Algorithms

University of Virginia

Professor Gabriel Robins

Purpose: to study algorithms and complexity, with a focus on problem-solving.

the Mock Turtle said, "No wise fish would go anywhere without a porpoise."

Outline:

- Foundations
- Data structures
- Sorting
- Graph algorithms
- Geometric algorithms
- NP-completeness
- Approximation algorithms
- Advanced Topics

"I didn't know it," the Knight said, a shade of vexation passing over his face.

Prerequisites: Some discrete math and programming background is helpful, but not necessary.

Textbook: Cormen, Leiserson, Rivest, and Stein, Introduction to Algorithms, Second Edition, McGraw-Hill, 2001.

Suggested reading: Polya, How to Solve it, Princeton University Press, 1957.

Preparata and Shamos, Computational Geometry, an Introduction, Springer-Verlag, 1985.

Miyamoto Musashi, A Book of Five Rings, Overlook Press, 1974.

Grading scheme:

Homeworks:	25%
Midterm:	25%
Final:	25%
Project:	25%
Extra credit:	10%

Details:

- There will be several homework assignments, and solutions will be reviewed in class.
- There will often be in-class extra-credit problems: participation in these would help your grade (although non-participation in extra-credit will not hurt your grade).
- Class handouts and Q&A will be posted on the Web at: www.cs.virginia.edu/robins
- Extra credit will be given to the first finder of each mistake in my handouts and slides.
- Extra credit will be given to for turning in the project early.

"It seems a shame," the Walrus said, "To play them such a trick."

Good advice:

- Start working on the homeworks early, and work in study groups.
- Solve lots of problems and ask many questions along the way.
- Attend every class (much of the material builds on itself sequentially, so missing classes will diminish your ability to follow subsequent material).
- Do not fall behind or procrastinate; "cramming" won't work in this class!
- Start on the project early (before mid-semester); you won't be able to do it in the last week!
- Read your E-Mail often - it will be used as a primary means of notification.
- Feel free to ask questions at any time; I am here to help you.

Contact Information:

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Office hours: right after class, or by appointment, or by Email

The TA Office hours will be posted on the class Web page