

I. COURSE DESCRIPTION:

The power of GIS lies in the automation of repetitive and complex GIS operations to save time, produce consistent results and present clients with products and interfaces usable with limited GIS knowledge. Upon successful completion of this course the student will have developed advanced GIS Visual Basic programming skills. Specific attention will be paid to Visual Basic 6.0, Visual Basic for Applications within ArcGIS, ArcObjects, and Structured Query Language (SQL).

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Perform advanced Visual Basic programming

Potential Elements of the Performance:

- Understand and use arrays and collections in VB
- Using VB to communicate with an Access database
- Use COM technology in VB programming
- Perform SQL queries using VB
- Package VB applications for external use
- Use Active X controls with VB

2. Customize ArcGIS with Visual Basic

Potential Elements of the Performance:

- Understand the connection of ArcObjects and VB to ArcGIS
- Understand the role of UIControls
- Understand object modeling terminology specific to GIS
- Read UML diagrams
- Read ArcObjects object models
- Develop Visual Basic code to customize ArcGIS
- Work with SQL in ArcGIS

III. TOPICS:

1. Advanced Visual Basic Programming
 - Review of Introduction to VB material
 - Collections and arrays
 - COM components
 - ListBoxes and ComboBoxes
 - ADO Data Control
 - DataGrid control
 - Active X controls
 - Packaging Visual Basic programs
 - Using SQL in VB

2. Customize ArcGIS with Visual Basic
 - The connection of ArcObjects and VB to ArcGIS
 - UIControls
 - GIS object modeling terminology
 - UML diagrams
 - ArcObjects object models
 - Customizing ArcInfo with Visual Basic and ArcObjects
 - Several tutorials and exercises exploring the use of VBA and ArcObjects within ArcGIS

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Burke, R. 2003. Getting to Know ArcObjects. ESRI Press.

V. EVALUATION PROCESS/GRADING SYSTEM:

VB Labs (2)	25%
VB Test	15%
ArcObjects Labs (3)	45%
ArcObjects Test	<u>15%</u>
 Total	 100%

The following semester grades will be assigned to students:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:

Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. Students who engage in academic dishonesty will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit Form from the program coordinator (for course-specific courses), or the course coordinator (for general education courses), or the program's academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.