ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (SUMMER-2026)

TH: 1- ANALOG CIRCUITS (COURSE CODE: ETCPC202)

Discipline: E&TC ENGG	Semester:4TH	NameoftheTeachingFaculty:ARUNA SATAPATHY
Subject:TH:1-ANALOG CIRCUITS	No.ofdays/per week class allotted: 3p/week	Semester From :05th Jan 2026 to 18th April 2026 No.of Weeks: 15
WEEK	CLASS DAY	THEORY TOPICS
1st	1st	DIODE CIRCUITs 1.1 Half Wave & Full WaveRectifiers with Concept of Filter Circuit. 1.2 Different type of Non-linear circuits - Clipper
	2nd	diode series &shunt,positive& negative biased
	3rd	unbiased and combinational clipper circuit & its application
2nd	1st	1.3 Different type of Clamper circuit (positive & negative clampers) & itsapplication.
	2nd	AMPLIFIER 2.1 Amplifier models:2.1.1 Voltage amplifier, 2.1.2 Current amplifier 2.1.3 Trans-conductance amplifier, 2.1.4 Trans-resistance amplifier
	3rd	2.2 Small signal analysis 2.3 Low frequency transistor models
3rd	1st	2.4 Estimation of voltage gain, input resistance, output resistance
	2nd	2.5 Design procedure for particular specifications
	3rd	2.6 Low frequency analysis of multistage amplifiers
4th	1st	2.7 High frequency transistor models
	2nd	2.8 Frequency response of single stage and multistage amplifiers, cascade
	3rd	TUNED AMPLIFIER3. 3.1 Defined and classify Tuned amplifier
5th	1st	3.2 Explain parallel Resonant circuit
	2nd	3.3 Resonance Curve& sharpness of Resonance.
	3rd	3.4 Working principle of Single tuned Voltage & Double tuned Amplifier & its limitation
6th	1st	**OPERATIONAL AMPLIFIER** 4.1 Differential amplifier & explain its configuration with significance
	2nd	4.2 Op-Amp 4.2.1 Block diagram of Op-Amp 4.2.2 Symbol of Op-Amp 4.2.3 Characteristics Op-Amp
	3rd	4.2.4 Open loop and closed loop amplifier 4.2.5 Virtual ground concept
7th	1st	4.2.6 IC-741 and its pin configuration
	2nd	4.3 Op-Amp parameters 4.3.1 Input offset voltage4.3.2 Output offset voltage4.3.3 Input offset current4.3.4 Input bias current
	3rd	4.3.5 Common Mode Rejection Ratio 4.3.6 Slew rate 4.3.7 Input and output Impedance

8th	1st	4.3.8 Bandwidth and gain bandwidth product 4.3.9 Drift parameters
	2nd	4.4 Discussthe types of integrated circuits, manufacturer's designations of ICs, Package types, pin identification and temperature and ordering information
	3rd	4.5 Draw and explain the Open Loop configuration (inverting, non-inverting Amplifier)
9th	1st	4.6 Draw and explain the Closed loop configurations: inverting and noninverting.
	2nd	APPLICATION OF OPERATIONAL AMPLIFIER 5.1 Basic mathematical applications such as adder and subtractor 5.2 Discusthe summing scaling using inverting and non-inverting amplifiers
	3rd	5.3 DC & AC Amplifies usingOP-AMP. 5.4 Integrator and differentiator using op-amp.
10th	1st	5.5 Sample and Hold circuit 5.6 I-V converter and V-I converter
	2nd	5.7 Concept of Zero-Crossing Detector using Op-Amp (Inverting and Non Inverting type) 5.8 Comparator
	3rd	5.9 Schmitt Trigger 5.10 Peak Detector5.11 Active filter using OP-AMP
11th	1st	5.12 Voltage to Frequency Convertor using Operational Amplifier5.13 Frequency to Voltage Conversion using Operational Amplifier
	2nd	**Integrated Circuit Timer** 6.1 Internal block diagram, pin connection of a 555 timer chip
	3rd	Continue…
12th	1st	6.2 Function of Output, Reset, Discharge, Control voltage,
	2nd	Trigger and Threshold terminals of a 555 timer
	3rd	6.3 555 timer used as, AstableMulti-vibrator, Monostable Multi-vibrator
13th	1st	Pulsewidth modulator and Pulse position modulator
	2nd	Class test
	3rd	**Power Supply and Regulated Power Supply** 7.1 Design a full wave bridge rectifier circuit by choosing the proper size of transformer, diode and capacitors
14th	1st	7.2 Measure the percent regulation and percent ripple of dc power supply
	2nd	7.3 Design a bipolar unregulated power supply
	3rd	7.4 Design a fixed dual voltage power supply using 7800 and 7900n series of
15th	1st	IC three terminal regulator
	2nd	7.5 Design an adjustable dual voltage regulated power supply using LM317 and LM337 chips
	3rd	revision

Aroma Satapathy

Signature of Teaching faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (SUMMER-2026)

TH:2- ANALOG & DIGITAL COMMUNICATION (COURSE CODE:ETCPC204)

Discipline: E&TC ENGG	Semester:4TH	Name of the Teaching Faculty: Suvam Das
Subject:TH:2- ANALOG & DIGITAL COMMUNICATION	No.ofdays/per week class allotted: 3P/week	Semester From :05th Jan 2026 to 18th April 2026 No.of Weeks: 15
WEEK	**CLASS DAY**	**THEORY TOPICS**
1st	1st	Elements of Communication Systems 1.1 Communication Process 1.2 Concept of Elements of Communication System & its Block diagram
	2nd	1.3 Source of information & Communication Channels 1.4 Classification of Communication systems
	3rd	continue
2nd	1st	1.5 Modulation Process 1.6 Need of modulation and classify modulation process
	2nd	1.7 Analog and Digital Signals & its conversion.
	3rd	1.8 Basic concept of Signals & Signals classification (Analog and Digital) 1.9 Bandwidth limitation
3rd	1st	Amplitude (linear) Modulation System 2.1 Amplitude modulation
	2nd	2.2 Derive the expression for amplitude modulation signal, power relation in AM wave
	3rd	2.3 Modulation Index
4th	1st	2.4 Generation of Amplitude Modulation (AM)- Linear level AM modulation
	2nd	2.5 Demodulation of AM waves- Envelope detector
	3rd	2.6 Concept of SSB signal and DSBSC signal
5th	1st	2.7 Concept of Balanced modulators
	2nd	2.8 Vestigial Side Band Modulation
	3rd	Angle Modulation Systems 3.1 Concept of Angle modulation & its types (PM & FM)
6th	1st	3.2 Basic principle of Frequency Modulation
	2nd	3.3 Frequency Spectrum of FM Signal. Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal
	3rd	3.4 Explain Phase modulation & difference of FM & PM)- working principle with Block Diagram
7th	1st	3.5 Compare between AM and FM modulation (Advantages & Disadvantages)
	2nd	3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram
	3rd	3.7 Methods of FM Demodulator or detector (Forster -Seely method)
8th	1st	AM & FM TRANSMITTER & RECEIVER 4.1 Classification of Radio Receivers 4.2 Define the terms Selectivity, Sensitivity, Fidelity and Noise Figure
	2nd	4.3 AM transmitter - working principle with Block Diagram
	3rd	4.4 Concept of Frequency conversion, RF amplifier & IF amplifier, Tuning, S/N ratio
9th	1st	4.5 Working of super heterodyne radio receiver with Block diagram
	2nd	4.6 Working of FM Transmitter with block diagram
	3rd	Working of FM Receiver with block diagram
10th	1st	ANALOG TO DIGITAL CONVERSION & PULSE MODULATION SYSTEM 5.1 Concept of Sampling Theorem, Nyquist rate & Aliasing
	2nd	5.2 Sampling Techniques (Instantaneous, Natural, Flat Top)
	3rd	5.3 Analog Pulse Modulation - Generation and detection of PAM, PWM &PPM system with the help of Block diagram & comparison of all above.

11th	1st	5.4 Concept of Quantization of signal & Quantization error.
	2nd	5.5 Generation & Demodulation of PCM system with Block diagram & its applications.
	3rd	5.6 Companding in PCM &Vocoder
12th	1st	5.7 Time Division Multiplexing & explain the operation with circuit diagram.
	2nd	5.8 Generation & demodulation of Delta modulation with Block diagram.
	3rd	5.9 Generation & demodulation of DPCM with Block diagram.
13th	1st	5.10 Comparison between PCM, DM , ADM & DPCM
	2nd	DIGITALMODULATION TECHNIQUES 6.1 Concept of Multiplexing (FDM & TDM)- (Basic concept, Transmitter & Receiver) & Digital modulation formats
	3rd	6.2 Advantages of digital communication system over Analog system 6.3 Digital modulation techniques & types
14th	1st	6.4 Generation and Detection of binary ASK, FSK, PSK,
	2nd	6.5 Concept of QPSK, QAM, MSK, GMSK
	3rd	6.6 Working of T1-Carrier system 6.7 Spread Spectrum & its applications
15th	1st	6.8 Concept of Spread Spectrum Modulation Techniques
	2nd	6.9 Define bit, Baud, symbol & channel capacity formula (Shannon Theorems)
	3rd	6.10 Types of Modem & its Application

Sanam Das

Signature of Teaching faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (SUMMER-2026)

TH: 3- MICROPROCESSORS & MICROCONTROLLER(ETCPC206)

Discipline: E&TC ENGG	Semester: 4TH	NameoftheTeachingFaculty: ARUNA SATAPATHY
Subject: TH:3- MICROPROCESSORS & MICROCONTROLLER	No.ofdays/per week class allotted: 3p/week	Semester From :05th Jan 2026 to 18th April 2026 No.of Weeks: 15
WEEK	**CLASS DAY**	**THEORY TOPICS**
1st	1st	**Architecture of 8085 Microprocessor** Introduction to Microprocessor, Functional Block Diagram
	2nd	Continue…
	3rd	Bus systems
2nd	1st	Timing and control signals
	2nd	Machine cycles and timing diagrams
	3rd	continue
3rd	1st	**Programming of 8085.** Instruction formats
	2nd	addressing modes
	3rd	Instruction set
4th	1st	Assembly language. Need for Assembly language
	2nd	Development of Assembly language programmes
	3rd	continue
5th	1st	Class test
	2nd	**Memory Interfacing** Interface requirements
	3rd	Address space partitioning
6th	1st	Buffering of Buses – timing constraints
	2nd	continue
	3rd	Memory control signals – Read and write cycles
7th	1st	Interfacing SRAM, EPROM and DRAM sections.
	2nd	continue
	3rd	**I/O Interfacing**
8th	1st	Memory mapped I/O Scheme -I/O mapped I/O scheme
	2nd	Input and Output cycles– Simple I/O ports
	3rd	Programmable peripheral
9th	1st	Interfacing – Simple
	2nd	Keyboards and LED displays.
	3rd	DMA controller 8237
10th	1st	**Applications** Interfacing of A/D converters (ADC 0800/ADC 0808/ADC 0809)

	2nd	Continue
	3rd	Interfacing of D/A converters (DAC 0800)
11th	1st	Waveform generators
	2nd	– Multiplexed seven segment LED display systems
	3rd	Measurement of frequency, phase angle and power factor
12th	1st	Traffic light controller – Stepper motor Control.
	2nd	**Intel 8051 Microcontroller** Architecture of 8051
	3rd	Addressing modes
13th	1st	Instruction set
	2nd	Boolean processing
	3rd	Simple programmes.
14th	1st	Class test
	2nd	**8051 Peripheral Functions** 8051 interrupt structures
	3rd	Timer and serial functions – parallel port features
15th	1st	Modes of operation – Power control, features
	2nd	Interfacing of 8051 – Typical applications
	3rd	MCS 51 family features 8031/8051/8751.

Aneena Sathyadhy

Signature of Teaching faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (SUMMER-2026)

TH: 4(B)- VLSI DESIGN(COURSE CODE: ETCPE 202(b))

Discipline: E&TC ENGG	Semester: 4TH	Name of the Teaching Faculty: SITAKANTA MISHRA
Subject: TH:4(B)-VLSI DESIGN	No.ofdays/per week class allotted: 3p/week	Semester From :05th Jan 2026 to 18th April 2026 No.of Weeks: 15
WEEK	CLASS DAY	THEORY TOPICS
1st	1st	**Introduction to VLSI** CMOS Logic, Combinational and sequential circuits
	2nd	CMOS fabrication and layouts
	3rd	Layout representations ,Stick diagrams
2nd	1st	Design partitioning 1.7 Logic design 1.8 Circuit design 1.9 Physical design
	2nd	1.10 Design verification, fabrication, packaging and testing 1.11 Design Flow.
	3rd	1.12 Modelling of MOS transistor 1.13 Capacitance voltage characteristics 1.14 Non-ideal effects DC transfer characteristics
3rd	1st	1.15 MOS Inverter 1.16 MOS Transistor Switches
	2nd	1.17 CMOS Logic design 1.18 Circuit and System Representations 1.19 Design Equations, 1.20 Static Load MOS Inverters
	3rd	1.21 Transistor Sizing 1.22 Static and Switching Characteristics. 1.23 Body Effect 1.24 Noise Margin
4th	1st	**Delay and Power** 2.1 Transient Response 2.2 RC Delay Model
	2nd	2.3 Effective Resistance 2.4 Gate and Diffusion Capacitance
	3rd	2.4 Gate and Diffusion Capacitance 2.5 Equivalent RC Circuits
5th	1st	2.6 Transient Response 2.7 Elmore Delay
	2nd	2.8 Layout Dependence of Capacitance 2.9 Determining Effective Resistance
	3rd	2.10 Linear Delay Model Logical Effort 2.11 Parasitic Delay
6th	1st	2.12 Delay in a Logic Gate Drive
	2nd	2.13 Extracting Logical Effort from Datasheets
	3rd	2.14 Limitations to the Linear Delay Model

		2.15 Logical Effort of Paths
7th	1st	2.16 Delay in Multistage Logic Networks 2.17 Choosing the Best Number of Stages
	2nd	2.18 Sources of power dissipation
	3rd	2.19 Dynamic power 2.20 Static power
8th	1st	2.21 Wire Geometry 2.22 Example of Metal Stacks
	2nd	2.23 Interconnect Modelling, Resistance, Capacitance and Inductance
	3rd	2.24 Skin Effect and Temperature Dependence 2.25 Interconnect Impact, Delay, Energy, Crosstalk and Inductive Effects
9th	1st	Class test
	2nd	**Circuit Design** 3.1 Circuit Families
	3rd	3.2 Static CMOS
10th	1st	3.3 Ratioed Circuits
	2nd	3.4 Cascade Voltage Switch Logic
	3rd	3.5 Dynamic Circuits
11th	1st	3.6 Pass-Transistor Circuits
	2nd	3.7 Sequencing Static Circuits 3.8 Sequencing Methods
	3rd	3.9 Max-Delay Constraints 3.10 Min-Delay Constraints
12th	1st	3.11 Time Borrowing 3.12 Clock Skew
	2nd	3.13 Circuit Design of Latches and Flip-Flops
	3rd	3.14 Conventional CMOS Latches
13th	1st	3.15 Conventional CMOS Flip-Flops 3.16 Pulsed Latches
	2nd	3.17 Resettable Latches and Flip-Flops 3.18 Enabled Latches and Flip-Flops
	3rd	3.19 Incorporating Logic into Latches
14th	1st	Class test
	2nd	**Subsystems Design** 4.1 Adders, zero one detectors
	3rd	4.2 Comparators, counters
15th	1st	4.3 Memory subsystems SRAM
	2nd	4.4 Read and write operation 4.5 DRAM
	3rd	4.6 Sense amplifiers

S. K. Mishra.

Signature of Teaching faculty

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ACADEMIC LESSON PLAN (SUMMER-2026)

TH: 5(b)- FUNDAMENTALS OF POWER ELECTRONICS ((COURSE CODE:ETCPE204(b))

Discipline: E&TC ENGINEERING	Semester:4TH	NameoftheTeachingFaculty:ANITA DAS
Subject: TH5(b): FUNDAMENTALS OF POWER ELECTRONICS	No.ofdays/per week class allotted: 3p/week	Semester From :05th Jan 2026 to 18th April 2026 No.of Weeks: 15
WEEK	CLASS DAY	THEORY TOPICS
1st	1st	**Power Electronic Devices UNIT-1** 1.1 Power electronic devices
	2nd	1.2 Power transistor
	3rd	1.2.1 construction and working principle 1.2.2 V-I characteristics and uses
2nd	1st	Solved problems
	2nd	1.3 IGBT
	3rd	1.3.1 Construction and working principle 1.3.2 V-I characteristics and uses
3rd	1st	1.4 Concept of single electron transistor (SET) 1
	2nd	1.5 Aspects of Nano- technology(concept only)
	3rd	Solved problems
4th	1st	**CLASSTEST/QUIZONTOPICSCOVEREDINUNIT-1**
	2nd	**Thyristor Family DevicesUNIT-2** 2.1 SCR
	3rd	2.1.1 Construction of SCR 2.1.2 Two transistor analogy of SCR
5th	1st	2.1.3 Types, working and characteristics
	2nd	2.1.4 SCR mounting and cooling
	3rd	2.2 Types of Thyristors: SCR, LASCR, SCS, GTO, UJT
6th	1st	PUT, DIAC and TRIAC
	2nd	2.3 Thyristor family devices 2.3.1 Symbol and construction
	3rd	2.3.2 Operating principle 2.3.3 V-I characteristics 2.4 Protection circuits
7th	1st	2.4.1 Over-voltage 2.4.2 Over-current
	3rd	2.4.4 Crowbar

8th	1st	Solved problems
	2nd	**CLASSTEST/QUIZONTOPICSCOVEREDINUNIT-2**
	3rd	**Turn-on and Turn-off Methods of ThyristorsUNIT-3** 3.1 SCR Turn-On methods 3.1.1 High Voltage thermal triggering
9th	1st	3.1.2 Illumination triggering
	2nd	3.1.3 dv/dt triggering
10th	1st	3.2.1 Resistance and Resistance-Capacitance circuits
	2nd	3.3 SCR triggering using UJT
	3rd	3.4 PUT: Relaxation Oscillator and Synchronized UJT circuit 3.5 Pulse transformer and opto-coupler based triggering
11th	1st	3.6 SCR Turn-Off methods: 3.6.1 Class A- Series resonant commutation circuit
	2nd	3.6.2 Class B-Shunt Resonant commutation circuit
	3rd	3.6.3 Class C-Complimentary Symmetry commutation circuit 3.6.4 Class D-Auxiliary commutation
12th	1st	3.6.5 Class E-External pulse commutation
	2nd	3.6.6 Class F-Line or natural commutation
	3rd	**CLASSTEST/QUIZONTOPICSCOVEREDINUNIT-3**
13th	1st	**Phase Controlled RectifiersUNIT-4** 4.1 Phase control: firing angle, conduction angle.
	2nd	4.2 Single phase half controlled, full controlled and midpoint controlled rectifier with R, RL load
	3rd	4.2.1 Circuit diagram, working, input- output waveforms, equations for DC output and effect of freewheeling diode 4.3 Different configurations of bridge controlled rectifiers: Full bridge, half bridge with common anode, common cathode, SCRs in one arm and diodes in anotherarm
14th	1st	**CLASSTEST/QUIZONTOPICSCOVEREDINUNIT-4**
	2nd	**Industrial Control CircuitsUNIT-5**
	3rd	5.1 Applications: Burglar's alarm system, Battery charger using SCR, Emergency light system, Temperature controller using SCR and; Illumination control/fan speed control TRIAC
15th	1st	5.2 SMPS5.3 UPS: Offline and Online
	2nd	5.4 SCR based AC and DC circuit breakers
	3rd	**CLASSTEST/QUIZONTOPICSCOVEREDINUNIT-4**

Anita Das.

Signature of Teaching faculty