



MUTAH UNIVERSITY
Faculty of Engineering
Department of Electrical Engineering



Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0401525	Electronic Communication Circuits	3	3 T

INSTRUCTOR/COORDINATOR

Name	Dr. Amneh Al-Mbaideen
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Office Hours	13:00-14:00 (Sun, Tues, Thur)

TEXTBOOK

Title	"Modern Communication Circuits", Jack Smith, 2 nd edition, McGraw-Hill, 1998.
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Other Supplemental Materials

Title	<ol style="list-style-type: none">1. "Communication Circuits: Analysis and Design", K. Clarke and D. Hess, 2nd edition, Krieger Publishing Company, 1994.2. "RF Microelectronics," Behzad Razavi, Prentice Hall, 2nd Edition, 2011.3. "Radio-Frequency and Microwave Communication Circuits: Analysis and Design", by Devendra K. Misra , 2nd edition, Wiley-Interscience, 2004.4. "Electronic Communications: A Systems Approach," Jeffrey S. Beasley, 20135. "Advanced Electronic Communications Systems", Wayne Tomasi, 2013, Tomasi6. "Electronic Communications", Dennis Roddy, John Coolen. 4th edition, 2012, Pearson Education
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SPECIFIC COURSE INFORMATION

A. Brief Description of the Content of the Course (Catalog Description)

Introduction into transmitter's small signal amplifier design. Design of tuned circuit amplifiers. Large signal and high power design. Broadband design. Automatic gain control circuits oscillator circuits phase locked loops.

B. Pre-requisites (P) or Co-requisites (C)

Communications (2) (0401422) , Electronics (2) (0401362) (P)

C. Course Type (Required or Elective)

Elective

SPECIFIC GOALS

A. Course Learning Outcomes (CLOs)

1. Understand the concepts of the communication system's main components: Amplifiers, Oscillators, Detectors, Mixers, Power Amplifiers, Frequency Synthesizers. And AGC circuits in low and high frequencies. [1]
2. Ability to analyze RF power amplifiers [1]
3. Ability to analyze and create RF oscillator and frequency synthesizer [1]
4. Ability to analyze RF mixers [1]
5. Understand the basics of the phase-locked loop and its applications [1]

B. Student Learning Outcomes (SOs) Addressed by the Course

1	2	3	4	5	6	7
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BRIEF LIST OF TOPICS TO BE COVERED

List of Topics	No. of Weeks	Contact Hours
Chapter 4: Resonant and Tuned circuits	1	2
Chapter 4: Impedance matching and transformation	1	3
Chapter 4: Simulation, transient and small signal AC	1	2
Chapter 2: Small signal analysis of common amplifiers	1	3
Chapter 5+11: Power amplifiers, Tuned amplifiers, and large signal operations of amplifiers.	1	6
Chapter 8:Phase Locked Loop PLL	1	3
Chapter 5: Frequency response of common amplifiers	1	3

Chapter 7: LNA (Cascade and feedback amp)	1	3
Chapter 7: Linearity and distortion (Intercept point, Compression, distortion)	1	3
Chapter 7: Oscillators	1	3
Chapter 10+12: Mixers and Frequency synthesizers	1	3
Chapter 12:Detectors	1	5
Chapter 12: AM TX/RX	1	3
Chapter 12:FM TX/RX	1	3
Total	14	42

EVALUATION		
Assessment Tool	Due Date	Weight (%)
Mid Exam	According to the university calendar	30
Course Work (Homeworks, Quizzes, Projects, ...etc.)	One week after being assigned	20
Final Exam	According to the university calendar	50

ABET's Students Learning Outcomes (Criterion # 3)		
Relationship to program outcomes		
ABET 1-7	Engineering Student Outcomes	
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.