

## M. Tech. (ECE)

The details of experiential learning are described in this document. Kindly refer to the respective pages as shown in the tables below for the courses offered in various academic sessions.

### Year 2018-2019

Course Title	Year of Offering	Name of students	Page no
Dissertation	2019	Heena Antil	02

### Year 2017-2018

Course Title	Year of Offering	Name of students	Page no
ADVANCED DIGITAL SIGNAL PROCESSING	2017	Jayveer Singh	03
ADVANCED IMAGE PROCESSING	2018	Deepak Kumar	04
ANTENNA THEORY AND DESIGN	2017	Manisha	05
Advanced Wireless and Mobile Communication	2018	Deepak Kumar	06

### Year 2016-2017

Course Title	Year of Offering	Name of students	Page no
Dissertation	2017	Himani Kathuria	02
ADVANCED DIGITAL SIGNAL PROCESSING	2016	Himani Kathuria	03
ADVANCED IMAGE PROCESSING	2017	Vipin Airn	04
ANTENNA THEORY AND DESIGN	2016	Himani Kathuria	05
Advanced Wireless and Mobile Communication	2017	Vipin Airn	06

### Year 2015-2016

Course Title	Year of Offering	Name of students	Page no
DISSERTATION	2016	Manisha Narang	02
ADVANCED DIGITAL COMMUNICATION SYSTEM	2015	Gulshan Chawla	07

### Year 2014-2015

Course Title	Year of Offering	Name of students	Page no
DISSERTATION	2015	4th Sem M.Tech ECE	02

### **DISSERTATION (MTECE-401N):**

A dissertation is a written document that summarizes the research work of student; this work represents the scholar's research and findings. Electronics and Communication dissertations can be implemented by a number of tools such as Matlab, Python, Orcad, HFSS, Lab view etc. The dissertation is supervised by faculty member and assessed by external examiner. The evaluation criteria usually includes the complete implementation of the proposed research work and the dissertation report submitted including research gap, research objective, literature survey, tools used, design, development, analysis, results and future implementation.

#### **Some of the dissertations submitted by students in different years are:**

- Performance Evaluation of Hybrid Method Using MMSE & SIC for Interference Cancellation in wireless communication System
- Proposing modification to existing SEP and Comparative analysis of LEACH, EAMMH and Modified SEP, Simulative Analysis of Radio over Fiber System with external Modulation under the effect of Fiber Dispersion
- Weighted Correction & Discrete Wavelet based Fusion for Aerial Images, Development of Modified Digital Beam Forming using LMS Algorithm
- Analysis of Dispersion Effect for ROF System with Intensity Modulation, Performance Evaluation of Advanced WIMAX-OFDM Wireless Communication Using BER & SER
- Performance Evaluation of OFDM Wireless Comm. System Based on Advanced STBC
- Analysis of Semi-Circular Slotted Micro strip Patch Antenna for Wireless Application.

### **ADVANCED DIGITAL SIGNAL PROCESSING (MTECE-102N):**

It is a method of **processing** real world **signals** (represented by a sequence of numbers) using mathematical techniques to perform transformations or extract information. Advanced Digital Signal Processing, can be defined quite simply as the processing of a signal in the digital domain to analyze, measure, and manipulate said signal using mathematical calculations. Digital Signal Processing involves the **Students have used this to generate new transformation techniques for processing of signal as per the requirement. It has been used in research work for inventing various filters.** Interchanging of information so that said information can be observed, analyzed, or transformed into a separate form of signal. As you can imagine, this takes place very quickly - the entire process is not even noticed by the user. However, Digital Signal Processing is a critical element of a good headset. **Advanced Digital signal processing** has been widely used in research area. This can also be utilized in remote sensing techniques.

#### **ExperientialActivity: Project Development**

S.no	Dissertation Titles	Year	Student Name
1	Stability Enhancement of a grid connected wind farm by using Fuzzy logic and D-Statcom	2017	Jayveer Singh
2	A Genetic Improved Parametric Clustering to Optimize WSN Communication	2016	Himani Kathuria

### **ADVANCED IMAGE PROCESSING (MTECE-201N):**

Image processing is a method to perform some operations on an image, to get an enhanced image or to extract some useful information from it. Digital image processing techniques help in manipulation of the digital images through the use of computers. It is of interest for students working in allied areas such as machine learning, statistics or signal processing, as well. The areas of research in which students have built projects as well as used these in their dissertations include:

- DE noising with different noise models, deblurring with different models of blur (motion/defocus)
- Tomographic reconstruction (in computed tomography machines, as well as in biology/virology)
- Reflection removal
- Image-based forensics
- Image compression
- Compressive reconstruction - including reconstruction of video, Magnetic resonance imaging (MRI) and hyper spectral images
- Time permitting, cutting edge techniques such as low rank matrix completion or estimation, phase retrieval and robust principal components analysis.

#### **Experiential Activity: Project Development**

S.no	Dissertation Titles	Year	Student Name
1	Hybrid clustering Algorithm using AD-Density based Spatial clustering of Applications with noise	2018	Deepak Kumar
2	A Path distributed Speed up Approach in MPLS Ring Network	2017	Vipin Airn

### **ANTENNA THEORY AND DESIGN (MTECE-103N):**

Antenna designing for WBAN application is emerging research area. Main WBAN applications (Implantable and wearable) are discussed here: Biomedical telemetry permits the transmission (telemetering) of physiological signals at a distance. One of its latest developments is in the field of implantable medical devices (IMDs). A key and critical component of RF-linked implantable medical devices is the integrated implantable antenna, which enables bidirectional communication with the exterior monitoring /control equipment. **The recent advancement in the wireless technology has led to the advent of wearable antennas. These antennas are utilized for Wireless Body Area Networks (WBANs) purposes such as health-care, military sportive activities and identification systems. Students have used HFSS (High frequency Structure Simulator) for antenna design.**

#### **Experiential Activity: Project Development**

S.no	Dissertation Titles	Year	Student Name
1	Performance evaluation of Hybrid method using MMSE and SIC for interference cancellation in Wireless Communication System	2017	Manisha
2	A Genetic Improved Parametric Clustering to Optimize WSN Communication	2016	Himani Kathuria

## **ADVANCED WIRELESS AND MOBILE COMMUNICATION (MTECE-202N):**

Wireless Communication is the fastest growing and most vibrant technological areas in the communication field. Wireless Communication is a method of transmitting information from one point to other, without using any connection like wires, cables or any physical medium. The course comprises of the basic concepts of cellular system, various propagation effects and propagation models used in mobile communication. Students are able to select a wireless technology or a combination of technologies to suit a given application.

- Various wireless technologies such as Paging, GSM, GPRS, Wireless LAN, and Bluetooth are discussed with the students.
- Some of the research projects by the students can be listed as Performance Evaluation of Advanced WIMAX-OFDM Wireless Communication Using BER & SER, Development of Modified Digital Beam Forming using LMS Algorithm

### **Experiential Activity: Project Development**

S.no	Dissertation Titles	Year	Student Name
1	Hybrid clustering Algorithm using AD-Density based Spatial clustering of Applications with noise	2018	Deepak Kumar
2	A Path distributed Speed up Approach in MPLS Ring Network	2017	Vipin Airn

### **ADVANCED DIGITAL COMMUNICATION SYSTEM (M .TEC 3.2):**

The aim of this subject is to develop a thorough understanding of the main concepts, techniques used in analysis and design of advanced digital communication systems. Digital communications have become the preferred option of many communication devices, replacing analogue systems due to their robustness to noise, ease of standardization and increased scale of integration. This subject provides as in depth knowledge of Linear and Constant envelop modulation techniques, Linear & Non-linear equalization, characterization of speech signal etc.

**The experimental teaching of this subject to train the students up to the level that they understand the various blocks that constitute an advanced digital communication system and how they interrelate. They can be able to qualitatively and quantitatively analyze various parameters in advance digital communication systems.**

#### **ExperientialActivity: Project Development**

S.no	Dissertation Titles	Year	Student Name
1	Coverage Planning for 4G LTE Technology for 2.3 GHz Frequency	2015	Gulshan Chawla