

16.216: ECE Application Programming

Summer 2012

Syllabus

Course Meetings

TTh 2:00-5:00 PM, Olsen 405
F (7/27 & 8/10 only), 2:00-5:00 PM, Olsen 405

Course Website

<http://mgeiger.eng.uml.edu/16216/sum12>

Course Discussion Group

All course announcements will be posted on the discussion group—you are responsible for checking the board regularly or enabling direct e-mail updates from Piazza.

Sign up link: <http://piazza.com/uml/summer2012/16216>

Instructor

Dr. Michael Geiger
E-mail: Michael_Geiger@uml.edu
Office: Perry Hall 118A
Phone: 978-934-3618 (x3618 on campus)
Office hours: MTTh 10-12 (*tentatively*)

Once posted, my office hours are the minimum that I will be available—I will (usually) be on campus five days a week. Feel free to stop by my office, e-mail me questions, or schedule a one-on-one appointment. Office hours are subject to change.

Textbook

K.N. King, *C Programming: A Modern Approach*, 2nd edition, 2008, W.W. Norton.
ISBN: 978-0-393-97950-3

Course Overview

Catalog Description: Introduces C programming for engineers. Covers fundamentals of procedural programming with applications in electrical and computer engineering and embedded systems. Topics include variables, expressions and statements, console input/output, modularization and functions, arrays, pointers and strings, algorithms, structures, and file input/output. Introduces working with C at the bit manipulation level. Laboratories include designing and programming engineering applications.

Credits: 3

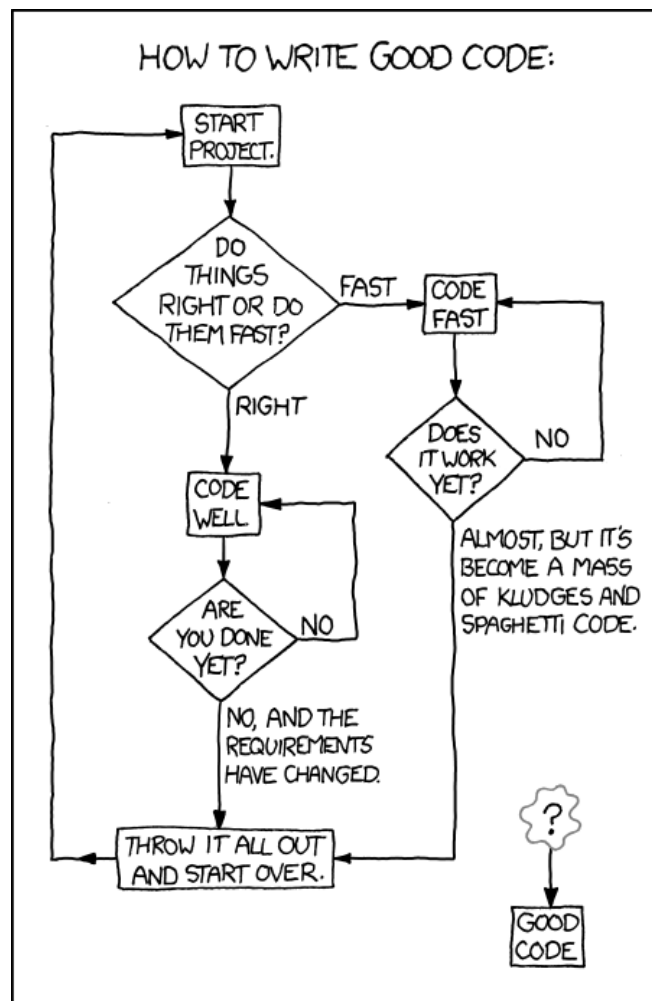
Prerequisites: 25.108 (Intro to Engineering II) and ECE major

Course Overview (cont.)

Course Objectives: By the end of this course, you should understand and be able to use all of the following:

1. **Basic C Language Concepts:** constants, variables, operators, expressions and assignment statements
2. **Input and Output:** Reading data from the keyboard and displaying formatted results on the screen
3. **Flow of Control 1 – Decisions and selection:** `if` and `switch` statements
4. **Flow of Control 2 – Repetition:** `while`, `do-while`, and `for` loops
5. **Functions:** Defining and calling functions. Using arguments to pass data to a function. Using arguments to obtain results from a function. Return values.
6. **Data Structures 1:** One and two-dimensional arrays. Character strings.
7. **Data Structures 2:** Structures, collections of data components of differing types.
8. **File Input / Output:** Writing programs which obtain input from a file rather than the keyboard, and which write results to a file rather than to the screen

What you'll really learn in this course ... ? (<http://xkcd.com/844>)



Course Overview (cont.)

Grading: Grades will be computed on an A to F scale; no A+ grades will be assigned, in accordance with UMass Lowell policy. The weights assigned to the various items are:

Programming assignments	60%
Exam 1	10%
Exam 2	15%
Exam 3	15%

Incomplete grades will only be given in exceptional situations, and the student must be passing the class at the time the grade is requested.

Programming assignments: Typically, you will have one week to complete each assignment. All assignments will be graded according to the program grading guidelines, to be distributed separately. Late assignments will lose 4^{n-1} points per day, including weekends and holidays. You will submit your work via e-mail directly to Dr. Geiger.

For each assignment, you will be allowed one resubmission to improve your grade without penalty. However, you must resubmit your assignment within 24 hours of your grade being posted. Note that late penalties still apply to resubmitted assignments for which the original submission is late. See the grading guidelines for more details.

Exams: Make-up exams will only be offered in exceptional circumstances. You must notify Dr. Geiger as early as possible in order to determine an appropriate make-up date.

Class participation: You are responsible for all material discussed or announced in class. You are expected to attend class regularly and participate in any in-class discussions, as such exercises are essential to your learning. Although lecture attendance is not explicitly required, regular attendance will improve your understanding of the course concepts.

Academic Honesty

All assignments and exams must be completed individually unless otherwise specified. You may discuss concepts or material covered in class, but may not share any details of your solutions to assigned problems, including algorithms and code. Plagiarism is also unacceptable and will be treated as an instance of cheating.

Students are allowed to discuss assignments in general terms and to help one another fix specific errors—examples include compiler errors or output formatting. In this case, students are required to note that they received assistance from a classmate by listing that person's name and the nature of their assistance as part of their assignment header.

Any assignment or portion of an assignment that violates this policy will receive a grade of zero for all parties concerned. Depending on the severity of the infraction, or in cases of repeat violations, additional penalties may be given at the instructor's discretion, up to and including a failing grade in the course.

Further information on the UMass Lowell Academic Integrity Policy can be found at: http://www.uml.edu/catalog/undergraduate/policies/academic_dishonesty.htm

Course Schedule

This schedule contains a tentative schedule of topics we will cover throughout the term; the course website will contain the most up-to-date version. The web page will also describe which section(s) of the textbook are associated with each lecture.

Please note that several days are denoted as "PE#"—in these classes, we will do an in-class programming exercise. While students will be able to participate even if they do not have a computer, I suggest anyone with a laptop bring it to class on these days.

Please note that the exam dates are fixed—the first exam will be held on **Tuesday, July 24 in class**, the second exam will be held on **Thursday, August 2 in class**, and the third exam will be held on **Thursday, August 16 in class**.

Lecture	Date	Lecture Topics	Programs
1	T, 7/10	Course introduction/overview Basic C program structure Data in C: Number systems, data types, constants, variables	Program 1 (due 7/13)
2	Th, 7/12	Variables; basic numeric output Input/output: printf() and scanf() PE1: Flowcharts, debugging basics	Program 2 (due 7/17)
3	T, 7/17	Operators Output formatting	Program 3 (due 7/20)
4	Th, 7/19	Conditional statements: if, switch PE2: Conditionals, formatting	Program 4 (due 7/26)
5	T, 7/24	Exam 1	
6	Th, 7/26	Loops: while, do-while, for, break/continue	Program 5 (due 7/31)
7	F, 7/27	PE3: Loops Functions: arguments, return statements	
8	T, 7/31	Pointers; pointer arguments PE4 (Functions and pointers)	Program 6 (due 8/3)
9	Th, 8/2	Exam 2 <i>NOTE: Saturday, 8/4 is last day to withdraw</i>	Program 7 (due 8/7)
10	T, 8/7	One-dimensional arrays Arrays, pointers, and functions Two-dimensional arrays	Program 8 (due 8/10)
11	Th, 8/9	Character arrays and strings PE5 (Arrays, strings)	Program 9 (due 8/14)
12	F, 8/10	File I/O Unformatted I/O	
13	T, 8/14	Structures	
	Th, 8/16	Exam 3	