Course Description
This course offers an introduction to the design and development of web GIS and desktop software to solve spatial problems. Topics covered include programming basics, Web GIS architecture and components, JavaScript programming, design and implementation of common tasks in web-based GIS applications, and customization of the user interface for desktop GIS applications.

Course Objectives
1). Understand Web GIS basic architecture and components.
2). Understand HTML and CSS concepts necessary for web site development.
3). Design and build JavaScript programs for web applications.
4). Develop basic google maps applications for geospatial application.
5). Design and customize ArcGIS interface.

Prerequisites
GISC 1470 and COSC 1435

Required or Recommended Readings
Required Textbooks

Recommended or Supplemental Reading:
- W3Schools online web tutorial, http://www.w3schools.com/

Class BlackBoard Website
https://iol.tamucc.edu/
Major Course Requirements

Grade
The final grade for this course will be made up from the graded marks as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs</td>
<td>30%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
</tr>
<tr>
<td>Participant</td>
<td>5%</td>
</tr>
<tr>
<td>Course portfolio</td>
<td>5%</td>
</tr>
<tr>
<td>Project</td>
<td>20%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
</tr>
</tbody>
</table>

The following grading scale applies:

- **A** >90
- **B** 80 and <90
- **C** 70 and <80
- **D** 60 and <70
- **F** <60

Labs
There are tentatively 13 labs. The labs are designed in such a way that students will gain first-hand experience in JavaScript programming and google maps application development.

Exams
There will be tentatively TWO exams in this course. These exams are non-cumulative. Each one takes 20% of the total grade. There will be no make-up exams. Exceptions are possible only with documentation of a medical or family emergency.

Projects
Each student is required to develop a project by the end of the semester. The project is expected to develop a google map application using JavaScript.

Each student must: 1) submit a one-page project proposal by the 11th week, Nov. 1, 2012, 2) present and demonstrate the project during a scheduled project presentation time, and 3) submit a final project report, including project description, PowerPoint slides, and your code by the end of the semester.

The project proposal must include the objective of the project and GIS data that will be used for the project.

Each student will have 10 minutes for presentation and 5 minutes for questions to demonstrate your application. In addition to the essential information described in your GIS application, a live demonstration of your application must accompany the presentation.
The project description should include your GIS application title, background (what is the main function of your application and why the application is needed), GIS Data, and Algorithms that you used.

It’s a good idea to browse online sources to see what JavaScript have been developed for Google Maps Applications. This will give you a sense of the scope and complexity of the program. However, **you must acknowledge the sources of any codes that you borrow in your application. You will fail this class if you commit plagiarism.**

**Course Portfolio**

**Purpose** - Being prepared to produce professional presentation of work conducted in order to meet the needs of industry

**Requirement** - Each student is required to prepare a professional course portfolio in a bound binder. The portfolio will be checked by the instructor by the end of the semester.

**Format:**

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Course summary (e.g. course summary, syllabus, etc)</td>
</tr>
<tr>
<td>2</td>
<td>Labs</td>
</tr>
<tr>
<td>3</td>
<td>Exams</td>
</tr>
<tr>
<td>4</td>
<td>Projects (project report, including project description, PowerPoint slides, and code)</td>
</tr>
</tbody>
</table>

**Course Policies**

**Due date and late policy**

Each of the labs will have a due date clearly written under the title of the lab. All labs must be completed on time. Any lab that is turned in after the due date is considered late. Submission of a late lab is accepted, but with a penalty of 10% of the grade per day (including weekends). **Late lab will only be accepted up to ONE WEEK after they are due. Exceptions are possible only with prior permission and for exceptional cause (with written documentation). Please work well ahead of the deadlines!**

**Academic Advising**

The College of Science and Technology requires that graduate students meet with their Graduate Advisor for assistance with initial course selection as soon as the students are accepted to a graduate program. By the end of the first year of graduate studies graduate students should meet with their Graduate Committees to set up a degree plan. Graduate students are also encouraged to contact the appropriate College Academic Advisor regarding any questions or problems with their program of study. The College of Science and Technology Academic Advising Center is located in Center for Instruction, Room 350, and can be reached at 825-5797.

**Academic Integrity/Plagiarism**
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or exam will result in zero (0) points for the assignment or exam.

**Dropping a Class**
I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. November 4, Friday, 2011 is the last day to drop a class with an automatic grade of “W” this term.

**Grade Appeals**
As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

**Disabilities Accommodations**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.
### Course Outline *(subject to change)*

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug.23</td>
<td>Course introduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Aug. 27</td>
<td>The Web and GIS</td>
<td>[PT] Chapter 1</td>
<td>Lab 1: Create your website</td>
</tr>
<tr>
<td></td>
<td>Aug. 30</td>
<td>HTML/XHTML</td>
<td>Handouts</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Sep. 4</td>
<td>HTML/XHTML</td>
<td>Handouts</td>
<td>Lab 2: Design and Create Your E-Portfolio</td>
</tr>
<tr>
<td></td>
<td>Sep. 6</td>
<td>CSS</td>
<td>Handouts</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Sep. 11</td>
<td>Introduction to JavaScript</td>
<td>[DG] Chapter 1</td>
<td>Lab 3: Basics of Javascript</td>
</tr>
<tr>
<td></td>
<td>Sep. 13</td>
<td>Working with functions</td>
<td>[DG] Chapter 2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Sep. 18</td>
<td>Data types and operators</td>
<td>[DG] Chapter 2</td>
<td>Lab 4: Javascript: functions, data types and operators</td>
</tr>
<tr>
<td></td>
<td>Sep. 22</td>
<td>Building arrays and control structures</td>
<td>[DG] Chapter 3</td>
<td></td>
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<tr>
<td>6</td>
<td>Sep. 27</td>
<td>Manipulating the Browser Object Model</td>
<td>[DG] Chapter 4</td>
<td>Lab 5: Javascript: arrays, control structures, and the Browser Object Model</td>
</tr>
<tr>
<td></td>
<td>Sep. 29</td>
<td>Validating form data with JavaScript</td>
<td>[DG] Chapter 5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Oct. 2</td>
<td>Using Object-Oriented JavaScript</td>
<td>[DG] Chapter 6</td>
<td>Lab 6: Javascript: forms</td>
</tr>
<tr>
<td></td>
<td>Oct. 4</td>
<td>Manipulating data in strings and arrays</td>
<td>[DG] Chapter 7</td>
<td></td>
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<tr>
<td>8</td>
<td>Oct. 9</td>
<td>Introduction to the Document Object Model (DOM)</td>
<td>[DG] Chapter 10</td>
<td>Lab 7: Javascript: strings and arrays</td>
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<td></td>
<td>Oct. 11</td>
<td>Guest speaking</td>
<td></td>
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<tr>
<td>9</td>
<td>Oct. 16</td>
<td>Review Session</td>
<td></td>
<td>Lab 8: Javascript: DOM</td>
</tr>
<tr>
<td></td>
<td>Oct. 18</td>
<td>Introduction to the Google Maps API</td>
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<tr>
<td>10</td>
<td>Oct. 23</td>
<td>Lab 8: Javascript: strings, arrays, and DOM</td>
<td>[GS] Chapter 1,2</td>
<td><strong>Exam 1</strong></td>
</tr>
<tr>
<td></td>
<td>Oct. 25</td>
<td>Creating your first map</td>
<td>[GS] Chapter 3</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Oct. 30</td>
<td>Work with MapOptions</td>
<td>[GS] Chapter 4</td>
<td>Lab 9: Google Maps Applications - Design Interface</td>
</tr>
<tr>
<td></td>
<td>Nov. 1</td>
<td>Markers and Icons <em>(Project proposal due)</em></td>
<td>[GS] Chapter 5</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Nov. 6</td>
<td>InfoWindow Tips and Tricks</td>
<td>[GS] Chapter 6</td>
<td>Lab 10: Google Maps Applications - Events</td>
</tr>
<tr>
<td></td>
<td>Nov. 8</td>
<td>Creating polylines and</td>
<td>[GS] Chapter 7</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Notes</td>
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<tr>
<td>Nov.13</td>
<td>Dealing with massive numbers of markers</td>
<td>Lab 11: Google Maps Applications – polygons, numbers of markers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov.15</td>
<td>Location, location, location</td>
<td>[GS] Chapter 9</td>
<td></td>
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<tr>
<td>Nov.19</td>
<td>Direction</td>
<td>Lab 12: Google Maps Applications – Geocoding and Direction</td>
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<tr>
<td>Nov.22</td>
<td>Thanksgiving holiday (no class)</td>
<td></td>
<td></td>
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<tr>
<td>Nov.27</td>
<td>Customizing Arc GIS interface</td>
<td>Work on projects</td>
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<tr>
<td>Nov.29</td>
<td>Review Session</td>
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<tr>
<td>Dec. 4</td>
<td>Work on projects</td>
<td><strong>Exam 2</strong></td>
<td></td>
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</tr>
<tr>
<td>Dec. 11</td>
<td>Project presentation (Final Exam time, 11:00am-1:30pm)</td>
<td>Project report due</td>
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</tbody>
</table>
GENERAL GUIDELINES FOR COURSES AND LABS
IN THE GISC PROGRAM
CULTURE, REGULATIONS, MODES OF OPERATION AND PROCEDURES

These guidelines are designed to inform scholars of their responsibilities and of the course requirements in order to make this course a positive experience. The instructor is always available for consultation and discussion with students on any aspect of a course and of these general guidelines.

CLASS CULTURE

1. Consider yourself as a scholar rather than a student. The term “student” may imply some passivity, whereas the term “scholar” implies active participation, understanding and searching. We will use these terms interchangeably with the meaning of “scholar” implied. Osmosis does not work in a learning environment! A good scholar takes NOTES at every class meeting.
2. Further, define yourself as a “thinking explorer”. You are responsible for your education; an instructor can only be a guide and a facilitator. An instructor cannot learn for you. If you come across something that really interests you, explore it further.
3. Your experience at this University should not consist of passing a series of courses to earn a degree. Your experience should rather be a series of activities that will give you an education.
4. Concentrate on “learning to learn”. You will have to be a life-long learner to survive in your chosen career.
5. There is no such thing as a stupid question; there is such a thing as a stupid answer. So ask questions, the instructor is taking all the risks! Ask questions of your instructor and of your fellow scholars. Many times questions are more important than answers.
6. Keep copious notes of all that is going on in all the meetings related to your course. Make a note of what the instructor is stressing. At the end of each lecture you should be able to answer two questions: What did I learn from this lecture? and What was not clear to me? At the beginning of each lecture, if the instructor does not ask for questions, you need to ask if there is something you did not understand from the last lecture. Review, consolidate, annotate and organize your lecture/lab notes on a regular basis, at least once a week. The Internet is a tremendous resource and also a great danger. When you find information on the Internet, you have no idea if it is correct. View such information with caution. But, use the Internet to explore topics that interest you. Do not only prepare for the exam in a course – learn as much as you can on the topics introduced to you by the course material. You are responsible for the extent of your education! READ MINDFULLY !!!!!
7. In addition to details of the syllabus given in class, the syllabus for the course includes all the chapters of the required textbook/s unless indicated otherwise by the instructor. The student is responsible for all materials/topics covered in class, in handouts, in assignments, in labs, and in outings or field trips. The instructor is NOT responsible for informing absent students exactly what was covered in previous classes, meetings, etc.

PROCEDURES & REGULATIONS

8. The final letter grade for the class will be based on the raw composite numerical score
obtained from the weighted average of the tests, quizzes, exams, labs, etc. as indicated by
the instructor. The raw composite numerical score may be adjusted (curved) based on the
highest score, the statistical profile of the scores and other academic standards or other
considerations. Generally the letter grade of A is 90% and over of the adjusted score, a B
is between 80% and 89% (inclusive) of the adjusted score, a C is between 70% and 79%
(inclusive) of the adjusted score, a D is below 70% of the adjusted score and an F is
below 60% of the adjusted score. An incomplete (I) will only be given in very unusual
circumstances. The University regulations on incomplete grades state: “An incomplete
notation may be given to a student who is passing but has not completed a term paper,
examination, or other required work for reasons beyond the student’s control other than
the lack of time”. Students are expected to take ALL tests, quizzes, exams, etc., and to
complete and hand in all labs and other assignments. There is no provision for “extra
credit”. No final grades will be given via the telephone, e-mail, etc.

9. All University rules, regulations and expected student conduct apply to this course.
Students are held responsible for the information given in the current Catalog and Student
Handbook. Make yourself aware of the University security regulations.

10. All labs, assignments, etc. must be handed in on the assigned due date. Scholars having
problems must notify the instructor well before the due date. Marks will be deducted
for poor and sloppily presented work.

11. Labs, etc. handed in after the due date may be subject to a penalty of loss of marks. Labs,
etc. handed in after the graded labs, etc. have been returned to students will get zero
marks but must be handed in to the instructor. Labs will be returned to students, after they
have been graded, at a class meeting. Students who miss this meeting will be able to
collect graded work in the marked box outside the instructor’s office.

12. Scholars are asked to take special note of the penalties, which the University attaches to
Academic Dishonesty. Consult the Student Handbook.

13. All work handed in to the instructor must be the student’s own work. Extracts, excerpts,
etc. from the work of others must be suitably noted, acknowledged and properly
referenced. Any Group Work will be judged in the same way. That is, it is the work of
the group and the extracts, excerpts, etc. of others must be acknowledged.

14. All written and graphical work handed in must be presented neatly printed and bound
(staples are adequate). Students’ written work will be judged on written communication
skills, critical thinking and problem solving ability.

15. Students are expected to be present at all meetings (lectures, labs, etc.) of the class.
Students are expected to be present at the date and time assigned for all tests, exams,
quizzes, etc. There are NO provisions for making up missed exams except in cases where
prior arrangements have been made and agreed to by the instructor. During the
assigned lab session, ONLY assigned labs are to be done. All other work must be done in
other rooms.

16. All cellular phones and other similar devices MUST BE TURNED OFF during lectures,
labs and other class meetings.

17. All students must keep their university e-mail addresses
(firstname.lastname@islander.tamucc.edu). This will be the means of communication
between the instructor and the class.

18. The instructor reserves the right to make changes to the above with due notice to the
students. These changes will be announced in class and each student is responsible for
keeping herself/himself informed of such changes.