King Fahd University of Petroleum & Minerals

College of Computer Sciences and Engineering

ICS 103: Computer Programming in C (2-3-3)

Syllabus – Summer Semester 2009-2010 (093)

Website: Blackboard (WebCT)

Class Time, Venue and Instructor Information:

Sec.	Time	Venue	Sec.	Time	Venue	Instructor
01	SUMT 9:20-10:10am	24-146	51	UT 14:00-17:10	22-335	**Mr. AHMAD IRFAN** Office: 22-148-2 Phone: 03-860-1243 E-mail: irfanics@kfupm.edu.sa
02	SUMT 10:30-11:20am	24-165	52	SM 14:00-17:10	22-410	**Dr. FARAG AZZEDIN** Office: 22-107 Phone: 03-860-3431E-mail: fazzedin@kfupm.edu.sa
03	SUMT 10:30-11:20am	22-132	53	SM 14:00-17:10	22-335	**Dr. AIMAN EL-MALEH** Office: 22-318 Phone: 03-860-2811 E-mail: aimane@kfupm.edu.sa

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

Objectives

- To provide engineering students with basic knowledge of programming in C and problem solving.

Learning Outcomes

Upon completion of the course, you 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.

Required Material

- C Program Design for Engineers, 2/e, by Jeri R. Hanley & Elliot B. Koffman. Addison Wesley, 2001.
- Lecture and Lab Handouts

Other Recommended References

- Problem Solving and Program Design in C, 6/e, by Jeri R. Hanly & Elliot B. Koffman. Addison Wesley, 2009. (Latest edition of the textbook)

- C for Engineers and Scientists: An Imperative Approach, by Harry H. Cheng. McGraw Hill, 2009.
- Engineering Problem Solving with C, 3/e, by Delores M. Etter, 2005.
- C Programming: A Modern Approach, 2/e, by K. N. King, 2008.
- C How to Program, 5/e, By Deitel & Deitel, 2007.
- C Programming Language, 2/e, by Brian W. Kernighan & Dennis M. Ritchie. Prentice Hall, 1988.

Assessment Plan

Assessment Tool	**Weight**
Lab: Lab assignments 13%, Lab Project 7%	20%
Lecture quizzes	10 %
Homework assignments	10 %
Class Participation and Discussions in WebCT	5 %
Major Exam 1 (**Wed. July 21, at 7:00 pm-9:00 pm**)	15 %
Major Exam 2 (**Thur. August 12, at 10:00 pm-12:00 am**)	15 %
Final Exam (comprehensive) [Date: as announced by the registrar]	25 %

Tentative Schedule

Wk#	**Lecture**		**Lab**
	Covered Topics	**Readings**	**Topics**
1	Overview of Computers and Software	1.1-1.5, H1	Lab0: Introduction of lab course & check login & passwords & Distribution of Syllabus
	Overview of C	2.1-2.2, H2	
	Assignment, Input and Output	2.3-2.5, H3	Lab1: Introduction of C-Program & how to run & compile it.
	Arithmetic Expressions	3.1-3.3, H4	
2	Simple Standard Functions	3.4,3.5, H5	Lab2: Data Types
	Selection	4.1-4.5, H6	
	Selection (cont.)	4.6-4.7	Lab3: Expressions
	Repetition	5.1-5.5, H7	
3	Repetition (cont.)	5.6-5.8	Lab4: Selection
	Repetition (cont.)		
	Data Files	2.6, H8	Lab5: Repetition
	Function with input Arguments	6.1, H9	
4	Function with input Arguments (cont.) **(2 lectures)**	6.1	Lab6: Data Files
	Functions with output parameters (Using pointers)	6.3 , 6.5, H10	Lab7: Functions (with input parameters)
	Recursive Functions	6.6, H11	
5	1-D Array	7.1-7.3, H12	Lab8: Functions (functions with output parameters using pointers & recursive functions)
	1-D Array elements as Function arguments	7.4, H13	
	1-D Array elements as Function arguments (cont.)	7.4, H13	Lab9: 1-D Array (How to read & write elements in 1-D array)
	1-D Arrays as Function Arguments (cont.)	7.5	
6	1-D Arrays [Linear & Binary Search (Iterative & recursive methods), Sorting (bubble & Selection sort)]	7.5, H14	Lab10: 1-D Array (How to use 1-D array with functions)

	Strings	7.6, H15	Lab11: 1-D Array (Linear & Binary (Iterative & Recursive both) Searching) & Selection & Bubble Sort)
	Strings (cont.) **(2 lectures)**	7.6	
7	Introduction of 2-D Array	8.1, H16	Lab12: Strings
	2-D Array	8.2,8.3, H17	
	2-D Array (cont.) **(2 lectures)**		Lab13: 2-D Array

Note: H1, H2, .., H17 refer to handouts provided in addition to the textbook

Additional Notes

- ***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. The requirements for the lab project will be discussed in the lab.
- ***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 and exams will be posted on WebCT. WebCT 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) will be considered as one absence. Missing more than 9 lectures or three or more unexcused labs 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. Every three unexcused absences lead to a loss of 0.5% of total grade.
- ***No makeup of homework, quizzes 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 only provide hints if it is an assigned task but not solve it.
- ***Academic honesty***: Students are expected to abide by all the university regulations on academic honesty. Cheating will be reported to the Department Chairman and will be severely penalized. Although collaboration and sharing knowledge is highly encouraged, copying others' work without proper citation, either in part or full, is considered plagiarism. Whenever in doubt, review the university guidelines or consult the instructor. Cheating in whatever form will result in F grade.
- ***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 class 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. To contact your instructor, please use email through WebCT whenever possible and avoid using phone calls or written notes. When necessary to send an email through the university email system, please indicate ICS103-093 in the "Subject" field of your email, e.g. ICS103-03: Question about homework 1.

⊙⊙⊙ **Best of luck!!** ⊙⊙⊙