



ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

**Course Specifications
(CS)**

Course Specifications

Institution: Najran University	Date of Report:
College/Department: College of Engineering/Electrical Engineering Department	

A. Course Identification and General Information

1. Course title and code: Logic Design 331EE-3		
2. Credit hours: 3(3,0,0)		
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Bachelor of Electrical Engineering		
4. Name of faculty member responsible for the course: Eng. Omar AlShorman		
5. Level/year at which this course is offered: 7th Level/3rd year		
6. Pre-requisites for this course (if any): None		
7. Co-requisites for this course (if any): None		
8. Location if not on main campus: Main campus		
9. Mode of Instruction (mark all that apply)		
a. Traditional classroom	<input checked="" type="checkbox"/>	What percentage? <div style="border: 1px solid black; padding: 2px; display: inline-block;">100%</div>
b. Blended (traditional and online)	<input type="checkbox"/>	What percentage? <div style="border: 1px solid black; padding: 2px; display: inline-block;"></div>
c. e-learning	<input type="checkbox"/>	What percentage? <div style="border: 1px solid black; padding: 2px; display: inline-block;"></div>
d. Correspondence	<input type="checkbox"/>	What percentage? <div style="border: 1px solid black; padding: 2px; display: inline-block;"></div>
f. Other	<input type="checkbox"/>	What percentage? <div style="border: 1px solid black; padding: 2px; display: inline-block;"></div>
Comments:		

B Objectives

1. What is the main purpose for this course? The aim of the course is to introduce to the students the topics that include combinational and sequential circuit analysis and design, digital circuit design optimization methods using random logic gates, multiplexers, decoders, registers, counters and programmable logic arrays.
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) - Increase use of simulation. - Increase use of internet resources.

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
Introduction to Digital logic Design.	Week 1	4 Hours
Binary Systems and Codes.	2	4 Hours
Boolean algebra and logic gates.	3,4	8 Hours
Simplification of Boolean functions.	5,6	8 Hours
Combinational logic circuits design and analysis.	7	4 Hours
Digital combinational logic (decoders, encoders, multiplexers, demultiplexers).	8,9	8 Hours
Digital combinational logic (adders and subtractors, comparators, multipliers, dividers).	10,11	8 Hours
Analysis of sequential circuits.	12,13	8 Hours

Design of sequential circuits.	14,15	8 Hours
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2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	45	15	-	-	Office Hours (60 Hours/semester)	120 Hours
Credit	3	-	-	-	-	3 Hours

3. Additional private study/learning hours expected for students per week: 0 Hours
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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
1.0	Knowledge		
1.1	Define number systems; decimal, binary, octal and hexadecimal..	1- Lectures. 2- Tutorials.	1- Quiz assignments. 2- Exams.
1.2			
2.0	Cognitive Skills		
2.1	Analyze boolean algebra and Karnaugh map for logic circuits simplification.	1- Lectures. 2- Tutorials.	1- Quiz assignments. 2- Exams.
2.2	Analyze and design combinational logic circuits.	1- Lectures. 2- Tutorials.	1- Quiz assignments Exams.
2.3	Analyze and design sequential logic circuits.	1- Lectures. 2- Tutorials.	1- Quiz assignments Exams.
3.0	Interpersonal Skills & Responsibility		
3.1	NA		
3.2			
4.0	Communication, Information Technology, Numerical		
4.1	NA		
4.2			
5.0	Psychomotor		
5.1	NA		
5.2			

Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

NQF Learning Domains	Suggested Verbs
Knowledge	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
Cognitive Skills	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
Interpersonal Skills & Responsibility	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write
Communication, Information Technology, Numerical	demonstrate, calculate, illustrate, interpret, research, question, operate, appraise, evaluate, assess, and criticize



Psychomotor	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	Quiz assignment # 1	Week 2	2%
2	Quiz assignment # 2	Week 6	2%
3	Quiz assignment # 3	Week 9	2%
4	Quiz assignment # 4	Week 11	2%
	Quiz assignment # 5	Week 15	2%
5	First Exam	Week 6	20%
6	Second Exam	Week 11	20%



7	Final Exam	(Week 16) At the end of the semester	50%
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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)
4 Office hours/week.

E. Learning Resources

1. List Required Textbooks Morris , "Digital Design", Prentice Hall, 2007.
2. List Essential References Materials (Journals, Reports, etc.) -http://lib.nu.edu.sa/digitalLibrary.aspx -John F. Wakerly, Digital Design: Principles and Practices Package, 4th edition, Prentice-Hall, 2007.
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) -
4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.) -
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. -

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 25 students.

2. Computing resources (AV, data show, Smart Board, software, etc.) Data Show Board
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) -

G Course Evaluation and Improvement Processes



1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching
- Open discussion for the students to touch their weak and strong points in the subject.
- Feedback from exams records.
- Complete course evaluation questionnaire by the students.
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor
Seminars for the teacher, to show his lectures arrangement and progress in front of all the staff members in the department.
3 Processes for Improvement of Teaching
Use more tutorial and videos to demonstrate the concepts of various course topics.
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)
Re-check the final term exam for some random students by another faculty member in the same field subject inside the department.

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.
Improve course contents by an external committee member in the same field of study in another institution.

Faculty or Teaching Staff: Omar AlShorman

Signature: _____

Date Report Completed: _____

Received by: _____

Dean/Department Head

Signature: _____

Date: _____