

## **GIS Programming Course Description**

Students utilize ArcObjects and VBA to create applications that perform fundamental spatial tasks such as geoprocessing, editing, database management, projecting data, and map creation.

### **Student Learning Outcomes:**

- Customize the ArcGIS graphical user interface.
- Describe the architecture of the core ArcObjects libraries.
- Illustrate the most effective ways to use the components of the software development kit (SDK) and developer tools to implement custom functionality.
- Use ArcObjects to develop GIS functionality using VBA.
- Write reusable code for automating tasks in ArcGIS.
- Customize the user interface and create interactive forms.
- Develop efficient code using variables, constants, procedures, and functions.
- Access "help" resources for VBA.
- Enhance code using form management, arrays, and collections.
- Interact with classes and COM objects.
- Solidify programs using debugging and error-handling techniques.
- Geoprocess in the ArcGIS environment.

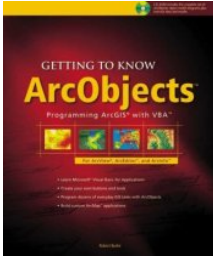
### **Topics covered:**

- Programming with COM- Cclasses, class libraries, COM, query interface and creating objects.
- Object model diagrams- Object model diagrams, types of classes and inheritance.
- The ArcGIS application framework- Customize dialog box and Visual Basic Editor.
- Working with maps and layers- Active data frame and layer properties.
- Accessing data with ArcObjects- Accessing existing data using ArcObjects.
- Displaying data- Feature and raster data rendering.
- Working with queries and selections- Cursors and feature cursors, selection sets.
- Geometry and spatial analysis- Spatial analysis, spatial reference and calculating area.
- Data creation and editing- Creating new data and editing using cursors.
- Geoprocessing- Running geoprocessing tools and setting environments.
- Working with layouts: Making maps, adding elements, exporting and printing.

- ArcObjects beyond VBA- Extending applications, ArcGIS Engine and ArcGIS Server

**Text Book:**

\**Getting to know ArcObjects.* (With CD-ROM) By Robert Burke. ESRI Press 2007.



<http://gis.esri.com/esripress/display/index.cfm?fuseaction=display&websiteID=70&moduleID=1>

\*Text book requirement is subject to change for all courses.