plan Duration : 15 week (January 2018 to April 2018)

Work load (Lecture/Practical) per week (in hours) : Lecture-03, Tutorial-03, Practical- 06

Week	Theory		Practical	
	Lecture Day	Topic	Week	Topic
1	1st	Digital systems and binary number: signed binary number	1	Introduction to digital electronics lab
	2nd	Binary codes, cyclic codes		
	3rd	Error detecting and correcting codes		
2	1st	Hamming codes	2	Implementation of all gates using NAND and NOR gate
	2nd	The K-map method		
	3rd	The K-map method upto five variables		
3	1st	Don't care condition	3	Implementation of the given Boolean function in both SOP and POS forms.
	2nd	POS simplification		
	3rd	NAND and NOR implementation		
4	1st	Quine Mc-Clusky method	4	Implementation and verification of decoder/de-muliplexer and encoder using logic gates
	2nd	Quine Mc-Clusky method		
	3rd	Combinational logic circuits		
5	1st	Analysis procedure	5	Implementation of 4-bit comparator
	2nd	Design procedure		
	3rd	Binary adder-subtractor		
6	1st	Decimal adder ,binary multiplier	6	Implementation of 4-bit parallel adder using 7483 IC
	2nd	Magnitude comparator , decoders		
	3rd	Encoders		

7	1st	Multiplexers	7	Implementation of 4*1 multiplexer using logic gates
	2nd	De-multiplexers		
	3rd	Sequential circuits		
8	1st	Storage elements: latches	8	Verification of state tables of RS,JK,T and D flip-flops using NAND and NOR gates
	2nd	Flip-flops		
	3rd	Flip-flops		
9	1st	Analysis of clocked sequential circuits	9	Implementation of 4-bit subtractor
	2nd	State reduction and assignments		
	3rd	Design procedure		
10	1st	Shift registers	10	Design and verify the 4-bit synchronous counter
	2nd	Ripple counter		
	3rd	Synchronous counter		
11	1st	Other counters	11	Design and verify the 4-bit asynchronous counter
	2nd	Other counters		
	3rd	RAM		
12	1st	ROM	12	Static and dynamic characteristics of NAND and Schmitt-NAND gate(both TTL and MOS)
	2nd	PLA		
	3rd	PAL		
13	1st	ASMs	13	Study of arithmetic logic unit
	2nd	Design examples		
	3rd	Design with multiplexers		
14	1st	Asynchronous sequential logic: analysis procedure	14	Mini project
	2nd	Circuit with latches		
	3rd	Design procedure		
15	1st	Reduction of state and flow table	15	Mini project
	2nd	Race free state assignments		
	3rd	Hazards		

Lesson Plan

Name of Faculty : RITU YADAV

Discipline : Electronics and communication Engg.

Semester : 4th

Subject : Electromagnetic Field Theory

Lesson Plan Duration : 15 week (January 2018 to April 2018)

Work load (Lecture/Practical) per week (in hours) : Lecture-03, Tutorial-01

Week	Theory	
	Lecture Day	Topic
1	1st	Co-ordinate system
	2nd	Co-ordinate transformation
	3rd	Cartesian and cylindrical coordinate ,
2	1st	Spherical co-ordinate ,vector calculas
	2nd	Del operator, gradient of scalar
	3rd	Divergence of a vector and divergence theorem
3	1st	Curl of a vector, stokes theorem, Laplacian of a scalar.
	2nd	Electrostatic field, coulombs law, field intensity
	3rd	Electric field due to charge distribution
4	1st	Electric flux density , gauss law
	2nd	Maxwell equation
	3rd	Electric diplole and flux line
5	1st	Energy density in electrostatic field
	2nd	Electric field in material space
	3rd	Properties of material
6	1st	Convection and conduction current
	2nd	Dielectric constant
	3rd	Electrostatic boundary condition
7	1st	General solution for passions equation

	2nd	Poisson and Laplace equation
	3rd	Resistance and capacitance , method of images
8	1st	Magneto static field
	2nd	Biot- savart law
	3rd	Ampere circuit law
9	1st	Ampere force law
	2nd	Maxwell equation
	3rd	Application of ampere law
10	1st	Magnetic forces ,and materials
	2nd	Magnetic torque moment , dipole moment
	3rd	Magnetization in materials
11	1st	Inductor and boundary condition
	2nd	Maxwell's equation , Faradays Law
	3rd	Electromotive Force, Displacement current, Motional EMF
12	1st	Maxwell equation in final form
	2nd	Electromagnetic wave propagation
	3rd	Wave propagation in lossy dielectric
13	1st	Plane wave in lossless dielectric
	2nd	Plane wave in free space
	3rd	Plain wave in good conductor
14	1st	Power and pointing vector
	2nd	Reflection of plain wave in normal
	3rd	Transmission line
15	1st	Transmission line parameter
	2nd	Transmission line equation
	3rd	Standing wave Ration and power

LESSON PLAN

Name of Faculty : SAWAN

Discipline : **ECE**

Semester : **4th**

Subject : **Signals and Systems**

Lesson Plan Duration : 15 weeks (From Jan 2018 to Apr 2018)

**Workload (lecture) per week (in hours): lectures (3).

Weeks	Theory	
	Lecture day	Topic (including assignment/test)
1st	1st	Definition, types of signals and their representations. continuous-time/discrete-time, periodic/non- periodic, even/odd, energy/power, deterministic/ random, one-dimensional/multi-dimensional.
	2nd	Numericals of periodic/non- periodic and even/odd signals
	3rd	Numericals of energy/power signals
2nd	1st	Assignment
	2nd	Commonly used signals (in continuous-time): unit impulse, unit step, unit ramp (and their interrelationships), exponential, rectangular pulse, sinusoidal.
	3rd	Commonly used signals (in discrete-time): unit impulse, unit step, unit ramp (and their interrelationships), exponential, rectangular pulse, sinusoidal.
3rd	1st	Definition and types of systems
	2nd	Numericals
	3rd	Assignment
4th	1st	Operations on continuous-time signals (including transformations of independent variables).
	2nd	Operations on discrete-time signals (including transformations of independent variables).
	3rd	Assignment
5th	1st	Fourier transform(FT): Definition, conditions of existence of FT, magnitude and phase spectra, Inverse FT, Numericals.
	2nd	Some important FT theorems, Parseval's theorem, Inverse FT, relation between LT and FT
	3rd	Properties of FT and examples.
6th	1st	Revision of FT
	2nd	Discrete time Fourier transform (DTFT), inverse DTFT, convergence,
	3rd	Comparison between continuous time FT and DTFT , Theorems of DTFT
7th	1st	Properties of DTFT (with proof)
	2nd	Numericals
	3rd	Assignment
8th	1st	1st Sessional Exam
	2nd	1st Sessional Exam
	3rd	1st Sessional Exam

9th	1st	Time and frequency domain analysis of systems, analysis of first order and second order continuous-time (CT) system using LT.
	2nd	Illustration of the concepts of system bandwidth and rise time through the analysis of a first order CT low pass filter
	3rd	System functions of CT systems, its poles and zeros.
10th	1st	Block diagram representations of CT system
	2nd	Assignment
	3rd	Analysis of first order and second order discrete-time (DT) system
11th	1st	System functions of DT systems, its poles and zeros.
	2nd	Block diagram representations of DT system
	3rd	CLASS TEST
12th	1st	Laplace-Transform (LT) , inverse LT, , Numericals
	2nd	Regions of convergence (ROC)
	3rd	One-sided LT and Bilateral LT, Examples
13th	1st	Important theorems and properties of LT
	2nd	Solutions of differential equations using LT, ,
	3rd	Assignment
14th	1st	Z-transforms, ZT of some common signals, s- to z-plane mapping
	2nd	ROC and its Properties
	3rd	One sided and Bilateral Z-transforms, Numericals
15th	1st	Properties and theorems of z-transform,
	2nd	Solution of difference equations using one-sided ZT,
	3rd	CLASS TEST

Lesson Plan

Name of Faculty : PRERANA DHULL

Discipline : Electrical Engineering

Semester : 4th

Subject : Principles Of Communication System (EE)

Lesson Plan Duration : 15 week (January 2018 to April 2018)

Work load (Lecture/Practical) per week (in hours) : Lecture-03, Tutorial-03, Practical- 06

Week	Theory		Practical	
	Lecture Day	Topic	Week	Topic
1	1st	Introduction and Essential of Communication System	1	Generation of DSB-SC AM signal using balanced modulator.
	2nd	Representation of Signals and System – Mode and Media of Communication System		
	3rd	Classification of Signals and System		
2	1st	Fourier Series – Trignometric Fourier Series-Representation of Periodic Function	2	Generation of SSB AM signal
	2nd	Polar Fourier Series Representation		
	3rd	Complex Fourier Exponential Series		
3	1st	Useful f'n and their Fourier Transforms	3	To study envelop detector for demodulation of AM signal
	2nd	Properties of Fourier Transforms		
	3rd	Analog and Digital Communication		
4	1st	Multiplexing and Demultiplexing	4	Study of Frequency Division Multiplexing/Demultiplexing with sinusoidal & audio inputs
	2nd	Amplitude Modulation (AM)		
	3rd	Generation of AM -Linear Modulation- Collector Modulation		
5	1st	Nonlinear Modulation – Square Law Modulation	5	To generate a FM Signal using Varactor & reactance modulation
	2nd	Demodulation - Square Law detector – Envelope detector		

	3rd	Introduction of (DSB-SC)		
6	1st	Generation of (DSB-SC) -	6	Study of pulse code modulation and demodulation with parity & Hamming code
	2nd	Demodulation of(DSB-SC)		
	3rd	Single Sideband Suppressed Carrier (SSB-SC) Modulation – Time domain description		
7	1st	Hilbert Transform	7	Frequency modulation using voltage controlled oscillator.
	2nd	Generation of (SSB-SC)		
	3rd	Demodulation of (SSB-SC)		
8	1st	Vestigial Sideband Transmission (VSB)	8	Study of ASK, FSK modulator and demodulator
	2nd	Angle Modulation		
	3rd	Type of Frequency Modulation – Narrow band FM		
9	1st	Wide Band FM	9	Study of PSK & QPSK modulator and demodulator
	2nd	Generation of FM		
	3rd	Demodulation of FM		
10	1st	Sampling Theorem	10	Study of Differential Pulse code modulation & demodulation
	2nd	Sampling Techniques		
	3rd	Pulse Amplitude Modulation (PAM)		
11	1st	Pulse Time Modulation (PTM)	11	Generation & study of Analog TDM at least 4 channels
	2nd	Pulse Code Modulation (PCM)		
	3rd	Quantization Noise		
12	1st	Application – advantage and drawback of (PCM)	12	. To study the circuit of PAM/PWM/PPM modulator & Demodulator
	2nd	Delta Modulation (DM)		
	3rd	Differential Pulse Code Modulation (DPCM)		
13	1st	Amplitude Shift Keying (ASK)	13	Generation & study of Analog TDM at least 4 channels
	2nd	Frequency Shift Keying (FSK)		
	3rd	Binary Phase Shift Keying (BPSK)		
14	1st	Spectrum of (BPSK) Signals		

	2nd	Differential Phase Shift Keying (DPSK)		
	3rd	Quadrature Phase Shift Keying (QPSK)		
15	1st	Spectrum of (QPSK) – Minimum Shift Keying (MSK)		
	2nd	External and Internal Noise		
	3rd	S/N Ratio – Noise Figure		