

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN AND MANUFACTURING (IIITDM) KANCHEEPURAM

INTRODUCTION OF NEW COURSE

Course Title	Radio Spectrum and Industry 4.0	Course No	YYY6XXX			
Specialization	ECE	Structure (LTPC)	3	0	0	3
To be offered for	PG / Ph.D	Status	Core <input type="checkbox"/>		Elective <input checked="" type="checkbox"/>	
Faculty Proposing the course	Dr. Ashok Chandra	Type	New <input checked="" type="checkbox"/>		Modification <input type="checkbox"/>	
Date of DAC	11/06/2019	Members Present in DAC	All Faculty Members of the Dept. External Member: Dr. Ashok Chandra			
Pre-requisite	None	Submitted for approval	40 th Senate			
Learning Objectives	<ul style="list-style-type: none"> • To study the concepts of Industry 4.0 • To understand spectrum allocation for various services • To investigate the challenges involved in radio propagation • To learn the various short range wireless devices and spectrum utilization 					
Learning Outcomes	<ul style="list-style-type: none"> • Understanding of the basics of Industry 4.0, Internet of Things, Machine to Machine Communications (M2M) etc and Radio spectrum needs. • Wireless technologies for Wireless Industrial application • Spectrum management for harmonization of frequency bands, • Technical and operational characteristics of short-range radio devices 					
Contents of the course (With approximate break-up of hours)	<p>Industry 4.0, wireless Sensors, WIA, and Industrial communication networks (7 hours) Essentials of Radio Spectrum Management (RSM) from International Telecommunications Union (ITU) perspectives (4 hours) Major National Spectrum Management Directives (2 hours) Management of RF Spectrum for major radio services i.e. Fixed Services, Mobile Services, Broadcasting Services and Satellite services etc (3 hours) Electromagnetic Compatibility (EMC) Studies for providing interference free environment/protection of various services (3 hours) Link budget for Terrestrial and satellite networks (3 hours) Advance Radio Spectrum Engineering techniques and related issues (5 hours) Dynamic Spectrum management (3 hours) Radio spectrum monitoring (3 hours) Impact and challenges of radio propagation (3 hours) IoT, Short range wireless devices and their applications to Wireless Infrastructure Association (WIA) (4 hours)</p>					
Text Books	<ol style="list-style-type: none"> 1. Martin Cave, Chris Doyle, and William Webb, Essentials of Modern Spectrum Management, Cambridge University Press, 2007. 2. William Gosling, Radio Spectrum Conservation: Radio Engineering Fundamentals, Reed Educational and Professional Publishing Ltd., 2000. 3. Radio Spectrum Management: Policies, Regulations and Techniques- by Haim Mazar (Madjar). 4. Alasdair Gilchrist, Industry 4.0, Apress Publisher, 2016. 					
Reference Books	<ol style="list-style-type: none"> 1. ITU, Survey on Spectrum Management. 2. ITU, Radio Spectrum Management Hand book. 3. ITU- Handbook on Spectrum Monitoring 4. ITU-R, "Radio wave propagation information for designing terrestrial point-to-point links". 5. ITU-R, "Handbook on Global Trends in International Mobile Telecommunications." 					