Devi Ahilya University, Indore, India Institute of Engineering & Technology				**IV Year B.E. (Electronics and Telecommunication)**			
Subject Code & Name	**Instructions Hours per Week**			**Credits**			
ETR8E3	**L**	**T**	**P**	**L**	**T**	**P**	**Total**
ELECTROMAGNETIC INTERFERENCE AND ELECTROMAGNETIC COMPATIBILITY	**3**	**1**	**2**	**3**	**1**	**1**	**5**
Duration of Theory Paper: 3 Hours							

Learning Objective: The purpose of this course is to expose the students to the basics and fundamentals of Electromagnetic Interference and Compatibility in System Design.

Prerequisite: EMF and Transmission line

COURSE CONTENTS

UNIT 1 EMI environment
Concepts of EMI and EMC and Definitions, Sources of EMI , Celestial Electromagnetic noise-Lightning Discharge, Electrostatic Discharge, Electromagnetic Pulse, Electromagnetic emissions-Noise from relays and Switches, Nonlinearities in Circuits

UNIT 2 EMI COUPLING PRINCIPLES
Capacitive coupling , Inductive coupling, Common Impedance Ground Coupling, Ground Loop coupling, Transients in power supply lines, Radiation coupling, Conduction coupling, Common – mode and Differential-mode interferences, Conducted EM noise on power supply lines

UNIT 3 EMI MEASUREMENTS
Open Area test site measurements-Measurement precautions , Open -Area test site, Anechoic Chamber, TEM-Reverberating TEM-GTEM cell , Comparisons

UNIT 4 EMI CONTROL TECHNIQUES
EMC Technology, Grounding, Shielding, Electrical Bonding, Power line filter, CM filter, DM filter, EMI suppression Cables, EMC Connectors ,Isolation transformer

UNIT 5 EMI / EMC STANDARDS
Introduction- Standards for EMI/EMC, MIL-STD-461/462-IEEE/ANSI standard-CISPR/IEC standard, FCC regulations, British standards, VDE standards-Euro norms, Performance standards-some comparisons.

Learning Outcome:

After learning the course the students should be able to know about:

- EMI Environment
- EMI Coupling and Measurements
- EMI control techniques and standards

BOOKS RECOMMENDED:

[1]. Prasad Kodali ,"Engineering Electromagnetic Compatibility –Principles, Measurements, and Technologies", IEEE press.
[2]. Henry W. Ott , "Noise Reduction Techniques in Electronic Systems"- 2nd Edition-John Wiley & Sons.
[3]. Bernharo Q'Keiser, 'Principles of Electromagnetic Compatibility', Artech house, 3rd edition, 1986

List of Practical Assignments:

The practical will be based on various EMI reduction techniques like Grounding, Shielding, Electrical Bonding, Power line filter, CM filter, DM filter, EMI suppression Cables etc.