



**LESSON PLAN**

**DEPARTMENT: ELECTRONICS AND TELECOMMUNICATION**

**BHUBANANANDA ORSSIA SCHOOL OF ENGINEERING, CUTTACK**

**ACADEMIC SESSION: 2022-23**

**SEMESTER: 5<sup>th</sup> SEM**

**SUBJECT: ANALOG AND DIGITAL COMMUNICATION**

# Bhubanananda Orissa School of Engineering

## Lesson Plan

Discipline: ETC ENGG	Semester: 5 <sup>th</sup>	Name of the Teaching Faculty: RUPALI LAYAK, LECTURER IN ETC
<b>Subject:</b> Analog & Digital Communication	No of Days/ per week class allotted: 05 (Mon, Tue, Wed, Thu, Fri - 1 period each)	Semester from 15.09.2020 to 22.12.2020 No. of weeks: 15
Week No.	Class Day	Theory Topics
1 <sup>st</sup>	15-09-2022	<b>Unit 1: Elements of Communication Systems</b> 1.1 Communication Process- Concept of Elements of Communication System & its Block diagram
	16-09-2022	1.2 Source of information & Communication Channels
2 <sup>nd</sup>	19-09-2022	1.3 Classification of Communication systems ( Line & Wireless or Radio)
	20-09-2022	1.4 Modulation Process & Need of modulation
	21-09-2022	1.4 Classify modulation process
	22-09-2022	1.5 Analog and Digital Signals & its conversion.
	23-09-2022	1.6 Basic concept of Signals & Signals classification (Analog and Digital)
3 <sup>rd</sup>	26-09-2022	1.7 Bandwidth limitation
	27-09-2022	<b>Unit 2: Amplitude (Linear) Modulation System</b> 2.1 Amplitude modulation & derive the expression for amplitude modulation signal
	28-09-2022	2.1 Power relation in AM wave & find Modulation Index.
	29-09-2022	2.2 Generation of Amplitude Modulation (AM)- Linear level AM modulation only
	30-09-2022	2.2 Generation of Amplitude Modulation (AM)- Linear level AM modulation only
5 <sup>th</sup>	10-10-2022	2.3 Demodulation of AM waves (Liner diode detector)
	11-10-2022	2.3 Demodulation of AM waves (Square law detector)
	12-10-2022	2.3 Demodulation of AM waves (PLL)
	13-10-2022	2.4 Explain SSB signal and DSBSC signal
	14-10-2022	2.5 Methods of generating & detection SSB-SC signal (Indirect
6 <sup>th</sup>	17-10-2022	2.6 Methods of generation DSB-SC signal (Ring Modulator )
	18-10-2022	2.6 Methods of detection of DSB-SC signal(Synchronous detection)
	19-10-2022	2.7 Concept of Balanced modulators
	20-10-2022	2.8 Vestigial Side Band Modulation
	21-10-2022	<b>1<sup>st</sup> Class Test</b>
7 <sup>th</sup>	25-10-2022	<b>Unit 3:</b> <b>Angle Modulation Systems</b> 3.1 Concept of Angle modulation & its types (PM & FM)
	26-10-2022	3.2 Basic principle of Frequency Modulation & Frequency Spectrum of FM Signal.
	27-10-2022	3.3 Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal
	28-10-2022	3.4 Explain Phase modulation & difference of FM & PM

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8 <sup>th</sup>	31-10-2022	3.4 Working principle of FM & PM with Block Diagram
	1-11-2022	3.5 Compare between AM and FM modulation (Advantages & Disadvantages)
	2-11-2022	3.6 Methods of FM Generation (Indirect (Armstrong) method only) working principle with Block Diagram
	3-11-2022	3.7 Methods of FM Demodulator or detector (Forster-Seely)-working principle with Block Diagram
	4-11-2022	3.7 Methods of FM Demodulator or detector (Ratio detector)-working principle with Block Diagram
9 <sup>th</sup>	7-11-2022	<b>Unit 4: AM &amp; FM Transmitter &amp; Receiver</b> 4.1 Classification of Radio Receivers
	9-11-2022	4.2 Define the terms Selectivity, Sensitivity, Fidelity and Noise Figure
	10-11-2022	4.3 AM transmitter - working principle with Block Diagram
	11-11-2022	4.4 Concept of Frequency conversion, RF amplifier & IF amplifier, Tuning, S/N ratio
10 <sup>th</sup>	14-11-2022	4.5 Working of super heterodyne radio receiver with Block diagram
	15-11-2022	4.6 Working of FM Transmitter & Receiver with Block Diagram
	16-11-2022	<b>1<sup>st</sup> Internal Exam</b>
	17-11-2022	<b>Unit 5: Analog to Digital Conversion &amp; Pulse Modulation System</b> 5.1 Concept of Sampling Theorem , Nyquist rate & Aliasing
	18-11-2022	5.2 Sampling Techniques ( Instantaneous, Natural, Flat Top)
11 <sup>th</sup>	21-11-2022	5.3 Analog Pulse Modulation - Generation and detection of PAM, PWM & PPM system with the help of Block diagram Comparison of PAM, PWM & PPM system
	22-11-2022	5.4 Concept of Quantization of signal & Quantization error
	23-11-2022	5.5 Generation & Demodulation of PCM system with Block diagram & its applications
	24-11-2022	5.6 Companding in PCM & Decoder
	25-11-2022	5.7 Time Division Multiplexing & explain the operation with circuit diagram
12 <sup>th</sup>	28-11-2022	5.8 Generation & demodulation of Delta modulation with Block diagram
	29-11-2022	5.9 Generation & demodulation of DPCM with Block diagram
	30-11-2022	5.10 Comparison between PCM, DM , ADM & DPCM
	1-12-2022	<b>2<sup>nd</sup> Class Test</b>
	2-12-2022	<b>Unit 6: Digital Modulation Techniques</b> 6.1 Concept of Multiplexing (FDM & TDM)- ( Basic concept , Transmitter & Receiver) & Digital modulation formats

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13 <sup>th</sup>	5-12-2022	6.2 Advantages of digital communication system over Analog system
		6.3 Digital modulation techniques & types
	6-12-2022	6.4 Generation and Detection of binary ASK, FSK,
	7-12-2022	6.4 Generation and Detection of binary ASK, FSK, PSK
	8-12-2022	QAM, MSK, GMSK
	9-12-2022	6.5 Working of T1-Carrier system
14 <sup>th</sup>	12-12-2022	6.6 Spread Spectrum & its applications
	13-12-2022	6.7 Working operation of Spread Spectrum Modulation Techniques (DS-SS & FH-SS)
	14-12-2022 15-12-2022	6.8 Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
	16-12-2022	6.10 Types of Modem & its Application
15 <sup>th</sup>	19-12-2022	2 <sup>nd</sup> Internal Exam
	20-12-2022	OVERALL REVISION
	21-12-2022	OVERALL REVISION
	22-12-2022	OVERALL REVISION

*Rupali Layak*

Signature of Faculty

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13/19

Principal