SHRI SHANKARACHARYA TECHNICAL CAMPUS, BHILAI

(An Autonomous Institute affiliated to CSVTU, Bhilai)
SCHEME OF TEACHING AND EXAMINATION (Effective from 2020-2021 Batch)
M.Tech (Electronics & Telecommunication(Communication)) Third Semester

S. No.	Board of Study	Subject	Subject Code	Periods per week			Scheme of Exam Theory/Practical			Total Marks	Credit L+(T+P)/2
				L	T	P	ESE	CT	TA		
1.	Electronics & Telecommunication	Broad Band Communication Technology	ET222301	3	1	-	100	20	20	140	4
5.	Electronics & Telecommunication	Elective – III	Refer Table I	3	1	-	100	20	20	140	4
6.	Electronics & Telecommunication	Project Work	ET222391	-		28	100		100	200	14
7.	Electronics & Telecommunication	Seminar on Industrial Training & Dissertatio	ET222392	-		3			20	20	2
	Total			**6**	**2**	**31**	**300**	**40**	**160**	**500**	**24**

Table I

	Elective-III		
Sr.No.	Board of Study	Subject	Subject Code
1	Electronics & Telecommunication	Electromagnetic Interference and Compatibility	ET222321
2	Electronics & Telecommunication	Soft Computing	ET222322
3	Electronics & Telecommunication	Global Tracking & Positioning System	ET222323

Note:
(a) Abbreviations used : L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Exam, CT- Class Test, TA- Teacher's Assessment
(b)The duration of end semester examination of all theory papers will be of three hours.

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Chairman (AC)	Chairman (BoS)	Date of Release	Version	

Subject Code :- ET222301	Broadband Communication Technology	L = 3	T = 1	P = 0	Credits = 4
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	20	140	3 Hours

Course Objective	Course Outcomes
The objective is to make the students understand **the concept of network architectures of broadband communication and analysis its parameters** for effective data transmission.	On successful completion of the course, the student will be able to: **CO1: -** Outline the earlier communication techniques. **CO2: -** Learn Architecture and standards of ISDN. **CO3: -** Understand the interfacing technique and transmission structure of ISDN. **CO4: -** Study the various services offered by broadband communication. **CO5: -** Analyze the methods of switching and error control in Broadband communication.

UNIT – I: X.25   CO1
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. **[5Hrs]**

UNIT – II: ISDN   CO2
Integration of Transmission and Switching, Analog and Digital switching, Principles of ISDN, User interface, Architecture, ISDN standards, I-series recommendations. **[5Hrs]**

UNIT – III: ISDN: Interface and Functions   CO3
Transmission structure, User network interface, ISDN protocol architecture, ISDN connections, Addressing, Interlocking, B-ISDN architecture and standards **[5Hrs]**

UNIT – IV: B-ISDN Services   CO4
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. **[5Hrs]**

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UNIT – V: ATM   **CO5**

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 and Central buffering. **[5Hrs]**

Text Books:

S. No.	Title	Authors	Edition	Publisher
1	ISDN and Broadband ISDN with Frame Relay and ATM	William Stallings	4th	Prentice-Hall
2	Understanding SONET/SDH and ATM	Kartalapoulos	-	PHI Publication

Reference Books:

S. No.	Title	Authors	Edition	Publisher
1	ATM Networks	Kasera	-	TMH
2	Isdn And Broadband Isdn With Frame Relay And Atm	W.stallings	-	P. E. A.

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Subject Code :- ET222321	Electromagnetic Interference and Compatibility	L = 3	T = 1	P = 0	Credits = 4
Evaluation Scheme	ESE	CT	TA	Total	ESE Duration
	100	20	20	140	3 Hours

Course Objective	Course Outcomes
1. To tutor the basics of EMI,EMC. 2. To instill knowledge on the EMI coupling mechanism and its mitigation techniques. 3. To impart comprehensive insight about the current EMC standards and about various measurement techniques.	On successful completion of the course, the student will be able to: **CO1:-** Find solution to EMI Sources, EMI problems in PCB level / Subsystem and system level design. **CO2:-** To measure emission immunity level from different systems to couple with the prescribed EMC standards **CO3:-**Understand EMI mitigation techniques **CO4:-**Understand various standards and regulation for EMI and EMC **CO5:-**Learn the Various EMI test methods and instrumentation

UNIT–I: Introduction to EMC: **CO1**

Introduction to EMI and EMC , Aspects of EMC and history, Requirements for electronic systems., Intra and inter system EMI, Elements of Interference, Sources and Victims of EMI, Conducted and Radiated EMI emission and susceptibility, Case Histories, Radiation hazards to humans, Various issues of EMC, EMC Testing categories, EMC Engineering Application.**[5Hrs]**

UNIT–II: COUPLING MECHANISM: **CO2**

Electromagnetic field sources and Coupling paths, Coupling via the supply network, Common mode coupling, Differential mode coupling, Impedance coupling, Inductive and Capacitive coupling, Radiative coupling, Ground loop coupling, Cable related emissions and coupling, Transient sources, Automotive transients. **[5Hrs]**

UNIT –III: EMI MITIGATION TECHNIQUES: **CO3**

Working principle of Shielding and Murphy"s Law, LF Magnetic shielding, Apertures and shielding effectiveness, Choice of Materials for H, E, and free space fields, Gasketting and sealing, PCB Level shielding, Principle of Grounding, Isolated grounds, Grounding strategies for Large systems, Grounding for mixed signal systems, Filter types and operation, Surge protection devices, Transient protection. **[5Hrs]**

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UNIT – IV: STANDARDS AND REGULATION: **CO4**

Need for Standards, Generic/General Standards for Residential and Industrial environment, Basic Standards, Product Standards, National and International EMI Standardizing Organizations; IEC, ANSI, FCC, AS/NZS, CISPR, BSI, CENELEC, ACEC. Electro Magnetic Emission and susceptibility standards and specifications, MIL461E Standards.**[5Hrs]**

UNIT – V: EMI TEST METHODS AND INSTRUMENTATION :   **CO5**

Fundamental considerations, EMI Shielding effectiveness tests, Open field test, TEM cell for immunity test, Shielded chamber , Shielded anechoic chamber, EMI test receivers, Spectrum analyzer, EMI test wave simulators, EMI coupling networks, Line impedance stabilization networks, Feed through capacitors, Antennas, Current probes, MIL -STD test methods, Civilian STD test methods. **[5Hrs]**

Text Books:

S.No.	Title	Authors	Edition	Publisher
1	Introduction to electromagnetic compatibility	Clayton R. Paul	Second	John Willey & Sons Inc.1992
2	Testing for EMC Compliance	Mark I. Montrose, Edward M. Nakauchi	First	. John Willey & Sons Inc-IEEE series.2004

Reference Books:

S. No.	Title	Authors	Edition	Publisher
1	EMI/EMC Computational Modeling Handbook	Bruce Aarchambeault, Colin Brench, Omar Ramahi	Second	Springer.2001
2	Engineering Electromagnetic Compatibility	V Prasad Kodali	Second	IEEE Press, Newyork, 2001
3	EDN"s Designer"s Guide to Electromagnetic Compatibility	Daryl Gerke and William Kimmel	Second	Elsevier Science & Technology Books, 2002
4	Electromagnetic Compatibility Engineering	. Henry W. Ott	Third	John Wiley & Sons Inc, Newyork, 2009
5	Control and Measurement of Unintentional Electromagnetic Radiation	W Scott Bennett	Second	John Wiley & Sons Inc., (Wiley Interscience Series) 1997.
6	The Electromagnetic Compatibility Handbook	Dr Kenneth L Kaiser	Second	CRC Press 2005

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