

INF 465: Senior Capstone Informatics (3 credit hours)

Spring 2016, Class number

Instructor: Norman Gervais

Office location: BA 313

Office hours: Tuesdays 10:30-12:30 or By Appointment

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Course Information

Meeting time: Arranged

Meeting location: Arranged

Course description from *Undergraduate Bulletin*:

Students create teams, each representing their specialization, to solve a current technology challenge. The purpose of this course is for students from all the different Informatics tracks to come together and work on a real world Informatics related problem. This course will require completion of 100 hours in a field placement. During their field placement students will work as part of a team comprised of their peers from other Informatics tracks to complete a capstone project. The project itself will be dictated by the individual needs of the placement and the strengths of the team. The Instructor of I INF 465 will act as a mentor to the student teams and help to guide them through their projects. May be repeated for credit up to a total of 6 credits with permission of department. Prerequisite(s): Informatics seniors only and instructor permission.

A more detailed course description

The Heldeberg Workshop, An Adventure in Learning, established in the 1961, is a 501(c)3 not-for-profit organization which every year offers more than 120 week-long classes to 1200 to 1400 students that range from kindergarten to high school ages. The Workshop's goal is to provide non-traditional educational opportunities to the youth of the capital district in an outdoor environment. As a part of their educational outreach, they utilize many nature trails, buildings, and distinct land features spread throughout their 250 acres of land. Last semester, a project was undertaken to start to develop a comprehensive map which outlines these features. Since then, there has been an additional demand identified to map minor trails and entrance roads as well as revise the maps which were already generated. This has created a unique opportunity for an additional support project in the area of data management and field mapping. The project would entail two major components.

The first component would entail conducting field work to collect spatial information via a GPS on the location of the features. It is estimated this data collection phase would take several days to complete. Most of these days would be conducted before the leaves bloom from the trees. During the data collection period, a representative from the Heldeberg Workshop would be present to help navigate the trails. Since this portion of the project will take place in a relatively wild, remote area of Albany County (approximately 13 miles from the UAlbany campus), it is expected that harsh environmental conditions may be present, including but not limited to: ticks, poison ivy, hot and cold (subfreezing) temperatures, mild hilly terrain, various

forms of precipitation, etc. Appropriate outdoor clothing and footwear is required: long pants, long-sleeved shirt, sturdy sneakers or hiking boots, etc. Trails may be muddy, icy, and/or snowy at places.

The second component of this project would take place on a computer either at home or on campus and would entail managing the collected data and efficiently displaying it. The recorded spatial information will be managed by downloading it to a computer, transforming it to a common spatial data format, placed into a simplistic database, and be described with metadata. It will then be displayed by utilizing a Geographic Information System (GIS) to overlay the collected spatial information over pre-existing base maps. These two final products of the database and maps will be delivered to the Heldeberg Workshop to help them maintain and update new trail data and help educators navigate to the classes, as well as presented at other events. This portion of the project will be mentored by myself.

Prerequisites

Prerequisite(s): Informatics seniors only and instructor permission.

In addition, the students should be familiar with basic computer operation and know how to safely work in potentially adverse environmental conditions.

Course Goals

By the end of the semester, you should be able to:

- Utilize modern techniques to record spatial information of objects in the field.
- Explain and effectively present the process of completing a field based mapping project.
- Construct a geodatabase.
- Apply cartographic practices to design and create maps.
- Develop a method for converting GPS collected data into a standardized GIS format.

Readings

Various readings will be assigned in digital format as needed. No book is required.

Course Policies

Withdrawal from the course

The drop date for the **Spring 2016 semester is April 5** for undergraduate students. That is the last date you can drop a course and receive a 'W'. It is your responsibility to take action by this date if you wish to drop the course. In particular, grades of "incomplete" will not be awarded to students because they missed the drop deadline.

Incompletes

As per the Undergraduate Bulletin, the grade of Incomplete (I) will be given "only when the student has nearly completed the course requirements but because of circumstances beyond the student's control the work is not completed." A student granted an incomplete will make an agreement specifying what material must be made up, and a date for its completion. The incomplete will be converted to a normal grade on the agreed upon completion date based upon whatever material is submitted by that time.

Important: Incompletes will not be given to students who have not fulfilled their classwork obligations, and who, at the end of the semester, are looking to avoid failing the course. This is asking for special treatment.

Academic Integrity

It is every student's responsibility to become familiar with the standards of academic integrity at the University. Claims of ignorance, of unintentional error, or of academic or personal pressures are not sufficient reasons for violations of academic integrity. See http://www.albany.edu/undergraduate_bulletin/regulations.html

Course work and examinations are considered individual exercises unless otherwise explicitly specified. Copying the work of others is a violation of university rules on academic integrity. Individual course work is also key to your being prepared and performing well on tests and exams. Forming study groups and discussing assignments and techniques in general terms is encouraged, but the final work must be your own work. For example, two or more people may not create an assignment together and submit it for credit. If you have specific questions about this or any other policy, please ask.

The following is a list of the types of behaviors that are defined as examples of academic dishonesty and are therefore unacceptable. Attempts to commit such acts also fall under the term academic dishonesty and are subject to penalty. No set of guidelines can, of course, define all possible types or degrees of academic dishonesty; thus, the following descriptions should be understood as examples of infractions rather than an exhaustive list.

- Plagiarism
- Allowing other students to see or copy your assignments or exams
- Examining or copying another student's assignments or exams
- Lying to the professor about issues of academic integrity
- Submitting the same work for multiple assignments/classes without prior consent from the instructor(s)
- Getting answers or help from people, or other sources (e.g. research papers, web sites) without acknowledging them.
- Forgery
- Sabotage
- Unauthorized Collaboration (just check first!)
- Falsification
- Bribery
- Theft, Damage, or Misuse of Library or Computer Resources

Any incident of academic dishonesty in this course, no matter how "minor" will result in no credit for the affected submission as well as additional possible ramifications which can be found in the undergraduate bulletin (http://www.albany.edu/undergraduate_bulletin/regulations.html).

Policies from Undergraduate Bulletin:

http://www.albany.edu/undergraduate_bulletin/regulations.html

Responsible Use of Information Technology

Students are required to read the University at Albany Policy for the Responsible Use of Information Technology available at the ITS Web Site:

<https://wiki.albany.edu/display/public/askit/Responsible+Use+of+Information+Technology+Policy>

Available Support Services

Reasonable accommodation

Reasonable accommodation will be provided for students with documented physical, sensory, cognitive, learning and psychiatric disorders. If you believe you have a disability requiring accommodation in this class, please notify the Director of Disability Resource Center (Business Administration 120, 442-5490). That office will provide the course instructor with verification of your disability, and will recommend appropriate accommodations. In general, it is the student's responsibility to contact the instructor at least one week before the relevant assignment to make arrangements.

How You Will Be Evaluated

Geodatabase Development: You will need to take the data which you will collect in the field with a GPS and field notebook and transform it to a standard GIS format. This data should be organized and preserved in a geodatabase. After the database creation, all data should be described with FGDC formatted metadata and delivered to the Heldeberg Workshop.

Digital Map Creation: Based on the collected data, a series aesthetically appealing and useful maps should be developed. The goal of these maps is to help people navigate the area. These will also be delivered to the Heldeberg Workshop.

Presentation: The process used to collect the data and construct the maps as well as the maps themselves should be presented throughout the semester at various events to be determined later.

Grading

The grade breakdown for the course is:

- Geodatabase development/improvement: 30%
- Digital map creation: 30%
- Presentations: 40%

A-E graded:

| | | |
|-------------|-------------|-------------|
| 93 – 100% A | 77 – 79% C+ | 60 – 62% D- |
| 90 – 92% A- | 73 – 76% C | 0 – 59% E |
| 87 – 89% B+ | 70 – 72% C- | |
| 83 – 86% B | 67 – 69% D+ | |
| 80 – 82% B- | 63 – 66% D | |

Course Outline and Schedule of Major Milestones

The following schedule of course milestones is preliminary and may be changed as the semester progresses. The final schedule and specific homework and lab assignments will be discussed in person or via email. Students are expected to have read the listed material before it is covered in class.

| Major Items | Due no later than |
|--|-------------------|
| <ul style="list-style-type: none">• Field data collected | 16-March |
| <ul style="list-style-type: none">• Draft database with all data collected | 1-Apr |
| <ul style="list-style-type: none">• Draft Metadata applied to data | 8-April |
| <ul style="list-style-type: none">• Draft maps | 15-April |
| <ul style="list-style-type: none">• Final database and map submission, Last day of class | 4-May |