CIS 161 - Introduction to Programming and Algorithms – SPRING 2012

PLEASE HAVE YOUR CELL PHONE ON SILENT MODE WHILE IN CLASS.

BEST WAY TO GET AN A - TURN YOUR WORK IN **EARLY**

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OFFICE HOURS: M-R -- 7:40-8:30am; 10:35-11:00am

TEXTBOOK: C Programming for Scientists and Engineers with Applications - Reddy & Ziegler

ISBN-13: 9780763739522

ADVISORY: Completion of CIS 101, and Eligibility for ENGL 099, READ 099 and MATH 130.

DESCRIPTION: This course is designed to give the student an introduction to the C programming language. Students will learn the basic elements of the C language, and a disciplined approach to program development using structured programming techniques for readability, maintainability, and defensive programming. Problem solving through stepwise development of algorithms and the mechanics of running, testing, and correcting programs is presented. Students will plan, create, test, and run their own programs to solve typical problems. BEFORE ENROLLING students should have basic computer experience and be able to save and retrieve files, run applications, print documents, and have sufficient aptitude with mathematics to solve simple algebraic equations and to appreciate the use of mathematical notation and formalism. The student should also have completed with a passing grade, one semester of a programming class.

ASSIGNMENTS: During the course of the semester, you will be assigned one assignment per class. Obviously copied work will be graded only once and the grade divided among those students who turned them in. You will be expected to turn in assignments at the beginning of the next class. They will, however, be accepted up to two weeks later. As assignment not turned in after two weeks will be given **NO** credit, ***REGARDLESS*** of the reason. No time will be given at the beginning of class for printing.

**IMPORTANT STUFF TO REMEMBER IF YOU WANT 10 POINTS ON AN ASSIGNMENT!!!**

1. The first thing I want to see on the top of your paper is your name on one line all by itself. On the second line, I want to see the chapter number.

2. Assignments must be turned in at the BEGINNING of class on ***or before*** the deadline to receive credit. NO CREDIT WILL BE GIVEN TO LATE WORK (no exceptions). You will not be given time to print out a program on the day it is due.

3. A paper containing only your name and the assignment will receive one point.

4. Your assignments must have your name and the chapter number clearly displayed at the top of the front page. (see #1)

EXAMS: Three exams will be given. Two exams during the semester and one final exam. All three are equal credit. You will not be allowed to make up a missed exam unless I receive prior notice that you are going to be absent. You will be expected to be prepared to take the exam on your return.

GRADING: class participation (quizzes) 50 points

assignments 10 @ 10 points each 100 points

tests 3 @ 50 points each 150 points

total 300 points

270 - 300 A

240 - 269 B

etc.

Schedule (this is **TENTATIVE**)

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| --- | --- |
| 02/06/11 | Intro |
| 02/13/11 | Chapter 2 |
| 02/20/11 | NO CLASS |
| 02/27/11 | Chapter 3 |
| 03/05/11 | Chapter 4 Part I (4.1-4.2) |
| 03/12/11 | TEST Chapters 2-3 |
| 03/19/11 | Chapter 4 Part II 4.3 |
| 03/26/11 | Chapter 5 |
| 04/02/11 | SPRING BREAK |
| 04/09/11 | Chapter 7 |
| 04/16/11 | Chapters 8 |
| 04/23/11 | Test Chapters 4, 5 & 7 |
| 04/30/11 | Chapter 9 |
| 05/07/11 | Chapter 10 |
| 05/14/11 | Chapter 11 |
| 05/21/11 | Final Exam Chapters 8-11 |
| 05/28/11 | NO CLASS |

ASSIGNMENTS:

You will be expected to turn in assignments at the beginning the next class after they are assigned, but will be accepted up to two weeks after they are assigned. As assignment not turned in after two weeks will be given NO credit, REGARDLESS of the reason. No time will be given at the beginning of class for printing assignments on the night of the deadline.

LAB RULES:

1. Food and drinks are not allowed on the third floor of this building with the exception of bottled water. There will be no exceptions to this rule.

2. Computers must be turned off during the lecture unless otherwise specified.

ATTENDANCE: More than two absences or 4 tardies will result in you being dropped from the class. I may make exceptions to this if I am given advance notice and there is a legitimate reason. It is recommended that you become friends with another student in class and exchange email addresses or phone numbers so that you can contact them in case you do have to miss class. Be here and BE ON TIME.

COURSE OBJECTIVES:

**Upon completion of course, the successful student will be able to:**

1. Describe and explain the essence of a programming language and characteristics specifically related to:

a. declarations of variables of various data types

b. arithmetic and logical operators

c. control structures for selection and iteration

d. function definitions

e. passing arguments to functions and receiving its returned value

f. declaring and using arrays, strings, and structures

g. console input and output

h. reading and writing data files

i. bit operations

j. pointers

k. standard C library routines

2. Solve problems through stepwise development of algorithms.

3. Use structured programming techniques to plan, code, run, test, and debug C code to solve the problem.

4. Create well documented, highly modular and easily maintainable programs.

COURSE OUTLINE:

|  |  |
| --- | --- |
| I. Introduction  a. Operating systems  b. Overview of programming languages  c. Compiling, testing, and debugging  d. Integrated development environment  e. Structure of a C program  f. Header files  g. Preprocessor commands and macros  h. Program documentation  II. Syntax and Semantics of the C Language  a. Data types  b. Naming of identifiers  c. Variable declarations and definitions  d. Arithmetic, logical, and bit-wise operators  e. Assignment operator  f. Expressions  g. Operator precedence and associativity  h. Variable scope, storage class, and lifetime  i. Conditional and iterative control structures  j. Function definitions and declarations  k. Passing values and addresses to functions  l. Complex data types  1. Arrays  2. Addresses and pointers  3. Character strings  4. Structures | m. Console input and output  n. Data files  o. Casts  p. Dynamic memory allocation  q. Command line arguments  III. Standard C Library Functions  a. Input and output functions  b. Character functions  c. Mathematical functions  d. Utility functions  e. String functions  IV. Machine Level Representation of Data  a. Bits, bytes, and words  b. Numeric data representation  c. Number bases: dec, oct, hex  d. Representation of character data  V. Algorithm and Problem Solving  a. Problem solving strategies  b. Implementation strategies for algorithms  c. Debugging strategies  VI. Software Development Methodology  a. Fundamental design concepts  b. Functional decomposition  c. Human-computer interaction |

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