

SEMINAR

Practical		
Week	Practical Day	Topic
1 st	1&2	OLED Pill camera
2 nd	3&4	plastic solar cell technology bio-chip technology
3 rd	5&6	Optical Ethernet IBOC Technology
4 th	7&8	multipurpose robot Microbivores
5 th	9&10	Paper battery Footwear based Wearable System
6 th	11&12	Eye Directive Wheelchair E nose
7th	1st Minor Test	
8 th	13&14	Wireless Communication using High Altitude Platforms (HAP) Autonomous Cars
9 th	15&16	Spintronics (Spin Electronics) Low Power Embedded Systems
10 th	17&18	Image based Authentication System Thermoelectric Generator
11 th	19&20	Security in Embedded Systems Third Generation Solid State Drives
12 th	21&22	I mouse Polytronics
13 th	23&24	Audio Spotlighting Metamorphic Robots:
14th	2nd Minor Test	
15 th	25&26	Smart Note Taker Weapon Detection System Using Digital Image Processing

RADAR AND SONAR ENGINEERING (EE-454-E)

Week	Theory	
	Lecture Day	Topic (Including Assignment/Test)
1 st	1	Radar Block Diagram
	2	Radar operations
	3	Radar Frequencies
	4	Radar development
2 nd	5	Application of Radar
	6	Simple form of Radar Equation
	7	Prediction of Range performance
	8	Minimum detectable signal
3 rd	9	Receiver noise
	10	Signal to Noise ratio
	11	Transmitter Power
	12	Pulse repetition frequency
4 th	13	Range ambiguities
	14	System losses
	15	Propagation effects
	16	The Doppler effect
5 th	17	CW Radar
	18	Frequency-modulated CW Radar
	19	Multiple Frequency CW Radar
	20	MTI: Introduction
6 th	21	Problems and Solutions
	22	Delay Line Cancellors
	23	Multiple or staggered
	24	Assignment I
7 th	 Minor Test II
8 th	25	Pulse repetition frequencies
	26	Range-Gated Doppler Filters
	27	Digital Signal Processing
	28	Other MTI delay line
9 th	29	Limitation of MTI performance
	30	Noncoherent MTI
	31	Pulse Doppler Radar
	32	MTI from a moving platform
10 th	33	Tracking with Radar
	34	Sequential Lobbing
	35	Conical Scan
	36	Monopulse Tracking Radar
11 th	37	Tracking in range
	38	Acquisition

	39	Radar Receivers
	40	Noise Figure
12th	41	Mixer
	42	Low-noise Front ends
	43	Displays
	44	Duplexer
13th	45	Receiver protectors
	46	Assignment II
	47	Problems and Solutions
	48	ATC Radar
14th Minor Test II	
15th	49	Introduction to Sonar
	50	Block Diagram of Sonar
	51	Operation of Sonar
	52	Applications of Sonar

WIRELESS COMMUNICATION

Week	Theory	
	Lecture Day	Topic (Including Assignment/Test)
1 st	1	Unit-1 Basics terminology of Communication systems
	2	Evolution of mobile radio communication
	3	Examples of wireless communication system: Paging & cordless telephone system
	4	Comparison of various wireless system
2 nd	5	Unit-2 Second generation cellular network
	6	Third generation wireless network
	7	Wireless in local loop
	8	Wireless local area network
3 rd	9	Blue Tooth
	10	Personal Area Network
	11	Unit-3 Spectrum allocation
4 th	12	Basic cellular system
	13	Performance criteria
	14	Operation of cellular system
	15	Analog cellular system
5 th	16	Digital cellular system
	17	Unit-4 Frequency reuse
	18	Numerical Problems
	19	Channel assignment strategies
6 th	20	Hand off strategies
	21	Interference
	22	System Capacity
7 th	23	Trunking & grade of service
	24	Numerical Problems
8 th	1st Minor Test	
9 th	25	Discussion of Minor Test Question
	26	Improving coverage and capacity-1
	27	Improving coverage and capacity-2
	28	Unit-5 Introduction to Multiple Access
10 th	29	Frequency division multiple access
	30	Time division multiple access
	31	Discussion of assignment-1
	32	Spread spectrum multiple access
11 th	33	Space division multiple access
	34	Packet radio
	35	Capacity of cellular system
12 th	2nd Minor Test	
13 th	36	Problems and Solution
	37	Discussion of Minor Test Question
	38	Unit-6 Difference between wireless & fixed telephone network ,Development of wireless network
	39	Fixed network
14 th	40	Transmission hierarchy
	41	Traffic routing in wireless network
	42	Wireless data services
	43	Common channel signalling
15 th	44	ISDN

14th	45	Advance intelligent networks
	46	Unit-7 Intelligent cell concepts
	47	Application of intelligent micro cell system
	48	In building communication
15th	49	CDMA Cellular radio network
	50	Discussion of Minor Test Question
	51	Revision of important topics-1
	52	Revision of important topics-2

LASER TECHNOLOGY (PHY-452-E)

Week	Theory	
	Lecture Day	Topic (Including Assignment/Test)
1 st	1	Basic Introduction of Optical Communication
	2	Optical Source: Light Emitting Diode, Laser
	3	Basic Principle of Laser, Conditions for Producing Laser
	4	Problem and Solution
2 nd	5	Spatial Coherence
	6	Temporal Coherence
	7	Population Inversion
	8	Problem and Solution
3 rd	9	Einstein coefficient
	10	Gain and Gain saturation
	11	Saturation intensity
	12	Problem and Solution
4 th	13	Development and Growth of a Laser Beam
	14	Exponential Growth factor
	15	Problem and Solution
	16	Problem and Solution
5 th	17	Threshold Requirement for a Laser
	18	Inversions and two-level systems
	19	steady-state inversions
	20	Problem and Solution
6 th	21	three and four-level systems
	22	Transient Population Inversions
	23	Factors effecting population inversion
	24	Problems and Solutions
7 th	1st Minor Test	
8 th	25	Laser Amplifiers contd...
	26	Laser Amplifiers
	27	Problems and Solutions
	28	Assignment 1
9 th	29	Excitation or Pumping Threshold Requirements
	30	Pumping Pathways
	31	Problems and Solution
	32	Problems and Solution
10 th	33	Specific Excitation
	34	Parameters Associated with Optical Pumping
	35	Parameters Associated with Particle Pumping
	36	Problems and Solution
11 th	37	Different type of Laser
	38	Helium-Neon Laser
	39	Co2 Laser

	40	Problems and Solution
12 th	41	Ruby Laser
	42	Semiconductor Diode Laser
	43	Problems and Solutions
	44	Assignment-II
13 th	45	Revision & Problem Solving of 1 st Unit
	46	Revision & Problem Solving of 1 st Unit
	47	Revision & Problem Solving of 2 nd Unit
	48	Revision & Problem Solving of 2 nd Unit
14 th	2ndMinor Test	
15 th	49	Revision & Problem Solving of 3 rd Unit
	50	Revision & Problem Solving of 3 rd Unit
	51	Revision & Problem Solving of 4 th Unit
	52	Revision & Problem Solving of 4 th Unit

