

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: 18/5/2014
College/Department: Faculty of Science and Arts, Sharourah/Computer Science Department	

A. Course Identification and General Information

1. Course title and code: Course Name: Computer Organization and Assembly Language Course Code: 403ENG-3 (٤٠٣ هند-٣)			
2. Credit hours Credit Hours: 3			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Computer Science Program			
4. Name of faculty member responsible for the course Dr. Khalid Ahmed Abood			
5. Level/year at which this course is offered 6 th Level of the Curriculum Plan (2 nd semester of the 3 rd year)			
6. Pre-requisites for this course (if any) 302 ENG-3 (Digital Logic Design)			
7. Co-requisites for this course (if any)			
8. Location if not on main campus - Main Campus: College of Science and Arts, Border District-King Abdul Aziz Road, Sharourah - Female Section: College of Science and Arts, Airport Road, Sharourah.			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	☒	What percentage?	100 %
b. Blended (traditional and online)	☐	What percentage?	
c. e-learning	☐	What percentage?	
d. Correspondence	☐	What percentage?	
f. Other	☐	What percentage?	
Comments: All courses taught in accordance with the Traditional classroom pattern as well as the department starts to formulate some e-learning courses in addition with taken into consideration the possibilities of applying long distance learning through the Internet in future			

B Objectives

1. What is the main purpose for this course?

The main purpose for this course can be summarized in the following points

- understand architecture and organization of computing systems and electronic computers,
- study the program execution, instruction format and instruction cycle,
- design a simple computer using hardwired and microprogrammed control methods,
- study the basic components of computer systems besides the computer arithmetic,
- understand input-output organization, and memory organization and management..

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)

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

Organization and Architecture. Computer Components, Computer Function, Interconnection Structures. Memory Organization: Internal Memory: Main Memory Cache Memory Design. External Memory. Input/Output: Programmed I/O, Interrupt-Driven I/O, Direct Memory Access. Serial Communication. Central Processing Unit: Computer Arithmetic: Integer and Floating-Point Representation and Arithmetic. Instruction Sets: Characteristics and Functions, Types of Operands, Data Types. Addressing Modes and Formats. Processor Structure and Function: Register Organization. Instruction Cycle, Instruction Pipelining. Control Unit: Hardwired Implementation. Microprogrammed Control.

1 Topics to be Covered

Topics	No of Weeks	Contact hours
Introduction Organization and Architecture, Structure and Function, Brief History of Computers	1.5	3
Computer Function and Interconnection Computer Components, Computer Function, Interconnection Structures, Bus Interconnection, PCI	2	4
Memory Organization Computer Memory System Overview Internal Memory Technology: Semiconductor Main Memory, Error Correction, Advanced DRAM Organization Cache Memory: Cache Principles, Elements of Cache Design. External Memory: Magnetic Disk, Optical Memory	2.5	5

Input/Output I/O Modules, Programmed I/O, Interrupt-Driven I/O, Direct Memory Access, I/O Channels and Processors. Serial Communication. + Mid term test	2.5 + 0.5	5 + 1
Central Processing Unit Computer Arithmetic: Integer Representation, Integer Arithmetic, Floating-Point Representation, Floating-Point Arithmetic. Instruction Sets: Characteristics and Functions, Machine Instruction, Types of Operands, Data Types. Addressing Modes and Formats, Processor Structure and Function: Processor Organization, Register Organization, Instruction Cycle, Instruction Pipelining.	3.5	7
Control Unit Control Unit Operation: Micro-operations, Control of the Processor, Hardwired Implementation, Micro-programmed Control: Basic Concepts, Microinstruction Sequencing, Microinstruction Execution	2.5	5

1 Topics to be Covered		
Topics	No of Weeks	Contact hours
Introduction to Assembly language	1	3
Registers types and interrupts	2	6
Input/ output programs	1	3
Arithmetic and logic operations	2	6
Subroutine using CALL, RET + Mid term test	3	9
Arrays operation	2	6
Sorting and Searching in Assembly Programming	3	9

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	-	30	-		60
Credit	30		15	-		45

3. Additional private study/learning hours expected for students per week.

Office hours

4

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

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	Memorize the background adequate theory of the components of Computing	Lectures.	- Written tests and final examinations - Evaluate the assignments
1.2	List the commands and instructions used in the implementation of the processes and the transfer of information		
1.3	Identify the key components of computer systems		
1.4	List the steps to implement the software and instructions		

2.0	Cognitive Skills		
2.1	Design the basic units of computer systems	• Practical application.	• Evaluate the Assignments • Evaluate the report.
2.2	Differentiate between the basic processes and sub-paths of different computer		
2.2	Design programs in assembly language		
3.0	Interpersonal Skills & Responsibility		
3.1	Develop personal and professional skills through self-learning and collaborative learning	• Lectures. • Discussion	• Assessment of Assignments • Assessment of seminars • personal Assessment
4.0	Communication, Information Technology, Numerical		
4.1	Demonstrate the use of modern technology in the presentation and report writing.	• Lectures. • Discussion	• Written test and final examinations • Assignments
4.2			
4.3			
5.0	Psychomotor		
5.1	None		

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

No .	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Midterm examination	8 th week	20
2	Individual and group assignments	Over the semester	5
3	Short tests (Quizzes)	Over the semester	5
4	Attendance	Over the semester	10
5	Midterm Practical examination	10 th week	10
6	Final practical examination (project)	13 th week	10
7	Final written examination	Semester end	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) 4 Office hours

E. Learning Resources

1. List Required Textbooks

- William Stallings,” Computer Organization and Architecture: Designing for Performance”, Prentice Hall , 6th edition , 2004, ISBN: 0-13-035119-9.

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

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

- 1) V. Carl Hamacher, et al,” Computer Organization”, McGraw Hill, 2001, ISBN: 0071122184.
- 2) David A. Patterson, John L. Hennessy,” Computer Organization & Design: The Hardware-Software Interface”, Morgan Kaufmann, 2004, ISBN 1558606041.
- 3) Peter Abel, "IBM PC Assembly language and programming", fourth edition, 1998.

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.)

- The Classrooms, laboratories size have to be suitable to accommodate all the students enrolled in the course

2. Computing resources (AV, data show, Smart Board, software, etc.)

- halls have to be equipped with a data display (data show)
 - The software is available for the scheduled topics
- Note: identify sources of Computer and software required depending on the selected topics.

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

identify laboratory equipment required depending on the selected topics

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:

- ✓ Distribution of a questionnaire for students to know how to achieve the goals in the theoretical and practical side.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor:

- ✓ Discussions with colleagues who specialize in teaching methods and means of learning.
- ✓ Self-evaluation of the performance of the teacher.

✓ Discussions with other colleagues who taught this course.
3 Processes for Improvement of Teaching ✓ Diagnose weaknesses and turn them into strengths. ✓ Discussions about the decision and methods of teaching ✓ Study the needs of the labor market of college graduates
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)
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

Faculty or Teaching Staff: Dr. Khalid Ahmed Abood

Signature: _____ **Date Report Completed:** 19/5/2014

Received by: _____ **Dean/Department Head**

Signature: _____ **Date:** _____