

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH: 1- DATA COMMUNICATION & COMPUTER NETWORKS (COURSE CODE: ETCPC.301)

Discipline: E&TC ENGG	Semester:5 TH	No. of periods available: 45	Name of Teaching Faculty :SMUTI REKHA SETHI
Subject: DATA COMMUNIC ATION & COMPUTER NETWORKS	No. of Days/ per week class allotted : 3periods /week		Semesterfrom:02.07.2026To 05.11.2026 No.ofweeks:15weeks
Week	Class Day		Theory Topics
1 st	1 st	1	Unit-1:Network & Protocol 1.1 Data Communication
	2 nd	1	1.2 Networks
	3 rd	1	1.3 Protocol & Architecture
2 nd	4 th	1	, Standards- OSI, TCP/IP
	5 th	1	CONTINUE..
	6 th	1	Unit-2:Data Transmission & Media 2.1 Data transmission Concepts and Terminology
3 rd	7 th	1	CONTINUE...
	8 th	1	2.2 Channel capacity
	9 th	1	2.3 Transmission media
4 th	10 th	1	2.4 Guided Transmission
	11 th	1	2.5 Wireless Transmission
	12 th	1	CONTINUE...
5 th	13 th	1	Unit-3:Data Encoding 3.1 Data encoding
	14 th	1	3.2 Digital data digital signals
	15 th	1	CONTINUE..

6 th	16 th	1	3.3 Digital data analog signals
	17 th	1	CLASS TEST :I
	18 th	1	, 3.4 Analog data digital signals
7 th	19 th	1	3.5 Analog data analog signals
	20 th	1	Unit-4:Data Communication & Data link control 4.1 Asynchronous and Synchronous Transmission
	21 st	1	4.2 Error Detection
8 th	22 nd	1	4.3 Line configuration
	23 rd	1	4.4 Flow Control 4.5 Error Control
	24 th	1	4.6 Multiplexing
9 th	25 th	1	4.7 FDM synchronous TDM
	26 th	1	4.8 Statistical TDM
	27 th	1	Unit-5:Switching & Routing 5.1 Circuit Switching networks
10 th	28 th	1	5.2 Packet Switching principles
	29 th	1	5.3 X.25
	30 th	1	5.4 Routing in Packet switching
11 TH	31 st	1	5.5 Congestion
	32 nd	1	5.6 Effects of congestion, congestion control
	33 rd	1	5.7 Traffic Management
12 TH	34 th	1	Unit-6:LAN Technology 6.1 Topology and Transmission Media
	35 th	1	CONTINUE..
	36 th	1	6.2 LAN protocol architecture

13 TH	37 th	1	6.4 Bridges, Hub & Switch
	38 th	1	CLASS TEST :II
	39 th	1	6.5 Ethernet (CSMA/CD)
14 TH	40 th	1	6.6 Wireless LAN Technology
	41 st	1	Unit-7:TCP/IP 7.1 TCP/IP Protocol Suite
	42 nd	1	7.2 Basic Protocol functions
15 th	43 rd	1	7.3 Principles of Internetworking
	44 th	1	7.4 Internet Protocol operations
	45 th	1	7.4 Internet Protocol

Smriti Khera Sethi

Signature of Teaching Faculty

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ACADEMIC LESSON PLAN (WINTER-2026)

**TH-2WAVE PROPAGATION & BROAD BAND COMMUNICATION
ENGINEERING (COURSECODE:ETCPC 303)**

Discipline: E& TC Engineering	Semester:5 TH	No.ofperiods available: 45	Name of Teaching Faculty: ARUNA SATAPATHY
Subject: WAVE PROPAGATION & BROAD BAND COMMUNICATI ON	No. of Days/ perweekclass allotted : 3periods /week		Semesterfrom: 02.07.2026To05.11.2026 No. of weeks : 15weeks
Week	ClassDay		TheoryTopics
1 st	1 st	1	Unit-1:WAVE PROPAGATION & ANTENNA 1.1 Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)
	2 nd	1	1.2 Classification based on Modes of Propagation-Ground wave, Ionosphere,
	3 rd	1	Sky wave propagation,Space wave propagation
2 nd	4 th	1	1.3 Definition: critical frequency, max. useable frequency, skip distance, fading, Duct propagation
	5 th	1	Troposphere scatter propagation actual height and virtual height
	6 th	1	1.4 Radiation mechanism of an antenna, Maxwell equation
3 rd	7 th	1	1.5 Definition: Antenna gains, Directive gain, Directivity, effective aperture polarization, input impedance, efficiency, Radiator resistance
	8 th	1	Bandwidth, Beam width, Radiation pattern1.6 Antenna: Mono pole and dipole antenna and omni directional antenna
	9 th	1	1.7 Operation of the following antenna with advantages & applications 1 Directional high frequency antenna: Yagi
4 th	10 th	1	Rohmbusantenna
	11 th	1	1.7.2 UHF &Microwave antenna.: Dish antenna (with parabolic reflector) & Horn antenna
	12 th	1	1.8 Basic Concepts of Smart Antenna: Concept and benefits of smart antennas.

5 th	13 th	1	Unit-2:TRANSMISSION LINES 2.1 Fundamentals of transmission line,2.2 Equivalent circuit of transmission line
	14 th	1	RF equivalent circuit
	15 th	1	2.3 Characteristics impedance
6 th	16 th	1	methods of calculations & simple numerical
	17 th	1	, 2.4 Losses in transmission line
	18 th	1	2.5 Standing wave: SWR, VSWR, Reflection coefficient, simple numerical
7 th	19 th	1	, Unit-3:TELEVISION ENGINEERING. 3.1 Define: Aspect ratio, Rectangular Switching. Flicker, Horizontal Resolution
	20 th	1	Video bandwidth, Interlaced scanning, Composite video signal, Synchronization pulses
	21 st	1	3.2 TV Transmitter: Block diagram & function of each block.
8 th	22 nd	1	3.3 Monochrome TV Receiver: Block diagram & function of each block.
	23 rd	1	3.4 Color TV signals (Luminance Signal & Chrominance Signal, I & Q, U & V Signals)
	24 th	1	3.5 Types of Televisions by Technology (Concept only): cathode-ray tube TVs, Plasma Display Panels, Digital Light Processing (DLP)
9 th	25 th	1	Liquid Crystal Display (LCD), Organic Light-Emitting Diode (OLED) Display, Quantum Light- Emitting Diode (QLED)
	26 th	1	3.6 Discuss the principle of operation: LCD display, Large Screen Display
	27 th	1	3.7 Digital TV Technology: Digital TV Signals, Transmission of digital TV signals Digital TV receiver Video programme processor unit
10 th	28 th	1	CLASS TEST: I
	29 th	1	Unit-4:MICROWAVE ENGINEERING. 4.1 Define Microwave Wave Guides
	30 th	1	4.2 Operation of rectangular wave guides and its advantage

11 TH	31 st	1	4.3 Propagation of EM wave through wave guide with TE & TM modes
	32 nd	1	4.4 Working of Directional coupler
	33 rd	1	Isolators & Circulator
12 TH	34 th	1	4.5 Microwave tubes-Principle of operational of two Cavity Klystron
	35 th	1	4.6 Principle of Operations of Cyclotron
	36 th	1	4.7 Principle of Operations of Tunnel Diode
13 TH	37 th	1	Principle of Operations of Gunn diode
	38 th	1	Unit-5: Broadband communication 5.1 Broadband communication system: Fundamental of Components and
	39 th	1	Network architecture
14 TH	40 th	1	5.2 Cable broadband data network: architecture, importance
	41 st	1	future of broadband telecommunication internet based network
	42 nd	1	5.3 ISDN: ISDN Devices interfaces, services, Architecture, applications
15 th	43 rd	1	CLASS TEST :II
	44 th	1	5.4 BISDN: Interfaces & Terminals
	45 th	1	protocol architecture applications

Arun Satapathy

Signature of Teaching Faculty

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ACADEMIC LESSON PLAN (WINTER-2026)

TH:3(a)- FIBER OPTIC COMMUNICATIONS (COURSE CODE: ETCPE 301A)

Discipline: E& TC Engineering	Semester: 5 TH	No. of periods available: 45	Name of Teaching Faculty: Suvam Das
Subject: FIBER OPTIC COMMUNICATIONS	No. of Days/ per week class allotted : 3 periods /week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks: 15 weeks
Week	Class Day		Theory Topics
1 st	1 st	1	Unit-1: Introduction to Fiber Optic Communication 1.1 Introduction to vector nature of light
	2 nd	1	continue
	3 rd	1	1.2 Propagation of light
2 nd	4 th	1	continue
	5 th	1	1.3 Propagation of light in a cylindrical dielectric rod
	6 th	1	continue
3 rd	7 th	1	1.4 Ray model
	8 th	1	continue
	9 th	1	1.5 Wave model
4 th	10 th	1	continue
	11 th	1	Unit-2: Optical Fibers 2.1 Different types of optical fibers
	12 th	1	continue
5 th	13 th	1	2.2 Modal analysis of a step index fiber
	14 th	1	continue
	15 th	1	2.3 Signal degradation on optical fiber due to dispersion and attenuation

6th	16 th	1	continue
	17 th	1	2.4 Fabrication of fibers and measurement techniques like OTDR
	18 th	1	Continue
7th	19 th	1	Unit3:Optical sources 3.1 LEDs
	20 th	1	Lasers
	21 th	1	3.2 Photo-detectors
8th	22 th	1	3.3 Pin-detectors
	23 rd	1	3.4 Detector responsively
	24 th	1	3.5 Noise
9th	25 th	1	3.6 Optical receivers
	26 th	1	continue
	27 th	1	Unit-4:Optical link design 4.1 BER calculation
10th	28 th	1	continue
	29 th	1	4.2 Quantum limit
	30 th	1	continue
11 th	31 st	1	4.3 Power penalties
	32 nd	1	continue
	33 rd	1	Unit-5:Optical switches 5.1 Coupled mode analysis of directional couplers

12 th	34 th	1	continue
	35 th	1	5.2 Electro-optic switches
	36 th	1	continue
13 th	37 th	1	continue
	38 th	1	Unit-6:Nonlinear effects in fiber optic links 6.1 Concept of self-phase modulation
	39 th	1	Continue...
14 th	40 th	1	6.2 Group velocity dispersion
	41 th	1	Continue...
	42 nd	1	6.3 Optical amplifiers: EDFA,Raman amplifier
15 th	43 rd	1	Continue...
	44 th	1	6.4 Coherent communication,WDM systems
	45 th	1	Continue...

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ACADEMIC LESSON PLAN (WINTER-2026)

TH: 4(a)- OPTO- ELECTRONICS (COURSE CODE: ETCPE303 (A))

Discipline: E&TC ENGG	Semester: 5 TH	No. of periods available: 45	Name of Teaching Faculty: SITAKANTA MISHRA
Subject: OPTO- ELECTRONICS	No. of Days/ per week class allotted : 3 periods /week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks: 15 weeks
Week	Class Day		Theory Topics
1 st	1 st	1	Unit-1: Semiconductors 1.1 Introduction to semiconductors
	2 nd	1	1.2 Doping
	3 rd	1	1.3 Alloy Semiconductors
2 nd	4 th	1	1.4 Electron-hole pair formation and recombination
	5 th	1	1.5 Energy bands in solids
	6 th	1	Unit-2: Optical Processes in Semiconductors 2.1 Absorption in semiconductors
3 rd	7 th	1	2.1.1 Indirect intrinsic transitions
	8 th	1	2.1.2 Exciton absorption
	9 th	1	2.2 Donor acceptor and impurity band absorption
4 th	10 th	1	2.3 Effect of electric field on absorption
	11 th	1	2.4 Radiation in Semiconductors 2.4.1 Relation between absorption and emission spectra
	12 th	1	2.4.2 Near band gap radioactive transitions

5 th	13 th	1	Unit-3:Optoelectronic detectors 3.1 Photoconductors
	14 th	1	3.2 Junction Photodiodes
	15 th	1	3.3 PIN Photodiodes
6 th	16 th	1	3.4 Hetero junction diodes
	17 th	1	3.5 Avalanche Photodiodes
	18 th	1	3.6 Phototransistors
7 th	19 th	1	3.7 Modulated barrier Photodiode
	20 th	1	3.8 Metal- semiconductor -metal photodiode
	21 th	1	Unit-4:Photovoltaic devices 4.1 Solar energy spectrum
8 th	22 nd	1	4.2 Device principles
	23 rd	1	4.3 I-V characteristics
	24 th	1	4.4 Equivalent circuit
9 th	25 th	1	4.5 Materials, devices and efficiencies
	26 th	1	Unit-5:Light emitting diode 5.1 Electroluminescent process
	27 th	1	5.2 Choice of LED materials
10 th	28 th	1	5.3 Device configuration and efficiency
	29 th	1	5.4 Light output from LED, LED structure
	30 th	1	5.5 Heterojunction LED 5.6 Surface emitting LED

11 TH	31 st	1	5.7 Device performance characteristics
	32 nd	1	5.8 Frequency response and modulation bandwidth
	33 rd	1	Unit-6:Laser diode 6.1 Junction laser operating principles 6.2 Threshold current
12 TH	34 th	1	6.3 Hetero junction lasers
	35 th	1	6.4 Distributed feedback lasers
	36 th	1	6.5 Cleaved coupled cavity laser
13 TH	37 th	1	6.6 Quantum well lasers
	38 th	1	6.7 Modulation of lasers- rate equations
	39 th	1	6.8 Steady state solution
14 TH	40 th	1	6.9 Transient phenomena and frequency response
	41 st	1	Unit-7:Optical fiber 7.1 Introduction to optical fiber
	42 nd	1	7.2 Structure of optical fiber
15 th	43 rd	1	7.3 Propagation of light through a numerical aperture
	44 th	1	7.4 Pulse broadening
	45 th	1	7.5 Advantages and disadvantages of fiber optics

Sitakanta Mishra

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ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-5(b) LEADERSHIP AND MANAGEMENT SKILL (COURSE CODE: OE301 (B))

Discipline: E&TC ENGG	Semester: 5 TH	No. of periods available: 45	Name of Teaching Faculty: HIMADRI TANAYA MOHAPATRA
Subject: Leadership & Management Skills	No. of Days/ per week class allotted : 3 periods /week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks: 15 weeks
Week	Class Day		Theory Topics
1 st	1 st	1	UNIT 1 : Leadership & Management, concept, principles – Definition of leadership, management Leadership theories
	2 nd	1	Leadership characteristics
	3 rd	1	Principles of management
2 nd	4 th	1	Managerial functions
	5 th	1	Leader vs Manager, Leader/Manager traits and character
	6 th	1	Leadership Styles
3 rd	7 th	1	Leadership theories
	8 th	1	Leadership characteristics and Leadership Styles
	9 th	1	Principles of management and Managerial functions
4 th	10 th	1	Quiz – Unit I
	11 th	1	UNIT 2: Human Resource Management: Meaning, Nature
	12 th	1	Human Resource Management: Objectives, Scope
5 th	13 th	1	Job & Job analysis
	14 th	1	Staff Development: Need and Objectives of Staff Development
	15 th	1	Staff Development: Approaches
6 th	16 th	1	Training & development

	17 th	1	Organizational Development: Components of OD process
	18 th	1	Learning organization
7 th	19 th	1	Training & development
	20 th	1	Organizational Development and Learning organization
	21 th	1	Class Test – Units I & II
8 th	22 nd	1	UNIT 3: personal disposition, skill & ability of leaders Self-awareness, Leadership characteristics, traits
	23 rd	1	Leadership skills & abilities, Emotional intelligence & its components, Importance in leadership
	24 th	1	Communication skills for effective leadership, Barriers to effective communication
9 th	25 th	1	Active Listening, Mindful listening
	26 th	1	Leading & Mentoring – Influencing & mentoring
	27 th	1	UNIT 4: Leader's role in Motivating, Inspiring and Transformative leadership, nurturing team-work Goal setting & leadership
10 th	28 th	1	Transformative Leadership
	29 th	1	Vision & envisioning
	30 th	1	Motivational role of leader in people management
11 TH	31 st	1	Group & team
	32 nd	1	Team dynamics
	33 rd	1	Conflict management
12 TH	34 th	1	Strategies in managing conflicts
	35 th	1	Revision
	36 th	1	UNIT 5: Change Management & Leadership Models of change
13 TH	37 th	1	Forces driving change
	38 th	1	Change Management – process

	39 th	1	Change Management –goal, importance
14 TH	40 th	1	The process of change happening in an organization
	41 st	1	Key aspects of leadership in change management
	42 nd	1	Responsibilities of a change leader
15 th	43 rd	1	Models of change and Forces driving change
	44 th	1	Group discussion
	45 th	1	Class Test –Units III, IV & V

Himadritanya Mohapatra

Signature of Teaching Faculty