

<b>Course Title</b>	<b>Advance wireless communication</b>	
<b>Course Code</b>	ET105	
<b>Course Credit</b>	Theory	: 04
	Practical	: 01
	Tutorial	: 00
	Total	: 05
<b>Course Objective</b>		
This course contains channel coding and speech coding techniques which is very important for any wireless communication system. It also includes depth knowledge about wireless IP and wireless Ad hoc networks.		
<b>Detailed Syllabus</b>		
<b>Sr. No.</b>	<b>Name of chapter &amp; details</b>	<b>Hours Allotted</b>
<b>Section – I</b>		
<b>1</b>	<b>Introduction</b> GSM cellular concept, Mobile radio propagation – large scale path loss and small scale fading, Different modulation techniques for mobile communication, Multiple access techniques for wireless communication	<b>04</b>
<b>2</b>	<b>Equalization, diversity and channel coding</b> Generis adaptive equalizer, Equalizer in communication receiver, linear and non-linear equalizer, Algorithms for adaptive equalization, Diversity techniques, RAKE receiver, Channel coding, block codes and finite fields, Convolutional codes, Coding gain	<b>13</b>
<b>3</b>	<b>Speech coding</b> Characteristics of speech signals, Different quantization techniques, Adaptive differential pulse code modulation, Frequency domain of speech, Vocoders, Linear predictive codes, Choosing speech codes for mobile communication, GSM codes, USDC codes	<b>07</b>
<b>Section – II</b>		
<b>4</b>	<b>Wireless IP</b> Mobile IP, Route optimization, Handoffs, IP for wireless domain, security in mobile IP, TCP in wireless domain, WAP	<b>08</b>
<b>5</b>	<b>Ad Hoc wireless networks</b> MAC protocols for ad hoc wireless networks, Routing and multi routing protocols for ad hoc wireless networks, Transport layer and security	<b>12</b>

	protocols for ad hoc network, Quality of services	
<b>6</b>	<b>Advanced wireless networks</b> UWB radio communication, Wi-Fi systems, Optical wireless networks, Wi-MAX	<b>04</b>

**Instructional Method and Pedagogy:**

- Lectures will be conducted with the aid of multi-media projector, blackboard, OHP etc. Assignments based on course contents will be given to the students at the end of each unit/topic and will be evaluated at regular interval
- Minimum five experiments shall be there in the laboratory related to course contents
- Minimum six tutorials which includes solution of minimum five computer programs in each head

**Students Learning Outcomes:**

At the end of the course students will be able

- To develop different block cods and modulation techniques.
- To design Ad hoc wireless network.

**Text books:**

1. C. Sivaram Murthy and B. S. Manoj, "Ad Hoc Wireless Networks", Pearson Education, Second edition India, 2001
2. Rappaport T. S., "Wireless Communication", Pearson education, Second edition, India, 2009

**Reference Books:**

1. Toh C. K., "Ad Hoc Mobile Wireless Networks", Pearson Education, India, 2002
2. Lee W. C. Y., "Wireless & Cellular Telecommunications", McGraw Hill, Third edition, New York, 2005