

CS 1073 Introductory Computer Programming for Scientific Applications

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- Homepage:** <http://www.cs.utsa.edu/~whaley/teach/cs1073/>
- *Where:* SB 3.02.02
 - *When :* TR 2-3:15PM
 - *Req Text:* Fortran 90 Programming by Ellis, Philips & Lahey
 - *Prereq:*
 1. MAT 1073 Algebra for Scientists and Engineers

2. Intro to Programming with Fortran 90

AKA: Why should I care about this course?

- Programming makes the modern world work
 - TV, DVR, cell phone, microwave, car engine, toaster, google, facebook
- Programming allows us to solve engineering and scientific problems
 - simulation and pretty much any repetitive calculation
- Programming is the closest thing we've ever achieved to magic
 - You think about a problem, formalize a solution, type it in, and you magically have a check book balancer, a computer game, a simulation of a wing in air, or a nuclear collision analyzer
 - Math was our first magical predictor of the real world, but it requires that you are good at arithmetic & math :(
- Programming is a skill that will help you for the rest of your life:
 - Could be coolest thing you will ever learn
 - Will use in any computational science/engineering pursuit, or if you want a job created after 1912

3. What is programming?

Programming: the art and craft of formalized problem solving using a computer. It includes:

- Taking a problem from the real world that can be solved with computation
- Detailing everything you know about that problem
 - what are the inputs/outputs, which transformations you will support
- Translating these abstract ideas into a series of statements in a computer language that instruct the computer to solve the problem

4. Basics of this class

- Will have quasi-weekly assignments (20–30%); probably a few long-term assignments
- Will have at least three exams (60-75% of grade)
 - Will mostly require you to write programs!
- Signup sheet for every class, and sometimes quizzes (5-15%)

⇒ Bust out the syllabus!

5. Tips for Success

- Attend lecture (understanding, test material, partic, human nature)
- Start homework promptly
- Ask questions (class, recit, e-mail, office hours, by appt)
- If present material review, read ahead.
- Take notes, and don't assume slides are everything you need
 - When need to tie notes to slide, note that slides are numbered within lectures
- **PROGRAM!!** : programming is a craft, and you can't become a good programmer without practice
 - Take working programs and make small changes to see effects
 - Solve toy problems that interest you
 - Look for opportunities in life and work to program a solution
 - Remember that you must use before full understanding will be achieved, so experiment!