Syllabus

August 23, 2004

ESSP 332 - Applied GIS & GPS

Geographic Information Systems (GIS) and Geographic Positioning Systems (GPS)

Fall Semester 2004, CSUMB

Instructors:

Dr. Rikk Kvitek
Phone: 831-582-3529
Office: Bldg. 13, Rm. 116B
Office Hours: TuTh 12 noon - 1:30 PM
Email: rikk_kvitek@csumb.edu

Mr. Pat Iampietro
Phone: 831-582-4214
Office: Bldg. 13, Rm. 129
Office Hours: M,W 12-1 PM
Email: pat_iampietro@csumb.edu

Mr. Bryan Jones (TA)
Phone: 831-582-3075
Office: Bldg. 13, Rm. 109
Email: bryan_jones@csumb.edu

Students with Disabilities

Students with disabilities who may need accommodations please see your instructor during office hours or make an appointment by contacting him via phone or email. ALSO, contact:

Student_Disability_Resources@csumb.edu
Phone: 831/582-3672 voice, or 582-4024 fax/TTY
http://www.csumb.edu/student/sdr/

Textbooks and Materials

- Learning ArcGIS 9 from the ESRI Virtual Campus (http://campus.esri.com/).
- Getting to Know ArcGIS Desktop 2nd edition for ArcGIS 9 (Ormsby et al., ESRI Press, 2004. $60)
- Certified GPS Mapping Training Manual - Trimble Navigation. Digital version (TerraSyncTrainingGuide2.20B.pdf) provided by Trimble through your certified trainer (Rikk Kvitek) in 'HOME':\CLASSES\ESSP\ESSP332-01\campus\GPS_Training Materials.
- Optional Texts (order from ESRI, we may be able to get educational discount): ArcGIS User Guides – Bundle (Documentation for ArcGIS, ESRI press, 2001. $120)

CSUMB/ESSP Major Learning Outcomes (MLO): Successful completion of this course fulfills the advanced proficiency requirement of the ESSP MLO#5 (Data Acquisition, Analysis and Display).

Course Learning Outcomes

Learning Outcome 1 (GIS): Participants will be able to demonstrate their understanding of the theory, operation, and application of Geographic Information Systems (GIS) technology. To earn a "C" or better in the class a student must demonstrate their ability to successfully apply each element within the **Minimum Required GIS Skill Set** which includes: data acquisition and organization into a database, creation and display of thematic maps to visualize a database, and effective analysis and presentation of results (successful participants will receive a certificate from ESRI for completing the Virtual Campus course **Learning ArcGIS 9**).

Learning Experiences

1. Instructor led GIS presentations with on-line ESRI tutorial.

2. Home work assignments and quizzes
3. Hands-on **Model Project** work covering each of the Minimum Required GIS Skills.

Learning Assessments

1. Three GIS Quizes/Homework Assignments (graded).
2. Comprehensive 3 hr pass/fail GIS practical exam covering the Minimum Required GIS Skills (pass/fail)
3. Final report for **Model Project** (pass/fail & graded).

Learning Outcome 2 (GPS): Participants will be able to demonstrate their understanding of the theory, operation and application of GPS and Differential GPS technology. To earn a "C" or better in the class a student must demonstrate their ability to successfully apply each element within the **Minimum Required GPS Skill Set** which includes: pre-mission planning, field data acquisition, post-processing and export of GPS data to GIS. (Successful participants will receive a GPS Certified Training certificate from Trimble Navigation.)

Learning Experiences

1. Trimble GPS Certified Training program on the acquisition, processing, display and export to GIS of spatial data.
2. Hands-on field training with Trimble GPS mapping receivers and Pathfinder Office post-processing software.

Learning Assessments

1. Comprehensive 3 hr pass/fail GPS practical examination: Design and completion of independent field mapping exercise including pre-mission planning, field data acquisition, post-processing and export of GPS data to GIS (pass/fail).

Learning Outcome 3: Each participant will be able to participate in the development and execution of **Class Project** that will integrate and apply GIS and GPS technologies to answer a specific research question. Through this process the student will collect, synthesize and analyze spatial data to produce the new information required to answer their research question. To earn a grade of "C" or better in the class each student must complete all phases of the class project.

Learning Experiences

1. Design and successfully complete a spatial data project involving the integrated use of GIS and GPS to answer a specific research question.

Learning Assessments

1. GIS database creation, organization and metadata
2. Professional poster presentation of project and results
3. Written final technical report

ESSP 332 Products & Assessment

Minimum & necessary requirements for earning a "C" in ESSP 332

Participants who successfully complete the following will earn at least a "C" in the class.

GIS Practical Exam (successfully complete all elements)	pass/fail
GPS Practical Exam (successfully complete all elements)	pass/fail
Model Project Final Report, GIS Map Layout and files	pass/fail
Custom Project (complete minimum required elements)	pass/fail

GIS database (illustrating proper management, structure & metadata)
Poster (E-size)
Final written report

Assessment breakdown for earning a grade above a "C" in ESSP 332

To earn a grade above the level of "C" in the class, the participant must perform **above** the minimum level of competency. The following products will be assessed for quality and scope for which the student will receive a set of scores above and beyond the minimum requirements for earning a "C" in the class.

These scores will be **weighted (given point values)** as follows:

GIS Tutorial Work Quality:		**35 points**
GIS quiz & homework assignments	15 points	
Model Project final report & layout	20 points	
Class Project Work Quality:		**60 points**
GIS database	20 points	
Poster	20 points	
Final Written Report	20 points	
Independent Integration of Techniques & Products		**5 points**
(Based on student's mastery of and ability to work independently with GIS and GPS)		
TOTAL QUALITY & SCOPE SCORE		**100 points**

Assignment of letter grades in ESSP 332

To earn a grade of "C" or better in ESSP 332, all minimum requirements must be fulfilled (see above) regardless of a student's cumulative points for the class. Once these minimum requirements have been fulfilled, a student's cumulative score for ESSP 332 products is graded on a straight percentage of 10% for each whole grade. Pluses and minuses are given at the upper and lower ends of each grade range.

A+	98-100%	B	83-87
A	93-97	B-	80-82
A-	90-92	C+	78-79
B+	88-89		

NOTE: A score of "D" is highly unlikely because you will either earn at least a "C" for successfully meeting all pass/fail requirements, or if you do not successfully pass all pass/fail requirements, you fail the course and receive an "F" or incomplete. When you pass all pass/fail requirements, you have earned a "C". Grades above "C" are based on the number of points you earn for the quality and scope of your work as indicated above.

ESSP 332 CLASS SCHEDULE Fall 2004

Date	DOW	Faculty	Topic or Activity
24 Aug	Tu	Pat/Rikk	Introduction to ESSP 332 Introduction to GIS/ESRI Virtual Campus Getting Started with ArcGIS (Learning ArcGIS 9 Module 1)
26 Aug	Th	Pat	Continue Module 1
31 Aug	Tu	Pat	Creating Map Symbology, (Mod.2)
2 Sep	Th	Pat	Continue Module 2 QUIZ #1
7 Sep	Tu	Pat	Referencing Data to Real Locations (Mod. 3)
9 Sep	Th	Pat	Understanding Map Projections and Coordinate Systems (Mod. 1) Georeferencing Tutorial (in class)

14 Sep	Tu	Pat	Organizing Geographic Data (Mod. 4) QUIZ #2
16 Sep	Th	Pat	Continue Module 4
21 Sep	Tu	Pat	Creating and Editing Data (Mod. 5)
23 Sep	Th	Pat	Continue Module 5
28 Sep	Tu	Pat	Getting Started with GIS Analysis (Mod. 6)
30 Sep	Th	Pat	Continue Module 6
5 Oct	Tu	Pat	Working with Geoprocessing and Modeling Tools (Mod. 7)
7 Oct	Th	Pat	Continue Module 8
12 Oct	Tu	Pat	Designing Maps with ArcGIS (Mod. 8)
14 Oct	Th	Pat	Continue Module 8, Intro to California Fisheries and ArcGIS
19 Oct	Tu	Pat	California Fisheries and ArcGIS, review, and special topics HW #1 (due)
21 Oct	Th	Pat	**GIS Practical Exam**
26 Oct	Tu	Rikk	GPS 1 – Basics of GPS – Field session 1
28 Oct	Th	Rikk	GPS 2 – Planning your GPS project
31 Oct	Su	Pat	**Model Project Due 5pm: Written report, Poster, Files**
2 Nov	Tu	Rikk	GPS 3 – Equipment setup, PFO data processing – Field session 2
4 Nov	Th	Rikk	GPS 4 – PFO data processing (cont)
9 Nov	Tu	Rikk	GPS 5 – Export to GIS
11 Nov	Th	Rikk	**GPS 6 Practical Exam – Field session 3**
16 Nov	Tu	Rikk	Advanced GPS skills
18 Nov	Tu	Pat/Rikk	Custom/Group Project Discussion
Fall Break (Nov 22 – 24) No Classes			
Thanksgiving Break (November 25 – 28) No Classes			
30 Nov	Tu	All	*Class Project Work & Mentoring*
2 Dec	Th	All	*Class Project Work & Mentoring*
7 Dec	Tu	All	*Class Project Work & Mentoring*
9 Dec	Th	All	*Class Project Work & Mentoring*
17 Dec	Fri	**Written Final Project Report Due 5pm**	

Last Day of Fall Semester Classes is December 10
Note that 13-19 December are Assessment Days

GIS CERTIFICATION SUB-SYLLABUS Fall 2004

Certified GIS Training

You will receive a certificate from ESRI for successfully completing the ESRI Virtual Campus online course during class time. You will register for the online course **Learning ArcGIS 9** with the ESRI course subscription for ESSP332.

TRIMBLE GPS CERTIFICATION COURSE SUB-SYLLABUS Fall 2004

Certified GPS Training

You are enrolled in a Certified Trimble GPS Mapping Training Course, taught by a Certified GPS Trainer (Dr. Rikk Kvitek). Students who successfully complete this course will receive a Trimble Certificate of GPS Training and be eligible to check out GPS receivers for use while at CSUMB. This GPS training class is outcomes based. Student assessment will be based entirely on the GPS Field-to-Finish Practical Examination.

GPS 1	Chap 1	**Introduction**	

	Chap 2 Chap 3 Chap 4	**GPS Fundamentals** **Accuracy** **Planning Your Project**	**Intro Field Session**
GPS 2	Chap 4 (cont.)	**Planning Your Project** (continued) Data dictionary & Quick Plan	Exercises 4.1-4.7
GPS 3	Chap 5 Chap 6 Chap 7	**Equipment Setup** GPS config. **Field Session** GPS status & Data collection **Data processing with PFO 9** Pathfinder Office setup & Data transfer	Exercise 5.1-5.2 **Field-session 1** Exercises: 6.1-6.2 Exercise: 7.1
GPS 4	Chap 7 (cont.)	Configure Pathfinder Office Differential Correction Data display & edit Review Tutorial	Exercises 7.2-7.6
GPS 5	Chap 7 (cont.)	Export to GIS Practice for practical	Exercises 7.6 **Field-session 2**
GPS 6		GPS Final Exam: Field-to-finish	**Field-session 3 & Practical Exam**
Advanced GPS		Real Time DGPS, Laser range finder, Trimble ProXR	Demonstration and field session

Home Drive Online Resources at CSUMB:
http://it.csumb.edu/help/tech/server_accts/home/
On Home Drive go to classes.csumb.edu/essp/332 -01 or –02, depending on your lecture section
Look in the **world** or **campus** folders for resources, and use the **inbox** to turn in assignments.

Ground rules for ESSP 332

Will late submissions be accepted? Late submission of any class work for assessment (homework, proposals, reports, practicals) will be accepted for pass/fail, but will have their quality scores devalued 10% for each week that the item is late.

Will incompletes be given for ESSP 332? No incompletes will be given unless there are circumstances beyond the student's control that led to the work not being completed in a timely manner.

How are students assessed for the "Independent integration of techniques & products" category (5% of total score for the class)? The "Independency of Project Work" score is to address a problem that has arisen in past project work. That problem is the practice of a student having the instructors and other students actually do most of the processing operations for a project. This practice takes excessive time from the instructors and peers, and results in the student not really learning the techniques. Each instructor will provide an "independency" evaluation for each student, and the lowest score given will be the score that is used. This rule makes sure that score from the instructor whose time was most heavily impacted is given full weight.

Where can examples of required work be found? CSUMB Home Drive (see above).

How should completed class work be submitted? All work must be submitted in electronic format to the inbox for your 332 section on the Home Drive (e.g. \\classes.csumb.edu\\ESSP\ESSP332-01\inbox.

- Written reports should be submitted as Msword .doc files
- Posters should be submitted as a MS powerpoint file
- ArcGIS projects should be organized in to folders and files, zipped into a single .zip file and submitted to the inbox, UNLESS the zipped file is over 200 MB. In which case, burn it to a CD and turn it in by the deadline.
- We will assess your file and data management skills based on how well your GIS project is organized.

How will projects be assessed? Evaluation criteria will be provided to the students for ArcGIS projects, Posters and Written Reports, before work on the projects begin.