

Affiliated to IKG-PTU (Kapurthala) & Approved by AICTE (New Delhi)

Subject List M.Tech ECE

S. No	PTU Code	Subject Name
1	MTEC-101-18	Advanced Communication Networks
2	MTEC-102-18	Wireless and Mobile Communication
3	MTEC-PE1A-18	Wireless Sensor Network
4	MTEC-PED-18	Fuzzy Logic & System
5	MTEC-111-18	Advanced Communication Networks Lab
6	MTEC-112-18	Wireless and Mobile Communication Lab
7	MTRM-101-18	Research Methodology and IPR
8	MTAXX-18	Audit Course
9	MTEC-103-18	Antennas and Radiating Systems
10	MTEC-104-18	Advanced Digital Signal Processing
11	MTEC-PE3B-18	Internet of Things
12	MTEC-PE4C-18	Programmable Networks – SDN, NFV
13	MTEC-113-18	Antennas and Radiating Systems Lab
14	MTEC-114-18	Advanced Digital Signal Processing Lab
15	MTEC-MP1-18	Mini Project
16	MTAXX-18	Audit course II
17	MTEC-PE5C-18	Remote Sensing
18	MTOE-O301A-18	Business Analytics
19	MTEC-DS1-18 & MTEC-DS2-18	Dissertation Phase –I & Dissertation Phase- II

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Course Outcomes M. Tech 1st Year ECE

(1st and 2nd Semester)

Advanced Communication Networks (MTEC-101-18)	
CO1	Classify advanced concepts in Communication Networking
CO2	Design and develop protocols for Communication Networks.
CO3	Illustrate the mechanisms in Quality of Service in networking.
CO4	Demonstrate the Network Design.
CO5	Summarize MPLS network and engineering issues.

Wireless and Mobile Communication (MTEC-102-18)	
CO1	Design appropriate mobile communication systems. Apply frequency-reuse concept in mobile communications, and to analyze its effects on interference, system capacity, handoff techniques
CO2	Distinguish various multiple-access techniques for mobile communications e.g. FDMA, TDMA, CDMA, and their advantages and disadvantages
CO3	Analyze path loss and interference for wireless telephony and their influences on a mobile communication system's performance. Analyze and design CDMA system functioning with knowledge of forward and reverse channel details, advantages and disadvantages of using the technology.
CO4	Explore upcoming technologies like 3G, 4G etc

Wireless Sensor Network (MTEC-PE1A-18)	
CO1	Design wireless sensor network system for different applications under consideration.
CO2	Understand the hardware details of different types of sensors and select right type of sensor for various applications.
CO3	Understand radio standards and communication protocols to be used for wireless sensor network based systems and application
CO4	Use operating systems and programming languages for wireless sensor nodes, performance of wireless sensor networks systems and platforms.
CO5	Handle special issues related to sensors like energy conservation and security challenges.

Fuzzy Logic & System (MTEC-112-18)	
CO1	Characterize and apply fuzzy logics in modern digital communication systems, such as information systems, receivers, filtering and statistical operations.
CO2	Demonstrate mathematical modelling and problem solving using such models
CO3	Comparatively evolve key results developed in this course for applications to signal processing, communications systems.
CO4	Explains the different structures of neural networks
CO5	Explains various genetic algorithms and soft computing techniques.

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Advanced Communication Networks Lab (MTEC-111-18)	
CO1	Identify the different types of network devices and their functions within a network.
CO2	Explain and build the skills of sub-netting and routing mechanisms.
CO3	Examine basic protocols of computer networks, and how they can be used to assist in network design and implementation

Wireless and Mobile Communication Lab (MTEC-112-18)	
CO1	Analyze Cellular concepts, GSM and CDMA networks
CO2	Illustrate GSM handset by experimentation and fault insertion techniques
CO3	Outline 3G communication system by means of various AT commands usage in GSM
CO4	Examine CDMA concept using DSSS kit
CO5	Determine and develop concepts of Software Radio in real time environment

Research Methodology and IPR (MTRM-101-18)	
CO1	Examine research problem formulation.
CO2	Analyze research related information
CO3	Follow research ethics
CO4	Simplify that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
CO5	Explore that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
CO6	Show that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits

Audit Course (MTAXX-18)	
CO1	Model how to improve your writing skills and level of readability
CO2	Illustrate about what to write in each section
CO3	List the skills needed when writing a Title
CO4	Learn about reviewing the literature
CO5	Analyze the skills required to write the results and conclusion of a research paper

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Antennas and Radiating Systems (MTEC-103-18)	
CO1	Compute the far field distance, radiation pattern and gain of an antenna for given current distribution.
CO2	Estimate the input impedance, efficiency and ease of match for antennas.
CO3	Compute the array factor for an array of identical antennas.
CO4	Design antennas and antenna arrays for various desired radiation pattern characteristics.

Advanced Digital Signal Processing (MTEC-104-18)	
CO1	Summarize theory of different filters and algorithms.
CO2	Illustrate theory of multirate DSP, solve numerical problems and write algorithms.
CO3	Illustrate theory of prediction and solution of normal equations.
CO4	Explain the principles of adaptive filters and estimation of PSD
CO5	Examine applications of DSP at block level.

Internet of Things (MTEC-PE3B-18)	
CO1	Understand what IoT technologies are used for today, and what is required in certain scenarios.
CO2	Understand the types of technologies that are available and in use today and can be utilized to implement IoT solutions
CO3	Apply these technologies to tackle scenarios in teams of using an experimental platform for implementing prototypes and testing them as running applications.

Programmable Networks – SDN, NFV (MTEC-PE4C-18)	
CO1	Understand advanced concepts in Programmable Networks.
CO2	Understand Software Defined Networking, an emerging Internet architectural framework.
CO3	Implement the main concepts, architectures, algorithms, protocols and applications in SDN and NFV.

Antennas and Radiating Systems Lab (MTEC-113-18)	
CO1	Determine specifications, design, construct and test antenna.
CO2	Explore and use tools for designing, analyzing and testing antennas.
CO3	These tools include antenna design and analysis software, network analyzers, spectrum analyzers, and antenna pattern measurement techniques.

Advanced Digital Signal Processing Lab (MTEC-114-18)	
CO1	Design different digital filters in software.
CO2	Apply various transforms in time and frequency.
CO3	Perform decimation and interpolation.

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Mini Project (MTEC-MP1-18)	
CO1	Design different circuits/ networks in Hardware/software
CO2	Apply various transforms in time and frequency
CO3	Perform decimation and interpolation
CO4	May apply various optimisation techniques

Course Outcomes M. Tech 2nd Year (3rd and 4th Semester)

Remote Sensing (MTEC-PE5C-18)	
CO1	Understand basic concepts, principles and applications of remote sensing, particularly the geometric and radiometric principles
CO2	Provide examples of applications of principles to a variety of topics in remote sensing, particularly related to data collection, radiation, resolution, and sampling

Business Analytics (MTOE-301A-18)	
CO1	Understand the role of business analytics within an organization.
CO2	Analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization.
CO3	To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.
CO4	To become familiar with processes needed to develop, report, and analyze business data.
CO5	Use decision-making tools/Operations research techniques.
CO6	Manage business process using analytical and management tools.
CO7	Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.

Dissertation Phase – I (MTEC-DS1-18) & Dissertation Phase – II (MTEC-DS2-18)	
CO1	Ability to synthesize knowledge and skills previously gained and applied to an in-depth study and execution of new technical problem.
CO2	Capable to select from different methodologies, methods and forms of analysis to produce a suitable research design, and justify their design
CO3	Ability to present the findings of their technical solution in a written report.
CO4	Presenting the work in International/ National conference or reputed journals