

**ATTACHMENT 5.**

**Kingdom of Saudi Arabia**

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

**T6. Course Specifications  
(CS)**

## Course Specifications

Institution: Najran University	Date: 5/05/1438H
College/Department : Engineering / Electrical Engineering	

### A. Course Identification and General Information

1. Course title and code: Communications Lab 342EE			
2. Credit hours : 1 ( 0 , 2 , 0 )			
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. Seif Shebl Seif			
5. Level/year at which this course is offered : 8th/ 4th year			
6. Pre-requisites for this course (if any): ---			
7. Co-requisites for this course (if any): Communications Principles 341 EE -3			
8. Location if not on main campus			
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?	
Code	Learning outcomes
CLOs	<ol style="list-style-type: none"> <li>1. Apply Fourier transform to different signals.</li> <li>2. Analyze AM and FM modulated signals in time and frequency domains using lab modules</li> <li>3. Apply sampling to achieve Time Division Multiplexing (TDM)</li> <li>4. Explain the principles of Pulse Code Modulation (PCM), and DM using lab modules</li> <li>5. Identify line codes and different kinds of modem technology using lab modules.</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)	
Plans for developing and improving	
<ul style="list-style-type: none"> <li>• Using MATLAB program to solve, visualize, and plot signals spectrum and time wave-forms lively on the Data Show. Sending and receiving pieces of program codes via e-mail.</li> <li>• Conducting lab experiments in the communications lab using state-of-the art tools (CASSY-2 Lab, Panels kits, Comm3 lab, ...) to foster theoretical and analytical understanding of the subject.</li> </ul>	

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

Course Description:
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1. Topics to be Covered
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List of Topics	No. of Weeks	Contact Hours
Getting started with Communications Lab modules and devices.	1	1
AM modulation experiment on CASSY2 LAB	1	1
AM demodulation experiment on CASSY2 LAB	1	1
FM modulation and detection experiment on CASSY2 LAB.	1	1
Analog Modulation and demodulation experiments on COMM3 LAB.	1	1
Pulse modulation schemes PAM, PPM, PWM experiments on CASSY2 LAB.	1	1
Pulse Code Modulation (PCM) and delta modulation experiments on CASSY2 LAB.	1	1
Time Division Multiplexing (TDM) experiment on CASSY2 LAB.	1/2	1/2
Shift keying and basics of modem technology (ASK, FSK, PSK) experiments on COMM3 LAB.	1/2	1/2
Line Coding (Binary Signaling) and decoding experiments on COMM3 LAB.	1	1
Getting started with Communications Lab modules and devices.	1	1

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	28	0	N/A	N/A	N/A	28
Credit	14	0	N/A	N/A	N/A	14

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

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	<b>Knowledge</b>		
1.1	<ul style="list-style-type: none"> <li>Know the primary communication resources, namely, transmission power and bandwidth</li> <li>Know the communication channel for signals transmission</li> <li>Define the modulation process</li> <li>Know the continuous modulation techniques, amplitude and angle modulation</li> <li>Define sampling, which is basic to all forms of pulse modulation</li> <li>Define quantization, which when combined with sampling represents analog signals in the form of amplitude and time</li> <li>Know different methods of digital modulation</li> </ul>	<ul style="list-style-type: none"> <li>Lab Sessions</li> <li>Tutorials</li> <li>Computer experiments using MATLAB program.</li> </ul>	<ul style="list-style-type: none"> <li>Homework assignments</li> <li>Lab quizzes</li> <li>Two mid-term exams.</li> <li>Final Exam.</li> </ul>
1.2	<b>Cognitive Skills</b>		
1.3	<ul style="list-style-type: none"> <li>Understand the fundamental concepts of communication systems.</li> <li>Understand and compare several analog modulation schemes.</li> <li>Apply sampling and quantization theorems to convert analog signals to digital.</li> <li>Design basic communications systems.</li> <li>Enhancing group work through team course.</li> <li>Ability to use the modern electrical engineering equipments practically.</li> </ul>	<ul style="list-style-type: none"> <li>Solve different applications of communication systems during the tutorials.</li> <li>Solve communications</li> </ul>	<ul style="list-style-type: none"> <li>Homework assignments.</li> <li>After performing the experiment tests, students have to submit an experiment sheet data.</li> <li>Two Midterm exams have to be done.</li> </ul>

		<p>problems using different tools in the lab to show the students how the economic way is to be considered.</p> <ul style="list-style-type: none"> <li>○ Use computer experiment tests to use communication systems practically.</li> </ul>	<ul style="list-style-type: none"> <li>○ Final Exams at the end of the semester.</li> </ul>
1.4			
2.0	<b>Interpersonal Skills &amp; Responsibility</b>		
2.1	<ul style="list-style-type: none"> <li>○ During the experiment tests students has to deal with each others to use the equipments and to get their experiment data.</li> <li>○ Students have to deal in a team workgroup during the experiment test,</li> <li>○ Students have the chance during the tutorials and lectures to ask any difficult questions to improve their self-confidence.</li> <li>○ During the classes students have to act in an ethical and responsible behaviour.</li> <li>○ During the different exams students have to act in an ethical and responsible behaviour.</li> </ul>	<ul style="list-style-type: none"> <li>○ Computer experiments tests</li> <li>○ Lab sessions and tutorials.</li> </ul>	<ul style="list-style-type: none"> <li>○ Record the attendance of the students every lab session.</li> <li>○ There is a computer experimental test.</li> <li>○</li> <li>○ Midterm and Final term exams</li> <li>○</li> </ul>
3.0	<b>Communication, Information Technology, Numerical Skills</b>		
3.1	<ul style="list-style-type: none"> <li>○ Use the computer programs MATLAB to draw the graph results of the experiment tests.</li> <li>○ The ability to use the kits in the laboratory in personal and in a group of students.</li> <li>○ The ability to formulate different mathematical solutions for the problem at hand.</li> </ul>	<ul style="list-style-type: none"> <li>○ Ask the students to use the office hours to ask more about their subject.</li> </ul>	<ul style="list-style-type: none"> <li>○ Attendance record for the students.</li> <li>○ Mid Term and final exams.</li> <li>○ Numerical experiments sheet results.</li> </ul>
3.3	<b>Psychomotor</b>		

4.0	None		
4.1			
5.0			
5.1			

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	1.2		2.1		3.2		4.1
1.1								
2.1								

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	Final Report	Every week	20 %
3	Quizzes and lab performance	Every week	20%
4	Mid-Term exam	7	20 %
6	Final Term exam	The end of the term	40 %

#### 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)

**6 hours weekly as office hours**

## E Learning Resources

1. List Required Textbooks
<i>Communications Systems</i> , Simon Haykin, John Wiley, 2010
2. List Essential References Materials (Journals, Reports, etc.)
<i>Modern digital and analog communication systems</i> , B. P. Lathi, Zhing, 2010 <i>Fundamentals of telecommunications</i> , 2nd Edition, Roger L. Freeman, 2005 <i>Telecommunication and Data Communications Handbook</i> , 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.)
AM Manual FM Manual PCM Manual
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.
COMM3 Lab System

## 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 Laboratory hall suitable for 30 students
2. Computing resources (AV, data show, Smart Board, software, etc.)
<ul style="list-style-type: none"> <li>Computers and multimedia equipment available in the class room</li> </ul>
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"> <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>
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor
<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>
3 Processes for Improvement of Teaching
<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>
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)
<b>Increase the experiment hours for the students in the laboratory.</b>
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
<ul style="list-style-type: none"> <li>• Ongoing updating and improving (during the course).</li> <li>• Annual updating and improving (during summers).</li> </ul>

Name of Instructor: \_\_\_\_\_ Dr. Seif Shebl Seif \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_5/05/1438H\_

Name of Course Instructor \_\_\_\_\_ Dr. Seif Shebl Seif \_\_\_\_\_

Program Coordinator: \_\_\_\_\_ Dr. Abdulkareem Almawgany \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_