

ATTACHMENT 5.

Kingdom of Saudi Arabia
The National Commission for Academic Accreditation &
Assessment

T6. Course Specifications
(CS)

Course Specifications

14012109-3 Compilers Construction

Institution : Umm Al-Qura University	Date : 14/4/2016
College/Department : College of Computers and Information Systems/Computer Science	

A. Course Identification and General Information

1. Course title and code: 14012109-3 Compilers Construction			
2. 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			
4. Name of faculty member responsible for the course Khaled Nasser ElSayed			
5. Level/year at which this course is offered 2nd year / (level 6)			
6. Pre-requisites for this course (if any)) 14012401-3 Data Structures			
7. Co-requisites for this course (if any) None			
8. Location if not on main campus Al-Abidiyah campus (Boys) and Al-Zaher campus (Girls), Makkah Al Mukarramah			
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: Mainly traditional classroom will dominant the mode on instruction. There is a need to apply some modes in some situations.			

B Objectives

<p>1. What is the main purpose for this course?</p> <ol style="list-style-type: none"> Gain an understanding of how compilers translate source code to machine executable. Utilize tools to automate compiler construction. Comprehend how to perform parsing (top down and bottom up). Understand how compilers generate code to manage memory during runtime. Be familiar with techniques for simple code optimizations. Have the knowledge to design, implement, and test a compiler for a simple language
<p>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)</p> <ol style="list-style-type: none"> Increase the use of the latest Web-based reference material and textbooks. Review and update the course materials as part of preparation to teach this course. Gather students' opinions about their success in achieving course objectives by the end of the semester. This is done through number of survey questions that map one-to-one with course objectives. Review and indicate which assessment instrument(s) to be used for assessing each course outcome, and what grading rubric will be used for each instrument.

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

<p>Course Description: This Course should give a wide overview of compilers constructions including lexical, syntax, and semantic analysis and other phases of compilation process.</p>
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1 Topics to be Covered		
List of Topics	No of Weeks	Contact hours per week
Introduction to compilers structure & goals	1	2
Arithmetic expression processing using a stack	1	2
Simple compiler structure	1	2
Grammar, parse tree, and ambiguous grammar	1	2
Translation schemes	1	2
Context-free grammar & parsing	1	2
Introduction to left recursion and right recursion	1	2
Lexical analyzer (language, errors, pattern specifications)	1	2
Operations on languages and regular expressions	1	2
Finite automata	2	2

Parsers and errors and sentential error					1	2
Left recursion and left factoring					1	2
FIRST, FOLLOW, and transition diagrams					1	2
2 Course components (total contact hours per semester):						
Lecture: 45	Tutorial: 0	Laboratory 0	Practical/Field work/Internship	Other:		

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

3. Additional private study/learning hours expected for students per week.	4
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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.			
<p>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.)</p>			
Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Description of the knowledge to be acquired	Course lectures, tutorials,	Quizzes

		assignments. Providing references and supporting reading materials for self-study.	Assignments
1.2	Introduces the students to the basic techniques that underlie the practice of Compiler Construction.	Course lectures, tutorials, assignments Providing references and supporting reading materials for self-study.	Quizzes Assignments Midterm Exam Final Exam
1.3	Introduced the theory and tools that can be standardly employed in order to perform syntax-directed translation of a high-level programming language into an executable code.	Course lectures,, tutorials, assignments, and a group project. Providing references and supporting reading materials for self-study.	Quizzes Assignments Midterm Exam Project Final Exam
1.4	Discusses various aspects of the run-time environment into which the high-level code is translated.	Course lectures, tutorials, assignments, and a group project. Providing references and supporting reading materials for self-study.	Quizzes Project
1.5	Provides deeper insights into the more advanced semantics aspects of programming languages, such as recursion, dynamic memory allocation, types and their inferences, object orientation, concurrency and multi-threading.	Course lectures, labs, tutorials, assignments, and a group project. Providing references and supporting reading materials for self-study.	Quizzes Assignments Midterm Exam Project Final Exam
2.0	Cognitive Skills		
2.1	Students will be able to analyze varying perspectives regarding Compiler construction and phases	Seminars and open discussion and debates (groups)	Presentation, project, midterm, final exam
2.2	Students will be able to critically analyze issues of the different functions and process in the topics the studied locally and internationally	Seminars and open discussion and debates (groups)	Presentation, project, midterm, final exam
2.3	Students will propose creative solutions to local issues to the use of technology	Seminars and Term Papers	Presentation, project
3.0	Interpersonal Skills & Responsibility		
3.1	Leadership	<i>Collaborative Project work</i> Project management skills should be implemented	Project presentations Observation of collaborative work Campaign work development

		Communication skills with others via projects	
3.2	Group work	<i>Collaborative Project work</i> Public presenting via campaign Communication skills with others via projects	Project presentations Observation of collaborative work Success rate of group communication
3.3	Group communication skills	<i>Collaborative Project work</i> Communication skills with others via projects	Observation of collaborative work Success rate of group communication
3.4	Debate skills	<i>Collaborative Project work</i> Project management skills should be implemented	Observation of collaborative work Campaign work development
3.5	Public speaking	Public presenting via campaign Communication skills with others via projects	Project presentations Success rate of group communication
4.0	Communication, Information Technology, Numerical		
4.1	Leadership	<i>Collaborative Project work</i> Project management skills should be implemented Communication skills with others via projects	Project presentations Observation of collaborative work Campaign work development
4.2	Group work	<i>Collaborative Project work</i> Public presenting via campaign Communication skills	Project presentations Observation of collaborative work Success rate of group communication

		with others via projects	
4.3	Group communication skills	<i>Collaborative Project work</i> Communication skills with others via projects	Observation of collaborative work Success rate of group communication
4.4	Debate skills	<i>Collaborative Project work</i> Project management skills should be implemented	Observation of collaborative work Campaign work development
4.5	Public speaking	Public presenting via campaign Communication skills with others via projects	Project presentations Success rate of group communication
5.0	Psychomotor		
5.1	N/A	N/A	N/A
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.) (I = Introduction P = Proficient A = Advanced)

Course LOs #	Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications)										
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1.1			P	P					P		
1.2			P	A					A		
1.3			A	A					P		
2.1			P	P					P		
2.2			A	A					P		
2.3			P	A					P		
3.1			P	A		A			A		
3.2			P	A		A			A		
3.3			A	A		P			A		
3.4			P	A		A			P		
3.5			P	A		A			A		
4.1			P	P					A		
4.2			P	P					A		
4.3			A	P					P		

4.4			A	P					P		
4.5			A	P					A		
5.1											

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
Asses sment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	Homework 1	2	2.5
2	Quiz1	4	5
3	Midterm	10	20
4	Homework 2	12	2.5
5	Quiz 2	13	5
6	Group Project	14	15
7	Final	16	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)

Three Office Hours

E Learning Resources

1. List Required Textbooks

Compilers: Principles, Techniques, and Tools ,A. V. Aho, R. Sethi, J. D. Ullman; (c) 2010;

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

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

4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

[Slides and site for discussing compilers issues](#)

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software

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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 Special studies space Library
2. Computing resources (AV, data show, Smart Board, software, etc.) Internet facility Web Journal access
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) PRINTERS MAC LABS (preferred for campaigns)

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Questionnaires Individual and Group Meetings
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department Comparisons of Assessments tools
3 Processes for Improvement of Teaching Workshops, Research of new issues
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) Peer Reviews and Sample Second Marking Jury marking for campaign effectiveness
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. Monthly Progress Report tells the achievements and drawbacks may need improvement

Name of Instructor: Khaled Nasser ElSayed

Signature: _____ Date Report Completed: 14/2/2016

Name of Course Instructor Khaled Nasser ElSayed

Program Coordinator: _____

Signature: _____ Date Received: _____