

No	Course Information (2019-20)	
1	Unit name:	Modern Electronic Communication Systems I
2	Code:	EcE 51012
3	Classification:	Engineering subject
4	Credit value:	2.5 (2-1-0)
5	Semester/ Year Offered:	1/5
6	Pre-requisite:	Communication Principle, Computer Communication, Digital Communication
7	Mode of delivery:	Lecture, Tutorial, Assignment
8	Assessment system and breakdown of marks:	
	Tutorial	15%
	Assignment	15%
	Examination	70%
9	Academic staff teaching unit:	Department of Electronic Engineering
10	<p>Course outcome of unit:</p> <p>In this course, students will be able to:</p> <ul style="list-style-type: none"> <li>(a) Discuss principles and operation of several modern electronic communication systems: (fiber optics communications, digital multiplexing, satellite communications, radar systems)</li> <li>(b) Apply the appropriate principles and techniques to determine parameters for several modern electronic communication systems.</li> <li>(c) Design the link budget for the satellite communication and fiber optics communication systems.</li> </ul>	
11	<p>Synopsis of unit:</p> <p>The course covers the Principle of Electronic Communication Systems. The course also introduces to the types of digital multiplexing, satellite communication, radar systems and fiber optics communications.</p>	
12	<p>Topics:</p> <ul style="list-style-type: none"> <li>○ Optical Fiber Communications <ul style="list-style-type: none"> <li>▪ Block diagram of optical fiber communications system</li> <li>▪ Optical fiber types</li> <li>▪ Light propagation</li> <li>▪ Losses in fiber cables</li> </ul> </li> </ul>	

	<ul style="list-style-type: none"> <li>▪ Light sources</li> <li>▪ Optical sources</li> <li>▪ Light detectors</li> <li>▪ Optical Link Budget</li> <li>○ Digital Multiplexing <ul style="list-style-type: none"> <li>▪ TDM</li> <li>▪ T1 Digital carrier</li> <li>▪ Digital carrier line encoding</li> <li>▪ T carrier systems</li> <li>▪ Digital carrier frame synchronization</li> <li>▪ Interleaving</li> <li>▪ FDM</li> <li>▪ WDM</li> </ul> </li> <li>○ Satellite Communications <ul style="list-style-type: none"> <li>▪ Kepler's laws</li> <li>▪ Satellite orbits</li> <li>▪ Geosynchronous satellites</li> <li>▪ Antenna look angles</li> <li>▪ Satellite antenna radiation pattern</li> <li>▪ Satellite system link model</li> <li>▪ Satellite system parameters</li> <li>▪ Satellite system link equations</li> <li>▪ Satellite system link budget</li> </ul> </li> <li>○ Radar Systems <ul style="list-style-type: none"> <li>▪ Radar classifications</li> <li>▪ Radar Equation</li> <li>▪ Radar cross section</li> <li>▪ Pulsed radar</li> <li>▪ CW or Doppler radar</li> <li>▪ FM CW radar</li> <li>▪ Direction finding and tracking</li> <li>▪ MTI radar</li> <li>▪ SAR radar</li> </ul> </li> </ul>
13	<p>Main references:</p> <ol style="list-style-type: none"> <li>1. Advanced Electronic Communication Systems, 6<sup>th</sup> Edition, Wayne Tomasi</li> <li>2. RF and Microwave Wireless Systems, Kai Chang</li> </ol>
14	<p>Additional references:</p> <ol style="list-style-type: none"> <li>1. Kennedy's Electronic Communication Systems, 5<sup>th</sup> Edition, George Kennedy Bernard Davis SRM Prasanna</li> </ol>