#### 9.3.6 Introduction to Communication Systems

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| **Debre Markos University****Debre Markos Institute of Technology****Department of Electrical and Computer Engineering** |
| Program | Regular |
| Course Title | **Introduction to Communication Systems** |
| Course Code | ECEg3152 |
| Degree Program | B.Sc. in Electrical Engineering  |
| Module Name | Electrical Systems Engineering |
| Module Code | ECEg-M3151 |
| Module coordinator |  |
| Course Instructor | Nolawit S. |
| ECTS | 6 |
| Credit hours | 3 |
| Contact hour per week | 32Lecture hrs, 48 Tutor hrs, 32 lab and 48 home study hrs |
| Target Group | III Year |
| Year/Semester | III/II |
| Prerequisites | ECEg2113: Applied Electronics II ECEg3122: Network Analysis and Synthesis ECEg2114: Probability and Random Processes |
| Status of the course | Compulsory |
| Course Description | This course introduces the student to Short description of ananalog communication system, Analysis of deterministic signals in frequency domain, Signal transmission in base band, Linear distortion, Nonlinear distortion and commanding, Analog modulation systems, Analysis of linear modulations such as AM, DSB, SSB, Linear modulation and demodulation techniques also combined with FDM, Nonlinear modulation techniques such as PM and FM, Survey of sampling techniques for analog pulse modulations such as PAM, PPM and PDM, Pulse modulation systems, PCM, DM, DPCM,FSK, PSK and ASK |
| Course Objective and Competency | * To give a strong background in communication systems engineering.
* To teach the different analog and digital linear and non-linear modulation and demodulation techniques those are common to many communication systems.
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| Detailed Course topics and reading materials |
| Week | Contact Hour |  Topic/Subtopic/Chapter | Remark |
|  |  | **1. Analysis and Transmission of Signals*** Analog communication system
* Analysis of deterministic signals in frequency domain
* Signal transmission in base band
* Linear distortion
* Nonlinear distortion and companding
* Frequency allocation,
* Electromagnetic wave propagation models
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|  |  | **2. Amplitude (linear) modulation.*** Analysis of linear modulations such as AM, DSB,DSB-SC,SSB, VSB
* Linear modulation and demodulation techniques also combined with FDM

**3. Angle modulation*** PM and FM modulation and demodulation techniques
* Narrow band and Wide band Angle modulation
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|  |  | 4. Base band pulse signaling* The sampling theorem, , Quantizing and Encoding,
* PAM,PCM,QAM,FSK, PSK and ASK
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|  |  | 5. Introduction to Data communication* Introduction
* Model for data communication
* TDM and PCM frames

Digital carrier systems and multiplexing |  |
| * Teaching Methodology
 | * Lectures supported by Quizzes and assignments, Tutorials and Labs
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| * Assessment Methods
 | * Attendance and class activities, Quizzes, Assignments and Final Exam
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| Course policy | All students are expected to abide by the code of conduct of students Senate Legislation of our University throughout this course. * Academic dishonesty, including cheating, fabrication, and plagiarism will not be tolerated.
* Class activities will vary day to day, ranging from lectures to discussions. Students will be active participants in the course.
* You are required to submit and present the assignments provided according to the time table indicated.
* **80 % of class attendance is mandatory!** Please try to be on time for class. I will not allow you enter if you are late more than five minutes.
* Active participation in class is essential and it will have its own value in your grade
* Cell phones MUST be turned off before entering the class
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| 1. References
 | 1. Simon Haykin: Communication Systems [Text Book]
2. Taub and Schilling: Principles of Communication SystemsMcGraw-Hill, 1999.
3. Leon W. Couch II, “Digital and Analog Communication Systems”
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| **Approved By:**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name (Course instructor) Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Name (Module Coordinator) Signature |