

**ATTACHMENT 2 (e)**

**Course Specifications**

**Kingdom of Saudi Arabia**

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

**Course Specifications  
(CS)**

## Course Specifications

Institution <b>Najran University</b>	Date of Report <b>24/04/1438 H</b>
College/Department <b>Engineering/Electrical</b>	

### A. Course Identification and General Information

1. Course title and code: <b>Communications Principles (341EE-3)</b>			
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) <b>Electrical Engineering Program</b>			
4. Name of faculty member responsible for the course <b>Dr. Adam Alhawari</b>			
5. Level/year at which this course is offered <b>8<sup>th</sup>/4<sup>th</sup> year</b>			
6. Pre-requisites for this course (if any) <b>Signals and Systems Analysis (321EE-3)</b>			
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?	<b>100%</b>
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?
<ol style="list-style-type: none"> <li>1. Categorize components of communication system.</li> <li>2. Make use of signal analysis techniques in communication systems.</li> <li>3. Analyze linear systems in time and frequency domains.</li> <li>4. Categorize modulations techniques.</li> <li>5. Analyze simple modulation systems.</li> <li>6. Categorize multiplexing techniques.</li> <li>7. Identify and analyze pulse code modulation systems.</li> <li>8. Describe and analyze delta modulation systems.</li> <li>9. Explain digital modulation techniques.</li> </ol>
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)
<ul style="list-style-type: none"> <li>• Use the data show to explain various concepts of the topics,</li> <li>• Deliver all class meeting in the communications Laboratory,</li> <li>• Offering the students extra hour of tutorial in addition to the prescribed office hours.</li> </ul>

## C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached)

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	Practical	Other:	Total
Contact Hours	42	14	N/A	N/A	N/A	56
Credit	42	14	N/A	N/A	N/A	56

3. Additional private study/learning hours expected for students per week.	None
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy
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Course Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning, assessment, and teaching.

The *National Qualification Framework* provides five learning domains. Course learning outcomes are required. Normally a course has should not exceed eight learning outcomes which align with one or more of the five learning domains. Some courses have one or more program learning outcomes integrated into the course learning outcomes to demonstrate program learning outcome alignment. The program learning outcome matrix map identifies which program learning outcomes are incorporated into specific courses.

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. **Fourth**, if any program learning outcomes are included in the course learning outcomes, place the @ symbol next to it.

Every course is not required to include learning outcomes from each domain.

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

		help students understand various concepts of the course topics	
<b>2.0</b>	<b>Interpersonal Skills &amp; Responsibility</b>		
2.1	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.
2.2	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.
<b>3.0</b>	<b>Communication, Information Technology, Numerical Skills</b>		
3.1	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
3.3	<b>Psychomotor</b>		
<b>4.0</b>	None		
4.1			
<b>5.0</b>			
5.1			

### Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

NQF Learning Domains	Suggested Verbs
<b>Knowledge</b>	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
<b>Cognitive Skills</b>	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise
<b>Interpersonal Skills &amp; Responsibility</b>	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write
<b>Communication, Information Technology, Numerical</b>	demonstrate, calculate, illustrate, interpret, research, question, operate, appraise, evaluate, assess, and criticize
<b>Psychomotor</b>	demonstrate, show, illustrate, perform, dramatize, employ, manipulate, operate, prepare, produce, draw, diagram, examine, construct, assemble, experiment, and reconstruct

Suggested **verbs not to use** when writing measurable and assessable learning outcomes are as follows:

Consider	Maximize	Continue	Review	Ensure	Enlarge	Understand
Maintain	Reflect	Examine	Strengthen	Explore	Encourage	Deepen

Some of these verbs can be used if tied to specific actions or quantification.

**Suggested assessment methods and teaching strategies are:**

According to research and best practices, multiple and continuous assessment methods are required to verify student learning. Current trends incorporate a wide range of rubric assessment tools; including web-based student performance systems that apply rubrics, benchmarks, KPIs, and analysis. Rubrics are especially helpful for qualitative evaluation. Differentiated assessment strategies include: exams, portfolios, long and short essays, log books, analytical reports, individual and group presentations, posters, journals, case studies, lab manuals, video analysis, group reports, lab reports, debates, speeches, learning logs, peer evaluations, self-evaluations, videos, graphs, dramatic performances, tables, demonstrations, graphic organizers, discussion forums, interviews, learning contracts, antidotal notes, artwork, KWL charts, and concept mapping.

Differentiated teaching strategies should be selected to align with the curriculum taught, the needs of students, and the intended learning outcomes. Teaching methods include: lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, guest speakers, memorization, humor, individual presentation, brainstorming, and a wide variety of hands-on student learning activities.

#### 5. 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.	<b>Quizzes</b>	<b>Every two chapters</b>	<b>10 %</b>
2.	<b>First Mid-Term exam</b>	<b>Week 6</b>	<b>20 %</b>
3.	<b>Second Mid-Term exam</b>	<b>Week 12</b>	<b>20 %</b>
4.	<b>Final Term exam</b>	<b>At the end of the semester as determined by the academic calendar</b>	<b>50 %</b>



#### 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 (eg. Web Sites, Social Media, Blackboard, 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**

<p>2. Computing resources (AV, data show, Smart Board, software, etc.)</p> <ul style="list-style-type: none"> <li>• <b>Only Laptops.</b></li> <li>• <b>Computer software is limited to MATLAB.</b></li> </ul>
<p>3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)</p> <p>None</p>

## G Course Evaluation and Improvement Processes

<p>1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <ul style="list-style-type: none"> <li>• Complete course evaluation questionnaire by the students.</li> <li>• Open discussion for the students to touch their weak and strong points in the subject.</li> <li>• Feedback from the mid-term exam records.</li> </ul>
<p>2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor</p> <ul style="list-style-type: none"> <li>• Seminars for the teacher, to show his lectures arrangement and progress in front of all the staff members in the department.</li> </ul>
<p>3 Processes for Improvement of Teaching</p> <ul style="list-style-type: none"> <li>• Learning from students feedback</li> <li>• Learning from instructor and department feedback</li> <li>• Learning/Using various teaching methods (lecturing, discussions, workshops, exams...)</li> <li>• Learning/Using various teaching medias (projector, whiteboard, videos, educational visits )</li> </ul>
<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>

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Ongoing updating and improving (during the course).
- Annual updating and improving (during summers).

Faculty or Teaching Staff: **DR. ADAM ALHAWARI**

Signature: \_\_\_\_\_

Date Report Completed: 24/04/1438 H

Received by: Dean/Department Head

Signature: \_\_\_\_\_

Date: