

VILLANOVA UNIVERSITY
Physics 2603
Computational Physics
Spring 2003

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Course web page: <http://www.phy.villanova.edu/syllabi/phy2601/index.html>
Alternate web page: <http://www.homepage.villanova.edu/Joseph.Schick/compphys/index.html>

Downloadable files are at the bottom of this page.

Printer friendly form of this syllabus.

Office Hours:

Monday & Wednesday: 10:30 to 11:20

Tuesday: 1:00 to 2:40

You are encouraged to make an appointment if these times are not convenient.

You are required to schedule a meeting with me during the first week of the course. You are welcome to stop by to discuss problems or other issues and ideas anytime during the semester.

Purpose: This course is designed to provide you with an introduction to the type of computing tasks which typically confront students of Physics and Astronomy, including: using computing hardware and operating systems and scientific numerical computing.

Text: *C++ How to Program*, Third Edition, H. M. Deitel and P. J. Deitel (Prentice Hall, 2001).

Organization: Each session will begin with an introduction to the topic of the day and then you will be assigned the project or homework for the week. You are expected to begin working on the assignment in class.

Turn in your assignment as soon as you finish or by Friday at 3:00 PM, whichever is sooner. Since substantial points are deducted for lateness, it is usually better to make an appointment to discuss the assignment with me and to hand in whatever you have done than it is to wait.

Bi-weekly projects: During the course you will write programs to model real systems. Writing the program is half of the work. Using each program, you are expected to perform trials, interpret the results, and write a lab report. The lab report grade will be based on the content and on the writing. These reports should be organized into sections:

1. **Project title** and your name
2. **Statement of purpose**
3. **Introduction to the method:** Explain in your own words how the calculation works.
4. **Results and discussion:** Explain what you have found using a logical presentation with

appropriate supporting tables or numbers. (Tables should be assigned “Table numbers” and figures, “Figure numbers” so you can refer to them from the text. Don’t add extra tables and numbers if you are not going to write about them.)

5. **Conclusion:** State how you have or have not reached the goal stated in the purpose.

Grading: Each assignment will be graded on a scale of 20 points. *Five points will be deducted from the score if the assignment is late.* Your grade will be computed from the average of your bi-weekly assignments.

Attendance: Attendance is mandatory in order to receive a grade other than N (incomplete) or F. University policy states that freshman students will receive either a Y (unofficial withdrawal) or an F for missing three or more labs, at the discretion of the instructor. To avoid these possibilities, contact your instructor as soon as possible and provide valid documentation.

Honesty: Villanova has an Academic Integrity Policy which will be enforced in this class. Violations will result in a failing grade for the course. Collaboration on assignments is a violation of this code.

Learning Support: It is the policy of Villanova to make reasonable academic accommodations for qualified individuals with disabilities. If you are a person with a disability please contact your instructor after class or during office hours and make arrangements to register with the Learning Support Office by contacting 610-519-5636 or at nancy.mott@villanova.edu as soon as possible. Registration is needed in order to receive accommodations.

Tentative Schedule:

<i>Date</i>	<i>Topic (handouts must be read before class)</i>
January 14 & 21	Pointers, String, and Files
January 28 & February 4	Numerical Differentiation
February 11 & 18	Numerical Integration
February 25 & March 11	The Cooling Problem
March 18 & 25	Particles and Newton's Second Law of Motion
April 1 & 8	Projectile Motion and Air Resistance
April 15 & 22	On Using Other Languages: FORTRAN