Geography 476
Computer Programming for GIS
Fall 2009

Lecture: Tue. 2pm – 4pm, 1124 Lefrak
Lab: Thu. 9am–11am (0101), 11am–1pm (0102), 1136 Lefrak

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:

20% : Midterm program
25% : Final program
50% : Weekly programming assignments
5% : Attendance

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 Schneider 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 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
Sept. 1	1.4, 2.1, 2.2	Course business Introduction Designing a program	Draw flow chart & write algorithm Work through 3.1, 3.2
Sept. 8	3.3, 3.4	Variables/Constants Assignment Statements Arithmetic Statements Data types	Project 1: Hello, World Project 2: Distance on a great circle
Sept 15	Chapter 5	Decisions	Project 3: Measurement Converter
Sept 22	Chapter 6	Repetition	Project 4: Cryptogram
Sept 29	Chapter 4	Subroutines	Project 5: Linear Regression
Oct 6	Chapter 13	OOP	Project 6a: Predator-Prey algorithm
Oct. 13		OOP	Project 6b: Predator-Prey code
Oct 20	Chapter 7	Arrays (1 dimension)	Project 7: Descriptive Statistics
Oct 27		Arrays (2 dimensions)	Project 8: Game of Life
Nov 3		Arrays (stacks, queues)	
Nov 10	Burke 10-11	Intro to ArcObjects	
Nov 17	Burke 12,14	ArcObjects	Project 9: Map Layers
Nov 24	Burke 17-18	ArcObjects	Project 10: Queries/Cursors
Dec 1		ArcObjects	Final Project Assigned
Dec 8		ArcObjects	
TBA		Final Program Due at 10:30	