

Course number: (04024150)

Course name: Analog Communications

Prerequisites by course: Probability and Random Signals (04023210) and Signals and System Analysis (04022230).

Prerequisites by topic: Students are required to have solid background in random signals characterizations; probability density function, mean value, variance, autocorrelation, and crosscorrelation. Also, students are required to have good background in Fourier transformations and power spectral density

Credit hours: 3 credit hours

Contact hours: 3 contact hours

Textbook: [Communication Systems], [Simon Haykin], [5th edition, Wiley]

References:

B. P. Lathi & Zhi Ding; “Modern Digital and Analog Communication Systems”, 4th edition, Oxford University Press, 2010.

Wayne Tomasi, “Electronic Communications Systems, Fundamentals through Advanced”, 4th edition, Prentice Hall 2001.

R. E. Ziemer and W. H. Traner, “Principles of Communications”, Wiley, Latest edition.

Course website:

Schedule and duration: 15 Weeks, 45 Lectures, 50 minutes each (including exams)

Minimum student material: Textbook, lecture handouts, and scientific calculator

Minimum college facilities: Classroom with whiteboard and projection display facility. Library

Course objectives:

1. Understand basic principle and types of amplitude modulation
2. Understand basic principle and types of phase and frequency modulation modulations
3. Understand the effect of noise in analog modulation systems

Course outcomes and relation to ABET student outcomes: (matrix)

After completing the course successfully students are expected to be able to

1. Characterize different types of amplitude modulation schemes. [1, 6, 7]
2. Characterize different types of phase and frequency modulation modulations [1, 6, 7]
3. Analyze the Understand the effect of noise in analog modulation systems [1, 6]

Course topics:

Introduction to Communications systems

Representation of Signals and systems

Amplitude Modulation

Hilbert Transform

Angle Modulation

Noise in CW Modulation

Pulse Modulation

Computer usage: Simulation part of this course is covered within tutorial

Attendance: Attendance is mandatory. Students are required to attend all lectures, attendance rules and regulations will be strictly applied.

Assessments: Quizzes and exams

Grading policy:	First	20%
	Second	20%
	Quizzes	10%
	Final	50%
	(comprehensive)	

Instructors: Dr. Osama Oglah Fares

Class time and location: Sunday, Tuesday, and Thursday, 12:00 – 12:50, Programming Lab

Student Outcomes (SOs)

- 1 An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- 2 An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- 3 An ability to communicate effectively with a range of audiences
- 4 An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- 5 An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- 6 An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- 7 An ability to acquire and apply new knowledge as needed, using appropriate learning strategies