# BHUBANANANDA ORISSA SCHOOL OF ENGINEERING

## LESSON PLAN

BY: JYOTI PRAKASH BEHURA

**SUBJECT:** WAVE PROPAGATION & BROADBAND COMM. ENGG.

**SEMESTER:** 5TH

**BRANCH:** E&TC

# Bhubanananda Orissa School of Engineering
## Lesson Plan

| Discipline: E&TC | Semester:5th | Name of the Teaching Faculty : JYOTI PRAKASH BEHURA |
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| Subject: WP & BC (TH-4) | No of Days/per week class allotted:4(MON ,THU,FRI,SAT) | Semester from 15.09 2022 to 22.12.2022<br>No of weeks:14 |
| Week No. | Class Day | Theory Topics |
| 1st | 15-09-2022 | **Unit-1: WAVE PROPAGATION & ANTENNA**<br>1.1 Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only) |
| | 16-09-2022 | 1.2 Classification based on Modes of Propagation-Ground wave, Ionosphere ,Sky wave propagation, Space wave propagation |
| | 17-09-2022 | 1.3 Definition – critical frequency, max. useable frequency, skip distance, fading, Duct propagation |
| 2nd | 19-09-2022 | Troposphere scatter propagation actual height and virtual height |
| | 22-09-2022 | 1.4 Radiation mechanism of an antenna-Maxwell equation<br>1.5 Definition - Antenna gains, Directive gain concept. |
| | 23-09-2022 | Definition - Directivity, effective aperture, polarization concept. |
| | 24-09-2022 | Definition of input impedance, efficiency, Radiator resistance, Bandwidth, Beam width, Radiation pattern |
| 3rd | 26-09-2022 | 1.6 Antenna -types of antenna<br>Mono pole antenna |
| | 29-09-2022 | Dipole antenna and omni directional antenna |
| | 30-09-2022 | 1.7 Operation of following antenna with advantage & applications. a) Directional high frequency antenna : , Yagi &Rohmbus only |
| | 01-10-2022 | b) UHF &Microwave antenna.: Dish antenna (with parabolic reflector) & Horn antenna |
| 4th | 10-10-2022 | 1.8 Basic Concepts of Smart Antennas- Concept and benefits of smart antenna |
| | 13-10-2022 | **Unit-2: TRANSMISSION LINES.**<br>2.1 Fundamentals of transmission line<br>2.2 Equivalent circuit of transmission line & RF equivalent circuit |
| | 14-10-2022 | 2.3 Characteristics impedance, methods of calculations |
| | 15-10-2022 | Simple numerical. 2.4 Losses in transmission line. |
| 5th | 17-10-2022 | 2.5 Standing wave – SWR, VSWR, Reflection coefficient, simple numerical. |

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| | 20-10-2022 | 2.6 Quarter wave & half wavelength line |
| | 21-10-2022 | 2.7 Impedance matching & Stubs – single & double 2.8 Primary & secondary constant of X-mission line. |
| | 22-10-2022 | **CLASS TEST-I** |
| 6th | 27-10-2022 | **Unit-3: TELEVISION ENGINEERING.** 3.1 Define-Aspect ratio, Rectangular Switching. Flicker, Horizontal Resolution, Video bandwidth |
| | 28-10-2022 | Interlaced scanning, Composite video signal, Synchronization pulses |
| | 29-10-2022 | 3.2 TV Transmitter – Block diagram & function of each block |
| 7th | 31-10-2022 | 3.3 Monochrome TV Receiver -Block diagram & function of each block. |
| | 03-11-2022 | 3.4 Colour TV signals (Luminance Signal & Chrominance Signal,( I & Q,U & V Signals).. |
| | 04-11-2022 | 3.5 Types of Televisions by Technology- cathode-ray tube TVs, Plasma Display Panels |
| | 05-11-2022 | Digital Light Processing (DLP) ,Liquid Crystal Display (LCD) |
| 8th | 07-11-2022 | Organic Light-Emitting Diode (OLED) Display, Quantum Light-Emitting Diode (QLED) – **only Comparison based on application** |
| | 10-11-2022 | 3.6 Discuss the principle of operation - LCD display, Large Screen Display. |
| | 11-11-2022 | 3.7 CATV systems & Types & networks |
| | 12-11-2022 | 3.8 Digital TV Technology-Digital TV Signals Transmission of digital TV signals |
| 9th | 14-11-2022 | Digital TV receiver Video programme processor unit. |
| | 17-11-2022 | **Unit-4: MICROWAVE ENGINEERING.** **4.1 Define Microwave Wave Guides.** |
| | 18-11-2022 | **1st Internal Assessment** |
| | 19-11-2022 | 4.2 Operation of rectangular wave gives and its advantage. |
| 10th | 21-11-2022 | 4.3 Propagation of EM wave through wave guide with TE & TM modes. |
| | 24-11-2022 | 4.4 Circular wave guide.4.5 Operational Cavity resonator. |
| | 25-11-2022 | 4.6 Working of Directional coupler, Isolators & Circulator |

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| | 26-11-2022 | 4.7 Microwave tubes-Principle of operational of two Cavity Klystron |
| 11th | 28-11-2022 | 4.8 Principle of Operations of Travelling Wave Tubes |
| | 01-12-2022 | 4.9 Principle of Operations of Cyclotron |
| | 02-12-2022 | 4.10 Principle of Operations of Tunnel Diode |
| | 03-12-2022 | 4.10 Principle of Operations of Gunn diode |
| 12th | 05-12-2022 | **CLASS TEST-II** |
| | 08-12-2022 | **Unit-5: Introduction to Broadband communication** 5.1 Broadband communication system |
| | 09-12-2022 | Fundamental of Components and Network architecture |
| | 10-12-2022 | 5.2 Cable broadband data network- architecture, importance Future of broadband telecommunication internet based network. |
| 13th | 12-12-2022 | 5.3 SONET(Synchronous Optical Network) |
| | 15-12-2022 | Signal frame components topologies advantages applications and disadvantages |
| | 16-12-2022 | 5.4 ISDN - ISDN Devices interfaces, services, Architecture, applications, |
| | 17-12-2022 | BISDN -interfaces & Terminals, protocol architecture applications |
| 14th | 19-12-2022 | **2nd Internal Assessment** **IMPORTANT QUESTION DISCUSSION** |
| | 22-12-2022 | **REVISION** |

Jyoti Prakash Behera
13.09.2022
**Signature of Faculty**

15/09/2022
**HOD, E&TC**

Lecturer
Electronics & Telecomm. Engg.
BOSE, Cuttack

**Principal** 13/9