

Course Syllabus

1. Brief Information

[Name of the University]				
[Name of the School /College/Faculty offer/own the Course]				
[Computer Science/Computer Engineering/Electrical Engineering/Information Technology/Information Systems/Software Engineering]				
Course Title	Introduction to Emerging Technologies			
Course Credits	Credit Hours: 3(2Hr. lecture & 3Hr Lab/Tutorial /Seminar) ECTS: 5			
Code	EmTe 1011 or EmTe 1012			
	Target Students' Major		Target Year	1 st Year
	Prerequisite(s) for enrollment	None	Capacity (Maximum Number)	
	Instructor		Office Hour:	Week, [Start time] – [End time]
		Mobile	E-Mail:	
	TA	Name	E-Mail:	
	Course Goal (Learning outcome)	By the end of this course the student will able to: - Identify different emerging technologies - Differentiate different emerging technologies - Select appropriate technology and tools for a given task - Identify necessary inputs for application of emerging technologies		
	Course Description	This course will enable students to explore current breakthrough technologies in the areas of Artificial Intelligence, Internet of Things and Augmented Reality that have emerged over the past few years. Besides helping learners become literate in emerging technologies, the course will prepare them to use technology in their respective professional preparations.		
	Grade Distribution	Attendance and Class Participation		Students must attend above 80% the lecture classes 100% of Lab/Demonstration.
		Demonstration/Lab work	15%	
		Tests/Quiz	15%	
		Assignment/Presentation	20%	Individual (10)%, Group(10)%
		Exam	50%	
Neither late assignments nor late projects are allowed				
Teaching Methods	Lecture, Tutorial, Seminar /Demonstration ...			

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2. Lesson Sequence Plan

Chapter	Title	Detailed Content	Week
1	Introduction to Emerging Technologies	➤ Evolution of technologies ○ Introduction to Industrial revolution ○ Historical background (IR 1.0, IR 2.0, IR 3.0) ○ Fourth industrial revolution (IR 4.0) ➤ Role of data for Emerging technologies ➤ Enabling devices and networks for emerging technologies (programmable devices) ➤ Human to Machine Interaction ➤ Future trends in emerging technologies	1-2
2	Introduction to Data Science	➤ Overview for Data Science ○ Definition of data and information ○ Data types and representation ➤ Data Value Chain ○ Data Acquisition ○ Data Analysis ○ Data Curating ○ Data Storage ○ Data Usage ➤ Basic concepts of Big data	3-4
3	Artificial Intelligence(AI)	➤ Introduction to AI ○ What is AI ○ History of AI ○ Levels of AI ○ Types of AI ➤ Applications of AI ○ Agriculture ○ Health ○ Business (Emerging market) ○ Education ➤ AI tools and platforms (eg: scratch/object tracking) ➤ Sample application with hands on activity (simulation based)	5-7
4	Internet of Things (IoT)	➤ Overview of IOT ○ What is IOT? ○ History of IOT ○ Advantages of IOT ○ Challenges of IOT ➤ How IOT works ○ Architecture of IOT ○ Devices and network	8-10

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		➤ Applications of IOT ○ Smart home ○ Smart grid ○ Smart city ○ Wearable devices ○ Smart farming ➤ IOT tools and platforms (eg: KAA IoT /Device Hive/Zetta/Things Board...) ➤ Sample application with hands on activity (eg IOT based smart farming)	
5	Augmented Reality (AR)	➤ Introduction to AR ➤ Virtual reality (VR) , Augmented Reality(AR) vs mixed reality (MR) ➤ Architecture of AR systems. ➤ Application of AR systems (education, medical, assistance, entertainment) workshop oriented hands demo	11-12
6	Ethics and professionalism of emerging technologies	➤ Technology and ethics ➤ Digital privacy ➤ Accountability and trust ➤ Treats and challenges	13
7	Other emerging technologies	➤ Nanotechnology ➤ Biotechnology ➤ Blockchain technology ➤ Cloud and quantum computing ➤ Autonomic computing ➤ Computer vision ➤ Embed systems ➤ Cyber security ➤ Additive manufacturing (3D Printing) ➤ Etc. ...	14-15

3. References

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Notes:

- I. National syllabus supported with centrally prepared online material to be hosted on local network.

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