

Bishop Dunne Catholic School

Geographic Information Systems I- 10th – 12th Grade

Curriculum Guide (revised February 2006)

Course Description:

Geographic Information Systems (GIS) is mapping software linked to databases that produce maps automatically to answer questions and solve problems. Students learn geographic concepts and the use of GIS software by completing mapping simulation exercises.

Created maps are placed in a personal portfolio that may be presented to college admissions counselors and prospective employers. Skills learned include: basic cartography (mapping), Global Positioning Systems (GPS), graphic layout and 3D terrain modeling. Off-campus field data collection is a component of this course. Grade level: 10-12. Semester course.

Quarter Grade:

50% Informal Map Projects (Daily Grades)

50% Formal Map Project or Lab Practical

Course Goals for the Semeste:

The primary goal of this course is to teach students the basics of GIS. Students should be able to do the following by the time they complete this course:

- Understand what GIS is and how it is used in the world.
- Be able to manage data for a GIS system.
- Learn GIS skills and concepts that will allow them to solve problem in the real world.
- Generate a Portfolio
- Generate Posters for Competition

Unit	Skills	TEKS	NETS	Assessments
Unit 1 - Building a Basic Project <ul style="list-style-type: none"> • Adding themes into a GIS project <ul style="list-style-type: none"> ○ What is GIS ○ The history of GIS • Basic understanding of theme tables • Basic symbology and layout intro <ul style="list-style-type: none"> ○ Effective map appearance 	1. Data Loading 2. File Management 3. Network Access 4. Understanding tables 5. Changing symbology 6. Layout basics	1A,D 2B 3B 7C, 7F 9B 10A 11C	1.2 2.2 3.1 5.3 6.1	Municipal Project Lab Practical
Unit 2 - Intro to 3D GIS <ul style="list-style-type: none"> • Basic 3D modeling <ul style="list-style-type: none"> ○ Mapping the future in 3D 	1. Extrusion 2. Transparency 3. Setting Base heights 4. Adding and	1C 1D 5B 7A 7D	5.1 4.2 2.3	3D Video Commercial Lab Practical

<ul style="list-style-type: none"> • 3D Text • Video Production <ul style="list-style-type: none"> ○ Advantages of motion maps 	<ul style="list-style-type: none"> changing text 5. Animation manager 6. Keyframes 7. object motion 	<ul style="list-style-type: none"> 9B 9C 10A 11A 11B 11C 		
<p>Unit 3 - Basic GPS and Search Mapping Geotech-SAR</p> <ul style="list-style-type: none"> • GPS <ul style="list-style-type: none"> ○ How to use a GPS • Digital Elevation Models • Search and Rescue Mock Search Exercise <ul style="list-style-type: none"> ○ Incident command and search mapping 	<ol style="list-style-type: none"> 1. GPS usage 2. Grid Mapping 3. GPS downloading 4. DEM usage 	<ul style="list-style-type: none"> 1B 1D 2A 7E 9B 10A 	<ul style="list-style-type: none"> 1.1 2.2 2.3 4.2 5.1 5.2 	<ul style="list-style-type: none"> Mock Search at CHSP GPS Test Lab Practical
<p>Unit 4 - Data Querying and Hyper-linking</p> <ul style="list-style-type: none"> • Querying <ul style="list-style-type: none"> ○ Data linkages and querying ○ Selection Data • Report Generation <ul style="list-style-type: none"> ○ Using the report wizard • Hyper linking <ul style="list-style-type: none"> ○ Table setup ○ File management 	<ol style="list-style-type: none"> 1. Writing queries 2. Selecting 3. Customizing reports 4. Establishing Hyperlinks 	<ul style="list-style-type: none"> 1D 4C 5A 6A 7F 8C 9B 10A 10B 11C 12B 12C 	<ul style="list-style-type: none"> 1.1 5.1 4.1 2.1 2.2 3.1 	<ul style="list-style-type: none"> Real-estate Project Lab Practical
<p>Unit 5 – Acquiring data – Data Joining</p> <ul style="list-style-type: none"> • Getting data from the web <ul style="list-style-type: none"> ○ FTP vs Http ○ File Management • Processing data <ul style="list-style-type: none"> ○ Table Joining ○ Table Linking 	<ol style="list-style-type: none"> 1. Downloading data 2. Table processing 	<ul style="list-style-type: none"> 1D 4A 4B 6A 7B 7C 7F 9B 11C 	<ul style="list-style-type: none"> 1.1 2.1 3.1 3.2 4.1 5.1 5.2 5.3 6.2 	<ul style="list-style-type: none"> California Job project
<p>Unit 6 - Unit 4 - Geo-referencing Images Katrina</p> <ul style="list-style-type: none"> • Changing image format <ul style="list-style-type: none"> ○ TIFF/Jpeg ○ The why and how of format • Referencing points <ul style="list-style-type: none"> ○ Hunting and setting good reference points • Projection issues and accuracy 	<ol style="list-style-type: none"> 1. Processing images 2. Establishing image referencing control points 3. Utilizing Projections 	<ul style="list-style-type: none"> 1D 2A 6A 7A 8A 9A 9B 12D 	<ul style="list-style-type: none"> 1.1 2.1 2.2 3.2 4.1 5.2 6.1 6.2 	<ul style="list-style-type: none"> Karst Image Processing

<ul style="list-style-type: none"> issues <ul style="list-style-type: none"> o UTM vs. Lat. Long o Reasons to reference 				
Unit 7- Digitizing Katrina <ul style="list-style-type: none"> • Metadata <ul style="list-style-type: none"> o Creating metadata o Why Metadata is needed 	<ol style="list-style-type: none"> 1. Advanced file management 2. Basic Digitizing 3. Creating Metadata 	1D 3A 6B 7B 7E 8A 8B 8D 8E 9B 9C	1.2 2.2 3.2 5.1 6.2	Karst Digitizing Project (TXU)
Unit 8 – Using census data to map neighborhoods <ul style="list-style-type: none"> • Establishing a project focus <ul style="list-style-type: none"> o Brainstorming o Compare data to problem • Downloading Census Data <ul style="list-style-type: none"> o Ethical us of data o Checking data format • Normalizing data <ul style="list-style-type: none"> o Advanced legend applications • Selecting Airphotos <ul style="list-style-type: none"> o Comparing format (MrSid, Tiff, Jpeg) o Object data storage vs. relational storage 	<ol style="list-style-type: none"> 1. Setting project goals 2. Downloading Data 3. Projecting Data 4. Normalizing a Legend 5. Advanced imaged data selection 6. File Management 	1D 7A 7B 9B 10A 11C 12C	1.2 2.1 2.2 2.3 3.2 4.2 5.1 6.1 6.2	Neighborhood analysis Project