

COMP 116: Introduction to Scientific Programming (Old COMP16)

	Section 601	Section 603
Instructors	Sudipta N. Sinha, ssinha@cs.unc.edu	Eli Broadhurst reb@cs.unc.edu
Lectures	M/W 12.30 – 1.45, Sitterson 011	M/W 12.30 – 1.45, Sitterson 014
Recitation	F 12.00 – 12.50 Sitterson 011	F 1.00 – 1.50 Sitterson 011
Office Hours	Sitterson 349, Ph: 962-1885 M/W 2-4pm, or by appointment	Sitterson 332, Ph: 962-1738 M/W 2-4pm, or by appointment

Recitation: Bring Your Own Laptop!

Catalog description:

COMP16: Introduction to Scientific Programming (3) Prerequisite, MATH 31.
An introduction to programming for computationally oriented scientists. Fundamental programming skills, using MATLAB and another imperative programming language (such as C). Problem analysis and algorithm design, with examples drawn from simple numerical and discrete problems. Students can only receive credit for one of COMP 14, 15, or 16. Fall. Snoeyink, Prins.

Invitation:

COMP 16 was created to address needs (expressed by Mathematics, Mathematical Sciences, Environmental Engineering, and the Carolina Environmental Program) for a one-semester introduction to programming for scientists. The course introduces many basics of programming (variables, data types, flow of control, modular design) that are common to many languages. Assignments will cover problems from scientific computing.

Most of the semester will be taught using MATLAB, with a couple of weeks at the end showing how the concepts migrate to the language C. MATLAB makes several things easier, such as working with matrices, plotting, and sophisticated mathematical functions. These will allow us to do sophisticated computation (on images, terrain data etc) as we develop the basics.

Learning a programming language is like learning spoken language. Texts and lectures are insufficient—one must use the language to make it your own. This has implications for how to study:

- There's always more than one way to say something, although some ways will be more "elegant" than others. You learn to recognize elegant expressions as you become more familiar with a language and to use them as you become more skilled.
- Keep a record of things you learn in the lab, lecture, and recitation sections. Whether this is a formal lab notebook, or a small diary or PDA for "new vocabulary", find a way that works for you to record your insights and ideas.

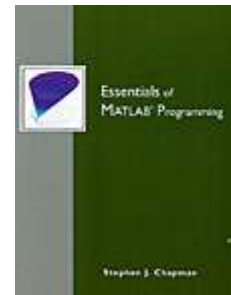
- Languages classes are cumulative; don't fall behind. Ask for assistance if you find yourself struggling.

Textbook:

Essentials of MATLAB® Programming by Stephen Chapman.

ISBN number: 0495073008.

It is in stock at UNC bookstore. Students who took Comp 16 in Spring-2006 used this book, so you could try to get a copy from them.



Web site: We use the Blackboard web site, <http://blackboard.unc.edu>, for access to handouts, email, online discussions. You need your ONYEN to log in to Blackboard. (See <http://onyen.unc.edu> if you need an onyen)

Software: MATLAB is available in all ATN labs <http://help.unc.edu/labs/>, and can be accessed out of AFS on the university network. For stand-alone use, a \$99 student edition can be purchased from the bookstore or <http://www.mathworks.com/store/index.html>.

Grading

Quizzes: 10% Assignments: 40%

Midterms: 25% Final Exam: 25%

Quizzes: (WILL BE ANNOUNCED IN CLASS on Mondays) There will be a 10-minute quiz at the end of lecture almost every Wednesday. No makeup is given for missed quizzes, but the lowest quiz score is dropped at the end of the term.

Assignments: Every other week there will be an assignment (involving programming) turned in using the Blackboard web site. Assignments are due at midnight on their due date. Assignments late by each lecture day will incur a 25% penalty (up to 2 lectures late).

Exams: There will be two midterms in class and a final exam.

Collaboration: Collaboration on assignments IS encouraged. However whatever you hand in (code, reports) must be your own writing/typing. Good scholarship requires that all collaboration must be acknowledged. Thus, if you collaborate on the solution of a problem set, I expect that you list your collaborators at the top of the page. Collaboration on in-class evaluations (quizzes, midterms, final) is, of course, a violation of the Honor Code. <http://www.cs.unc.edu/Admin/Courses/HonorCode.html>