

Geography 476
Computer Programming for GIS
Fall 2007

Instructor:

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Course overview and objectives

This course is an introduction to programming for geography students. The foundational concepts of computer programming will be introduced and the Visual Basic programming language will be the implementation medium for those concepts. By the end of the semester students will be able to design and implement programs that are correct, robust, and user-friendly for a variety of situations using both structured and object-oriented programming concepts.

Who should take this course?

The material presented by the course is crucial for anyone who works with geographic information systems and wants to customize a GIS environment for particular applications. Anyone who intends to pursue a career in GIS should enroll; completing this course successfully will add a dimension to your GIS portfolio that employers will find very attractive. Students who have completed Geography 306 or the equivalent are prepared for the material in this course.

Course requirements and grading

This class will require a significant commitment in time for programming assignments. The midterm and final exams will be projects that demonstrate your ability to synthesize the material and to produce working programs that incorporate geographic concepts. The course grade will be according to the following pattern:

- 25% : Midterm program
- 25% : Final program
- 50% : Weekly programming assignments

Required Textbooks

Schneider, David I. *An Introduction to Programming using Visual Basic 6.0*, Fourth edition-Update edition. Prentice Hall, 2004. ISBN: 0-13-142707-5.

Burke, Robert. *Getting to Know ArcObjects*. ESRI Press, 2003. ISBN: 1-58948018-X.

Software

We will use Visual Basic 6.0. The software is available in the Open Lab. It is also provided on a CD with the textbook. All students must have a UMD glue account to obtain permissions to

access the software in the lab. If you have never worked in the Open Lab, see me to get permission.

We will also use ESRI's ArcMap software, also available in the Open Lab.

Makeup Policy

This class is going to move fast and it is crucial that you keep up. As a result, all assignments must be turned in at the beginning of the class at which they are due. No late assignments will be accepted without prior arrangement.

Academic Honesty

The University of Maryland, College Park, has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student, you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit www.shc.umd.edu. *Within our class, you may work together to discuss concepts and solution ideas, but you must then produce a program that is original and individual.*

Blackboard

Announcements and assignments will be posted on Blackboard. Access your Blackboard account at <http://elms.umd.edu>.

Schedule

This is a tentative schedule. We will probably make changes as we go through the semester. Changes to the schedule will be announced in class and lab.

	Reading	Lecture	Assignment	Assignments Due Date
Aug 30		Course business Introduction		
Sep 4, 6	1.4, 2.1, 2.2	Designing a program	Draw flow chart & write algorithm Work through 3.1, 3.2	9-11
Sep 11, 13	3.3, 3.4	Variables/Constants Assignment Statements Arithmetic Statements Data types	Program 1: Hello, World Program 2: Distance on a great circle	9-18
Sep 18, 20	Chapter 5	Decisions	Program 3: Measurement Converter	9-25
Sep 25, 27	Chapter 6	Repetition	Program 4: Cryptogram	10-2
Oct 2, 4	Chapter 4	Subroutines	Program 5: Midterm: Predator-Prey Simulation	10-9
Oct 9, 11	Chapter 13	OOP	Program 6:	10-16
Oct 16, 18		OOP	Program 7:	10-23
Oct 23, 25	Chapter 7	Arrays (1 dimension)	Program 8:	10-30
Oct 30 Nov 1		Arrays (2 dimensions)	Program 9:	11-6
Nov 6, 8		Arrays (stacks, queues)	Program 10:	11-13
Nov 13, 15	Burke	Intro to ArcObjects		11-20
Nov 20	Burke	ArcObjects	Program 11:	11-29
Nov 27, 29	Burke	ArcObjects	Program 12:	12-4
Dec 4, 6	Burke	ArcObjects	Final Program Assigned	12-17
Dec 11	Burke	ArcObjects		
Dec 17		Final Program Due at 10:30		