INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN AND MANUFACTURING (IIITD&M) KANCHEEPURAM

INTRODUCTION OF NEW COURSE

Course Title	ELECTROMAGNETIC INTERFERENCE AND COMPATIBILITY	Course No *(will be assigned)*					
Specialization	Electronics Engineering	Structure (LTPC)	3	0	0	3	
Offered for	UG/PG/Ph.D	Status	Core ☐		Elective ■		
Faculty	Dr. Manoharan M.	Type	New ■		Modification ☐		
Pre-requisite		To take effect from	Jan 2011				
Submission date	November 2010	Date of approval by AAC					
Objectives	With the increasing proliferation of computing devices, limits on the electromagnetic emissions from these devices are necessary to minimize their potential for interfering with radio and wire communications. It is illegal to market a computing device unless its radiated and conducted emissions do not exceed the limits of the regulation in any country. So the digital product designer must learn to incorporate EMC design principles into his/her design in addition to the usual functional design principles. This course is expected to equip the students to design an electronic product which satisfies EMC regulations.						
Contents of the course *(With approximate break up of hours)*	Electronic Equipment and System EMI Concepts- EMC Requirements for Electronic Systems, Equipment Emissions and Susceptibilities Common-Mode and Differential mode Coupling- Mechanisms Including Field to Cable, Ground Impedance, Ground Loop and Coupling Reduction Techniques, Other Coupling Mechanisms, Arcing at switches and its suppression Non ideal behavior of components- resistance, capacitance and inductance of wires, equivalent circuits, Resistors, capacitors, inductors, effect of component leads, digital circuit devices, effect of component variability The Importance of Grounding For Achieving EMC- The Reasons (I.E., Safety, Lightning Control, EMC, etc.), Grounding Schemes (Single Point, Multi-Point And Hybrid), Shield Grounding and Bonding. Importance of Shielding- Shielding Effectiveness, Shielding Considerations (Reflective and Absorptive) Shielding Design, Shielding Compromises Techniques Used in EMI Diagnostics and Fixes, EMC Specifications, Standards and Measurements, EMC Documentation Including a Historical Summary, The Rationale, and a Review of MIL-Stds, FCC and CISPR Requirements. Introduction to Electromagnetic Compatibility, Communications System EMI- Typical Modes of System Interactions Including Antennas, Transmitters and Receivers and Receiver Responses, Elements of Interference, including Antennas, Transmitters, Receivers and Propagation						
Text and References	**Text Books:** 1. Clayton R. Paul ,Introduction to Electromagnetic Compatibility, John Wiley,2006, 2nd Edition. **References:** 1. Henry Ott, Electromagnetic Compatibility Engineering, John Wiley, 2009 2. Clayton, Electromagnetics for Engineers: With Applications to Digital Systems and Electromagnetic Interference,John Wiley, 2004. 3. David A. Weston, Electromagnetic Compatibility: Principles and Applications, Marcel Dekker Inc., 2001, 2nd Edition.						