



Information and Computer Science Department

Syllabus

ICS103: Computer Programming in C 2017 / 2018 First Semester (Term 171)

Course Website: Blackboard CE 8 (WebCT) <http://webcourses.kfupm.edu.sa/>

Class Times and Venues: Registrar Website <http://regweb.kfupm.edu.sa/>

List of lecture instructors:

INSTRUCTOR	Office	Phone	E-mail Address	Office Hours
Dr. Louai Al-Awami	22/317	1948	louai@kfupm.edu.sa	M:11:00-12:00 and W:10:00-12, or by appointment
Dr. Mohamed Balah	22/324-1	1390	mbalah@kfupm.edu.sa	UTW 9:00-10:00 and by appointment
Dr. Othman Baroudi	22-144	4283	ubaroudi@kfupm.edu.sa	MW: 11:00-11:55 AM and by appointment
Mr. Muhammad Aslam	23/054	3980	mwaslam@kfupm.edu.sa	MW 8:00-09:00 and by appointment
Dr. Md Rafiul Hassan	22/318	7330	mrhassan@kfupm.edu.sa	UT: 3.30PM to 5.00PM
Dr. Tareq El-Bassuny	22-137-3	1967	helmy@kfupm.edu.sa	MW: 2:00-3:30 PM and by appointment
Dr. El-Sayed El-Alfy	22/108	1930	alfy@kfupm.edu.sa	MW: 10:00-11:00AM and by appointment
Dr. C Kamal	23/082	2082	cskamel@kfupm.edu.sa	U,T: 11:00 am – 13:00 and by appointment
Dr. Ayman Hroub	59/1023	8984	aymanh@kfupm.edu.sa	Monday (2:00-3:00) pm or by appointment
Dr. Ali Al-Suwaiyan	22/143	N/A	alisuwaiyan@kfupm.edu.sa	Contact this instructor for more information
Dr. Muhamed Mudawar	22/328	4642	mudawar@kfupm.edu.sa	UTR 9:00 – 11:00 AM
Dr. Samer Arafat	22/329	7718	arafat@kfupm.edu.sa	UT 1:30 – 3:00 pm, or by appointment

Course Catalog Description

Overview of computer hardware and software; Programming in C with emphasis on modular and structured programming technique; Problem solving and algorithm development; Simple engineering and scientific problems.

Note: ICS 103 cannot be taken by ICS/SWE students.

Co-requisites: MATH 101 or MATH 132

Course Objectives

Provide engineering students with basic knowledge of programming in C and problem solving.

Course Learning Outcomes

Upon completion of this course, each student should be able to:

1. Understand and find the output of simple C programs that incorporate different types of variables, expressions (arithmetic and logical), selection, and iteration.
2. Understand and find the output of more complex C programs containing arrays and invoking (calling) functions having input and output arguments using pointers.

3. Design and implement simple programs using basic syntax of C language such as assignment, expressions, selection, and iterations.
4. Practice modular programming by developing more complex C programs made of functions passing data between them using arrays, input, and output arguments.

Lab Learning Outcomes

Upon completion of the lab, each student should be able to:

1. Use effectively a software development tool for C programming.
2. Comprehend theoretical concepts through practical examples.
3. Strengthen programming capabilities to construct software systems of varying complexity.
4. Enhance teamwork and communication skills.
5. Engage in continuing professional development.

Required Material

- Textbook: Problem Solving and Program Design in C, 8th Ed., by Jeri R. Hanly & Elliot B. Koffman. Prentice Hall, 2016.
- Lecture Slides.
- Lab Documents.

Other Recommended References

- Problem Solving and Program Design in C, 8th Ed., by Jeri R. Hanly & Elliot B. Koffman. Prentice Hall, 2016.
- C Programming: A Modern Approach, 2/e, by K. N. King, 2008.
- C Programming Language, 2/e, by Brian W. Kernighan & Dennis M. Ritchie. Prentice Hall, 1988.
- C for Engineers and Scientists, by Harry H. Cheng. McGraw Hill, 2009.
- C How to Program, 5/e, By Deitel & Deitel, 2007.
- Engineering Problem Solving with C, 3/e, by Delores M. Etter, 2005.

Assessment Plan

Evaluation Method	Weight
Lab Work: Lab Tests (15%), Lab work (2.5%), Project (2.5%)	20 %
Quizzes (5 quizzes, 4% each)	20 %
Homework Assignments	5 %
Midterm Exam Saturday November 11 (10:00 AM – 12:00 noon) Location: Building 54, Exhibition Center Material: from the first set of lecture slides up to (and including) all of repetition: Chapters 1, 2, 4, and 5.	25 %
Final Exam: 08:00 AM, Sunday, January 07, 2018 Location: To be announced by the Registrar Material: Comprehensive	30 %

Course Weekly Schedule

		Lecture			Lab <small>(Check "Lab Syllabus & Regulations" document for details)</small>
Week#	Dates	Topic		Notes	Topic
1	Sept. 17-20	Overview of Computers and Programming	1.1-1.5		No Lab
		Overview of Computers and Programming	1.1-1.5		
Sunday 24 Sept		NATIONAL HOLIDAY			
2	Sept. 25-28	C language Elements Variable Declarations and Data Types The const modifier	2.1 2.2		Lab 00: Introduction of the Lab; Use of IDE Environment to Write, Compile and Run C Programs
		Executable Statements General Form of a C program	2.3 2.4		
3	Oct. 1-5 (Normal Sunday classes on Oct. 7)	Arithmetic Expressions Formatting Numbers in Program Output The e-format specifier Common Programming Errors	2.5 2.6 2.8	Quiz # 1	Lab 01: Data Types and Console I/O
		Selection Structures Single and two way selection, Compound statements	4.1-4.2		
4	Oct. 8-12	Selection Structures Single and two way selection, Compound statements	4.3-4.6	HW # 1 (Assigned)	Lab 02: Expressions
		Selection Structures Multiway selection, Nested-if and switch statements	4.7-4.9		
5	Oct. 15-19	Repetition and Loop Statements while-loop, Compound assignment operators	5.1-5.3	Quiz # 2	Lab Test 1 (Labs 1,2) 3% Lab 03: Selection
		Repetition and Loop Statements for loop, increment and decrement operators, conditional loops	5.4-5.5		
6	Oct. 22-26	Repetition and Loop Statements Sentinel-controlled loops, nested loops, do-while loop Common Programming Errors	5.6-5.8 5.12	HW # 1 (Due) HW # 2 (Assigned)	Lab 04: Repetition-1
		Building Programs from Existing Information Library Functions Top-Down design	3.1 3.2 3.3		
7	Oct. 29- Nov. 2	Functions without Arguments Functions with Input Arguments	3.4 3.5 3.7	Quiz # 3	Lab Test 2 (Labs 3,4) 3% Lab 05: Repetition-2
8	Nov. 5-9	Pointers and Modular Programming	6.1 [Exclude Pointers to files]-6.3	HW # 2 (Due) HW # 3 (Assigned)	Lab 06: Functions without and with Input Parameters Project Announcement
		Pointers and Modular Programming	6.4-6.8		

	Saturday, Nov.11	Midterm Exam (10 AM)			
9	Nov. 12-16	Data Files	11.1 [Exclude formatting]		Lab Test 3 (Labs 5,6) 3% Lab 07: Functions with Output
		1D Arrays	7.1-7.3		
10	Nov. 19-23	Using Array Elements as Function Arguments const array parameters. Partial Arrays [Excluding Stacks]	7.4-7.5	Quiz # 4	Lab 08: Data Files
		Linear search, Selection sort, Parallel Arrays [Exclude Enumerated Types]	7.6, 7.7, 7.11		
11	Nov. 26-31	2D-Arrays [Exclude 3D-Arrays]	7.8 – 7.9	HW # 3 (Due) HW # 4 (Assigned)	Lab Test 4 (Labs 7,8) 3% Lab 09: 1-D Arrays (How to Read & Write Elements in 1-D Array)
		More on Arrays			
12	Dec. 3-7	Array Processing Illustrated		Quiz # 5	Lab 10: 1-D Arrays (How to Use 1-D Array with Functions)
		Strings Passing strings to functions, Passing strings using char pointers. Standard String functions.	8.1-8.2 Exclude strncpy and substrings]		
13	Dec. 10-15	Strings	8.3 [Exclude strncat]	HW # 4 (Due)	Lab 11: 2-D Arrays
		Strings	8.4		
14	Dec. 17-22	Strings			Lab Test 5 (Labs 9,10,11) 3% Lab 12: Strings Project Submission
		Review and Problem Solving			
15	Dec. 24-28	Review and Problem Solving			
	Sunday, January 7	Final Exam (8 AM)			

Course Policies

- **Minimum Passing Grade:** The minimum passing grade in the ICS 103 course is set to a total of **50/100**. Total scores less than **50/100** will result in an **F** grade.
- **Labs:** Lectures and labs are integrated and they complement each other. To pass this course, the student must pass the lab-component of the course.
- **Course Website & Participation:** Students are required to periodically check the course website and download course material as needed. Several resources will be posted through the website as well. Keys to quizzes, lab assessments and exams are generally discussed during class as time permits but solutions will be posted. **Keys to lab tasks will not be posted.** The Blackboard will be used for communication and interaction, posting and submitting assignments, posting grades, posting sample exams, etc. It is expected that you get benefit of the discussion board by raising questions or answering questions put by others.
- **Attendance:** Regular attendance is a university requirement; hence, attendance will be checked at the beginning of each lecture and lab. Late arrivals will disrupt the class session. Hence, two late attendances (**more than 10 minutes late**) will be considered as one absence. Missing more than **6 unexcused lectures** or **3 unexcused lab** will result in a **DN grade without prior warning**. To avoid being considered as absent, an official excuse must be shown no later than one week of returning to classes.
- **No makeup** of homework, quizzes, lab assessments, lab project or exams will be given.
- **Re-grading policy:** If you have a complaint about any of your grades, discuss it with the instructor **no later than a week of distributing the grades** (except for the final). Only legitimate concerns on grading should be discussed.
- **Office Hours:** Students are encouraged to use the office hours to clarify any part of the material that is not clear; however, the instructor will not solve assigned homework problems.

- **Courtesy:** Students are expected to be courteous toward the instructor and their classmates throughout the duration of this course. Talking while someone else is speaking will not be tolerated. Furthermore, all cell phones must be turned off during classes and exams. In addition, students are expected to be in class on time. More importantly, you are not allowed to leave the class unless it is an urgent matter.

Academic honesty

Students are expected to abide by all the university regulations on academic honesty. Cheating will be severely penalized.

Here are the main ICS 103 regulations related to cheating and plagiarism:

- Cheating in a homework assignment will result in getting a zero grade for that homework for all students involved.
- Cheating in a quiz will result in getting a zero grade in that quiz.
- Cheating in the lab project will result in zero grade in the lab project for all student groups involved.
- Cheating in an exam will result in a zero grade in that exam for all students involved. The students will also be reported to the Students Affairs Committee for further punishments.

NOTE: It is the student's responsibility to make sure his work in homework and lab project is not copied; the excuse that one does not know how his work got copied will not be accepted. The excuse that a cheating offence was a collaboration will also not be accepted. Each student is required to do each homework assignment alone. Each lab project group is required to do the lab project alone.

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