

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)**

**Scheme of Teaching & Examination**

**M.E. Electronics & Telecommunication (Communication)**

**III Semester**

S. No.	Board of Study	Subject Code	Subject	Periods per Week			Scheme of Examination			Total Marks	Credit L+(T+P)/2
				L	T	P	Theory / Practical				
							ESE	CT	TA		
1	Electronics & Telecom	551311 (28)	Broad Band Communication Technology	3	1	-	100	20	20	140	4
2	Refer Table – III		Elective III	3	1	-	100	20	20	140	4
3	Electronics & Telecom	551321 (28)	Project Work	-	-	28	100	-	100	200	14
4	Electronics & Telecom	551322 (28)	Seminar on Industrial Training & Dissertation.	-	-	3	-	-	20	20	2
<b>Total</b>				<b>6</b>	<b>2</b>	<b>31</b>	<b>300</b>	<b>40</b>	<b>160</b>	<b>500</b>	<b>24</b>

L- Lecture  
P- Practical,  
CT- Class Test

T- Tutorial  
ESE- End Semester Exam  
TA- Teacher's Assessment

<b>Table – III</b>		
<b>Elective – III</b>		
<b>Board of Study</b>	<b>Code</b>	<b>Subject</b>
Electronics & Telecom.	551331 (28)	Electromagnetic Interference and Compatibility
Electronics & Telecom.	551332 (28)	Soft Computing
Electronics & Telecom.	551333 (28)	Global Tracking & Positioning System

**Note (1) –** 1/4<sup>th</sup> of total strength of students subject to minimum of twenty students is required to offer an elective in the college in a Particular academic session.

**Note (2) –** Choice of elective course once made for an examination cannot be changed in future examinations.

# CHHATISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **M. E. III**

Subject: **Broadband Communication**

Total Theory Periods: 40

Total Marks in End Semester Exam. : **100**

**Minimum number of class test to be conducted: 02**

Branch: **Electronics & Telecommunication**

Code: **551311 (28)**

Total Tutorial Periods: 12

## **Unit 1**

X.25, Frame relay, X.25 v/s Frame relaying, Frame mode protocol architecture, Frame relay and Frame switching, Frame mode call control, Call control protocol, DLCI, Bearer capability, Link layer core parameters, LAPF.

## **Unit 2**

**ISDN** Integration of Transmission and Switching, Analog and Digital switching, Principles of ISDN, User interface, Architecture, ISDN standards, I-series recommendations.

## **Unit 3**

**ISDN: interface and Functions** - Transmission structure, User network interface, ISDN protocol architecture, ISDN connections, Addressing, Interlocking, B-ISDN architecture and standards

## **Unit 4**

**B-ISDN Services** - Conversational, Messaging, Retrieval, Distribution, Business and Residential requirements. B-ISDN protocols User plane, Control plane. Physical layer, Line coding, Transmission structure, SONET- Requirement, Signal Hierarchy, System Hierarchy.

## **Unit 5**

**ATM** - Overview, Virtual channels, Virtual paths, VP and VC switching, ATM Cells, Header format, Generic flow control, Header error control, Transmission of ATM cells, Adaptation layer, AAL services and protocols. ATM switching - ATM switching building blocks, ATM cell processing in a Switch, Matrix type switch, Input, Output buffering, Central buffering, Performance aspects of buffering switching networks.

## **Tex Book**

1. ISDN and Broadband ISDN with Frame Relay and ATM William Stallings, Prentice-Hall, 4th edition
2. Understanding SONET/SDH and ATM, Kartalopoulos PHI Publication

## **References**

- 1 Atm Networks Kasera, Sumit T Mh
- 2 Isdn And Broadband Isdn With Frame Relay And Atm , W.stallings P. E. A.
- 3 Broadband Bible, Gaskin, James E, Wiley

# CHHATISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **M. E. III**

Subject: **Electromagnetic Interference and  
Electromagnetic Compatibility**

Total Theory Periods: **40**

Total Marks in End Semester Exam. : **100**

Minimum number of class test to be conducted: **02**

Branch: **Electronics & Telecommunication**

Code: 551331 (28)

Total Tutorial Periods: 12

## **UNIT - I**

**Introduction to EMC:** Aspects of EMC and history, Different regulatory forums, Requirements for electronic systems. Commercial and military requirements. Examples of the difficulty in meeting regulatory norms.

## **UNIT - II**

**EMC design aspects:** Non-ideal behavior of wires, concept of partial inductance, PCB Lands, Effect of component leads, resistors, capacitors inductors. Effect of Electromechanical devices and digital circuit devices.

## **UNIT - III**

**Radiated emission and susceptibility:** Differential mode and common mode currents, emission models, current probes, shielded cables and surface transfer impedance, antenna measurements. Experimental results.

## **UNIT - IV**

**Conducted emission and susceptibility:** The line impedance stabilization network (LISN), Effect of power supply filter elements on differential and common mode currents. Effect of SMPS on conducted emission.

## **UNIT - V**

**Cross Talk and Electrostatic discharge:** Three conductor lines and crosstalk, time and frequency domain cross talk. Lumped circuit approximate models. Effects of ESD. Mitigation design techniques. Hardware and software immunity.

### **Text Books:**

1. Clayton R. Paul; 'Introduction to electromagnetic compatibility'. John Willey & Sons Inc.1992
2. Mark I. Montrose, Edward M. Nakauchi, 'Testing for EMC Compliance'. John Willey & Sons Inc-IEEE series.2004

### **Reference Books:**

1. Bruce Aarchambeault, Colin Brench, Omar Ramahi, 'EMI/EMC Computational Modeling Handbook'. Springer.2001

**CHHATISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY,  
BHILAI (C.G.)**

Semester: **M. E. III**  
Subject: **Soft Computing**  
Total Theory Periods: **40**  
Total Marks in End Semester Exam. : **100**  
Minimum number of class test to be conducted: **02**

Branch: **Electronics & Telecommunication**  
Code: **551332 (28)**  
Total Tutorial Periods: **12**

**UNIT - I**

**ARTIFICIAL NEURALS:** Basic-concepts-single layer perception-Multi layer perception-Supervised and un supervised learning back propagation networks, Application.

**UNIT - II**

**FUZZY SYSTEMS:** Fuzzy sets and Fuzzy reasoning-Fuzzy matrices-Fuzzy functions-decomposition-Fuzzy automata and languages-Fuzzy control methods-Fuzzy decision making, Applications.

**UNIT - III**

**NEURO-FUZZY MODELLING:** Adaptive networks based Fuzzy interfaces-Classification and Representation trees-Data dustemp algorithm -Rule base structure identification-Neuro-Fuzzy controls.

**UNIT - IV**

**GENETIC ALGORITHM:** Survival of the fittest-pictures computations-cross overmutation-reproduction-rank method-rank space method, Application

**UNIT - V**

**SOFT COMPUTING AND CONVENTIONAL AI:** AI Search algorithm-Predicate calculus rules of interface - Semantic networks-frames-objects-Hybrid models applications.

**Text Boos:**

- 1) *Nih.J.Ndssen Artificial Intelligence, Harcourt Asia Ltd. ,Singapore, 1998.*
- 2) *Laurene Fauseett: Fundamentals of Neural Networks. prentice Hall India, New Delhi, 1994.*

**Reference Books:**

- 1) *Timothy J. Ross: Fuzzy Logic Engineering Applications. McGraw Hill, New York, 1997.*
- 2) *George J. Klir and Bo Yuan, Fuzzy Sets and Fuzzy Logic, Prentice Hall Inc., New Jersey, 1995*
- 3) *Jang J.S.R., Sun C.T and Mizutami E - Neuro Fuzzy and Soft computing Prentice hall New Jersey, 1998*

# CHHATISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **M. E. III**

Subject: **Global Tracking & Positioning System**

Total Theory Periods: **40**

Total Marks in End Semester Exam. : **100**

Minimum number of class test to be conducted: **02**

Branch: **Electronics & Telecommunication**

Code: **551333 (28)**

Total Tutorial Periods: **12**

## **UNIT - I**

**INTRODUCTION:** Satellites, Introduction to Tracking and GPS System, Applications of Satellite and GPS for 3D position, Velocity, determination as function of time, Interdisciplinary applications(eg,.Crystal dynamics, gravity field mapping, reference frame, atmospheric occultation)Basic concepts of GPS. Space segment, Control segment, user segment, History of GPS constellation, GPS measurement characteristics, selective availability(AS), anti-spoofing (AS).

## **UNIT - II**

**ORBITS AND REFERENCE SYSTEMS:** Basics of Satellite orbits and reference systems-Two-body problem, orbit elements, timer system and timer transfer using GPS, coordinate systems, GPS Orbit design, orbit determination problem, tracking networks, GPS force and measurement models for orbit determination, orbit broadcast ephemeris, precise GPS ephemeris. Tracking problems.

## **UNIT - III**

**GPS MEASUREMENTS:** GPS Observable-Measurement types(C/A Code,P-code,L1 and L2 frequencies for navigation, pseudo ranges),atmospheric delays (tropospheric and ionospheric) data format (RINEX), data combination(narrow/wide lane combinations, ionosphere-free combinations, single, double, triple differences), undifferenced models, carrier phase Vs Integrated Doppler, integer biases, cycle slips, clock error.

## **UNIT - IV**

**PROCESSING TECHNIQUES:** Pseudo range and carrier phase processing, ambiguity removal, Least square methods for state parameter determination, relation positioning, dilution of precision.

## **UNIT - V**

**GPS APPLICATIONS:** Surveying, Geophysics, Geodesy, airborne GPS, Ground-transportation, Spaceborne GPS orbit determination, attitude control, meteorological and climate research using GPS.

### **Text Books:**

1. B.Hoffman - Wellenhof,H.Lichtenegger and J.Collins,"GPS: Theory and Practice ".4th revised edition, Springer, New york,1997
2. B.Parkinson,J.Spilker,Jr.(Eds),"GPS:Theory and Applications",Vol.I & Vol.II,AIAA,370 L'Enfant Promenade SW,Washington,DC20024,1996

### **Reference Books:**

1. A.Kleusberg and P.Teunisen(Eds),GPS for Geodesy,Springer-Verlag,Berlin,1996
2. A.Leick,"GPS Satellite Surveying",2nd edition, John Wiley & Sons,NewYork,1995