

ATTACHMENT 5.

Kingdom of Saudi Arabia

**The National Commission for Academic Accreditation &
Assessment**

**T6. Course Specifications
(CS)**

Course Specifications

Institution: Najran University	Date: 24/04/1438 H
College/Department: Engineering/Electrical	

A. Course Identification and General Information

1. Course title and code: Communications Principles (341EE-3)			
2. Credit hours: 3 (3 , 0 , 1)			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Electrical Engineering Program			
4. Name of faculty member responsible for the course Dr. Adam Alhawari			
5. Level/year at which this course is offered: 8th/4th year			
6. Pre-requisites for this course (if any): Signals and Systems Analysis (321EE-3)			
7. Co-requisites for this course (if any): None			
8. Location if not on main campus: None			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="100%"/>
b. blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. other	<input type="checkbox"/>	What percentage?	<input type="text"/>
Comments:			

B. Objectives

1. What is the main purpose for this course?

- 1. Categorize components of communication system.**
- 2. Make use of signal analysis techniques in communication systems.**
- 3. Analyze linear systems in time and frequency domains.**
- 4. Categorize modulations techniques.**
- 5. Analyze simple modulation systems.**
- 6. Categorize multiplexing techniques.**
- 7. Identify and analyze pulse code modulation systems.**
- 8. Describe and analyze delta modulation systems.**
- 9. Explain digital modulation techniques.**

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Use the data show to explain various concepts of the topics,**
- Deliver all class meeting in the communications Laboratory,**
- Offering the students extra hour of tutorial in addition to the prescribed office hours.**

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

Overview and basic elements of Communication systems; Transmission through Systems and channels; Modulation; AM; Frequency conversion; FM and PM; Superheterodyne receiver; FDM; Stereo Broadcasting; Sampling; Pulse Modulation (PAM, PWM ,PPM); TDM; Pulse Code Modulation (PCM); DPCM and DM; Regenerative Repeaters; Advantages of Digital Communications; Line Coding (Binary Signaling); Introduction to Digital Modulation (ASK, FSK, PSK).

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
Overview and basic elements of communication systems	1	4
Signal analysis (Fourier series, Fourier transform, properties of Fourier transform)	2,3	8
Solving problems	4	4
Transmission through systems and channels	5	4
AM modulation, Frequency conversion, solving problems	6,7	8
Frequency (FM) and phase modulation (PM), solving problems	8,9	8
Superheterodyne receiver, FDM, stereo broadcasting	10	4
Sampling, pulse modulation (PAM, PWM, PPM)	11	4
Pulse code modulation (PCM), DPCM, and Delta modulation (DM), problems	12	4
Regenerative repeaters, line coding, advantages of digital communications	13	4
Introduction to digital modulation (ASK, FSK, PSK).	14	4

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	45	15	N/A	N/A	N/A	60
Credit	3	0	N/A	N/A	N/A	3

3. Additional private study/learning hours expected for students per week.	5
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
On the table below are the five NQF Learning Domains, numbered in the left column. First , insert the suitable and measurable course learning outcomes required in the appropriate learning

domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	<ul style="list-style-type: none"> • Be familiar with basic communication system. • Understand the relationship of signal analysis to communication systems. • Learn how to analyze linear systems in time and frequency domains. • Recognize modulations techniques. • Recognize multiplexing techniques • Understand pulse code modulation • Understand delta modulation. • Be aware of digital modulation techniques. 	<ul style="list-style-type: none"> - Lectures - Tutorials - Computer programing tools (MATLAB) 	<ul style="list-style-type: none"> - Homework assignments. - Quizzes - Two Midterm exams has to be done. - Final Exams at the end of the semester.
2.0	Cognitive Skills		
2.1	Ability to analyze analog communication systems,	<ul style="list-style-type: none"> • Offering extra tutorials for students • Encourage class participation • Making field trips (to, for example, Najran TV & Radio transmission station) to help students understand various concepts of the course topics 	<ul style="list-style-type: none"> • Class participation and homework assignments (home works and Quizzes) • Two Midterm exams. • Final Exams at the end of the semester.
2.2	Ability to design simple analog communication systems meeting desired needs.	<ul style="list-style-type: none"> • Offering extra tutorials for students • Encourage class participation • Making field trips 	<ul style="list-style-type: none"> • Class participation and homework assignments (home works and Quizzes) • Two Midterm exams.

		(to, for example, Najran TV & Radio transmission station) to help students understand various concepts of the course topics	• Final Exams at the end of the semester.
3.0	Interpersonal Skills & Responsibility		
3.1	Conduct collaborative and peer-to-peer coaching sessions which enhance team work skills.	Make all class meeting in the communications lab to enhance the students hands – on experience Lectures and tutorials.	Record the attendance of the students every lecture. Midterm and Final term exams Assess the group Assignment.
3.2	During the classes students has to act responsible and ethical behavior	Make all class meeting in the communications lab to enhance the students hands – on experience Lectures and tutorials.	Record the attendance of the students every lecture. Midterm and Final term exams Assess the group Assignment.
4.0	Communication, Information Technology, Numerical		
4.1	Record the students' attendance. Quizzes, Mid Terms and final exams.	Invite the students to benefit from the office hours to ask more about their subject.	Ability to formulate different problems and provide solutions
5.0	Psychomotor		
5.1			
5.2			

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)

Course LOs #	Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)							
	1.1	2.1	2.2	3.1	3.2	4.1		
1	✓							
2	✓	✓	✓	✓	✓			
3	✓	✓	✓	✓	✓			

4	✓	✓	✓	✓	✓	✓			
5						✓			

6. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Quizzes	Every two chapters	10 %
2	First Mid-Term exam	Week 6	20 %
3	Second Mid-Term exam	Week 12	20 %
4	Final Term exam	At the end of the semester as determined by the academic calendar	50 %

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- Teaching staff are available weekly for all the students and can answer any query that rises, besides, the students can email their enquiries to the main lecture. Beside students have Open general discussions with other class mates.
- 6 hours per week and can be arranged according to the student needs.

E. Learning Resources

1. List Required Textbooks

Communications Systems, Simon Haykin, John Wiley, 2010

2. List Essential References Materials (Journals, Reports, etc.)

Modern digital and analog communication systems, B. P. Lathi, Zhing, 2010.
Fundamentals of telecommunications, 2nd Edition, Roger L. Freeman, 2005.
Telecommunication and Data Communications Handbook, Ray Horak, 2008.

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)
None
4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.
None
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
MATLAB Program

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Lecture Room for 20 students
2. Computing resources (AV, data show, Smart Board, software, etc.) <ul style="list-style-type: none"> Only Laptops. Computer software is limited to MATLAB.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) None

G. Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching <ul style="list-style-type: none"> Complete course evaluation questionnaire by the students. Open discussion for the students to touch their weak and strong points in the subject. Feedback from the mid-term exam records.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department Seminars for the teacher, to show his lectures arrangement and progress in front of all the staff members in the department.

<p>3 Processes for Improvement of Teaching</p> <ul style="list-style-type: none">• Learning form students feedback• Learning from instructor and department feedback• Learning/Using various teaching methods (lecturing, discussions, workshops, exams...)• Learning/Using various teaching medias (projector, whiteboard, videos, educational visits)
<p>4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)</p> <p>Checking students' results by another teaching staff member through reviewing the assessment samples during the semester in order to verify the students' results.</p>
<p>5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <ul style="list-style-type: none">• Ongoing updating and improving (during the course).• Annual updating and improving (during summers).

Name of Instructor: : **DR. ADAM ALHAWARI**

Signature: _____ Date Report Completed: **24/04/1438 H**

Name of Course Instructor _____

Program Coordinator: _____

Signature: _____ Date Received: _____