



King Fahd University of Petroleum & Minerals
College of Computer Sciences and Engineering

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

Syllabus – Second Semester 2009-2010 (092)

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/COE students.

Co-requisites: MATH 101 or MATH 132

Instructor Dr. Aiman H. El-Maleh. Room: 22/318 Phone: 2811 Email: aimane@kfupm.edu.sa

Office Hours UT 10:00-11:00, and by appointment

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 6%, Lab Project 5%, 3 Lab quizzes 9%	20%
Lecture quizzes	5 %
Homework assignments	5 %
Class Participation and Discussions in WebCT	5 %
Major Exam 1 (Th. March 25)	15 %
Major Exam 2 (Th. May 13)	20 %
Final Exam (comprehensive) [Date: as announced by the registrar]	30 %

Tentative Schedule

Lecture Schedule			Lab Schedule	
Week of	Topic	Sections	Topic	Other Activities
Feb. 20-24	Overview of Computers and Software	1.1-1.5, H1	Lab 0: Introduction of lab course & check login & passwords & Distribution of Syllabus	
Feb. 20-24	Overview of C	2.1-2.2, H2		
Feb. 27- Mar 03	Assignment, Input and Output	2.3-2.5, H3	Lab 1: Introduction of C-Program & how to run & compile it.	
Feb. 27- Mar 03	Arithmetic Expressions	3.1-3.3, H4		
Mar. 06-10	Simple Standard Functions	3.4,3.5, H5	Lab 2: Data Types	
Mar. 06-10	Selection	4.1-4.5, H6		
Mar. 13-17	Selection	4.6-4.7	Lab 3: Expressions	
Mar. 13-17	Repetition	5.1-5.5, H7		
Mar. 20-24	Repetition	5.6-5.8	Lab 4: Selection	
Mar. 20-24	Repetition			
Major Exam 1 –Thursday March 25, 2010 at 9:00 -10:30 AM (Week 6)				
Mar. 27-31	Data Files	2.6, H8	Lab 5: Repetition	
Mar. 27-31	Function with input Arguments	6.1, H9		
Apr. 03-07	Function with input Arguments (2 lectures)	6.1	Lab 6:Data Files	Lab Quiz 1
Apr. 10-14	Functions with output parameters (Using pointers)	6.3 , 6.5, H10	Lab 7:Functions (with input parameters)	
Apr. 10-14	Recursive Functions	6.6, H11		
Midterm Vacation From Apr. 15 to Apr. 23				
Apr. 24-28	1-D Array	7.1-7.3, H12	Lab 8:Functions (functions with output parameters using pointers & recursive functions)	Lab Project announcement
Apr. 24-28	1-D Array elements as Function arguments	7.4, H13		
May. 1-5	1-D Array elements as Function arguments		Lab 9:1-D Array (How to read &	Lab Quiz 2

	(continued)		write elements in 1-D array)	
May. 1-5	1-D Arrays as Function Arguments	7.5		
May. 8-12	1-D Arrays [Linear & Binary Search (Iterative & recursive methods), Sorting (bubble & Selection sort)]	7.5, H14	Lab 10:1-D Array (How to use 1-D array with functions)	
May. 8-12	Strings	7.6, H15		
Major Exam 2 – Thursday May 13, 2010 at 12:00 – 2:00 PM (Week 11)				
May. 15-19	Strings (2 lectures)	7.6	Lab 11:1-D Array (Linear & Binary (Iterative & Recursive both) Searching) & Selection & Bubble Sort)	
May. 22-26	Introduction of 2-D Array	8.1, H16	Lab 12:Strings	
May. 22-26	2-D Array	8.2,8.3, H17		
May. 29- Jun. 02	2-D Array (2 lectures)		Lab 13:2-D Array	Lab Quiz 3
Jun. 05-09	Review			

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 are 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 2 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 unexcused absence leads 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.

☺☺☺ **Best of luck!!** ☺☺☺