GEOS/EUGS 470: Geographic Information Systems II, Fall 2007

SYLLABUS

Class Instructor: Dr. Mark J. Chopping
Contact Information:  Phone: (973) 655-7584
                     Office: 350C Mallory Hall (ML 350C) Hours: M 11:30 – 3:00 pm OBA.
                     Email: chopping@pegasus.montclair.edu –prefix Subject with ‘GIS:’

Duration  Classes start Monday, September 5 (September 6 is Labor Day). All classes end on or
           before December 13. Classes & practicals will be held in FI204, 8:15 - 10:45 pm.

Textbook  GIS Fundamentals: A First Text on Geographic Information Systems, 2nd edition,

Internet  The course website is http://csam.montclair.edu/~chopping/gis and practical assignments
           and data sets will be distributed via this medium. A login ID and password will be
           distributed at the first meeting of the class. Students are expected to use the Internet as a
           resource whenever appropriate (e.g., for looking up unfamiliar terms, following up on case
           studies and research applications) – but plagiarism will NOT be tolerated: if you use
           someone else’s work, you must cite the source.

Synopsis  EUGS470 provides an introduction to Geographic Information System (GIS)
           technologies and applications, including GIS, Remote Sensing and Global Positioning
           Systems, GPS) to aid in both study of the environment and solving of practical issues.
           Geographic information systems (GIS) have been described as "simultaneously the
           telescope, the microscope, the computer; and the Xerox machine of regional analysis and
           synthesis of spatial data" (Abler, 1988). In essence GIS are "automated systems for the
           capture, storage, retrieval, analysis, and display of spatial data" (Clarke, 2000). This course
           provides an intensive introduction to GIS. The main objectives of the course are to
           examine the concepts, theory, vocabulary and evolving applications of GIS and to build a
           solid understanding of theory and capability. The course will involve a mixture of lectures
           and hands-on practical experience. The course will thus cover both the principles and the
           practice of GIS on a roughly 50:50 basis.

Success  No-one can teach you GIS. This is something that you have to teach yourself. You can
         learn a huge amount from books and web sites but there is nothing like experience --
         practical work – to turn yourself into a GIS expert. Note that you will be examined on the
         topics covered. You will need to make notes in class – please do not rely solely on the
         lecture notes provided (if any) and you will have to read and surf around the topics. This
         is a great opportunity to add a highly marketable skill to your résumé.

Labs &  You should aim to spend 2-3 hours per week in the GIS Lab familiarizing yourself
Assignments with GIS software packages and performing practical GIS work: assigned coursework
         and the semester project. The skills you will learn through this are highly marketable in
today’s geospatial and environmental industries and ability with GIS is regarded as a
prerequisite for many jobs. Lab assignments are an integral part of this course and each
one is assigned points based on relative difficulty. No late assignment returns will be
accepted without documented reasons. GIS Lab. hours are posted on the EAES website.

Grading  Exams (2): 25%  Labs/Assignments: 25%  Project: 50%
         A grading spreadsheet will be available on the course web site
         The exam format will be multiple choice questions and a number of short answer essay
         questions. Examinations may be taken late only with documented reasons.
## Time Allocation for Classes, Lab. and Project Work

<table>
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<tr>
<th>WEEK</th>
<th>DAY</th>
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| 1    | W   | 09/05  | GIS Overview: We Have Problems – Are there GIS Solutions?  
Nuts’n’Bolts'n'Numbers: Digital Representation of Geographic Information. Intro. to the class project: Siting Wind Farms  
Assignment 1: Interpolating imported text XYZ data to a Digital Elevation Model (DEM); Virtual GIS & Landscape Fly-Throughs |
| 2    | W   | 09/12  | Land cover change in New Jersey, 1972 - 1995  
Practical: Assessing Land Cover Change; GIS data & operations  
Class Project: Siting Wind Farms (GIS issues/teams);  
**Course Project work (CPW)** |
| 3    | W   | 09/19  | Land cover change in New Jersey, 1972 - 1995  
Practical: Digital data storage  
Finding project data and METADATA (CPW)  
Assignment 2: Raster Site Selection: GIS data & operations |
| 4    | W   | 09/26  | Building a GIS: Finding Data (CPW)  
Practical: Assig. 2 + Summary Operation, Course Project work. |
| 4    | W   | 10/03  | Graphical Spatial Modeler: Raster Data Processing  
Practical: The *Imagine* Spatial Modeler/Assignment/CPW. |
| 5    | W   | 10/10  | Maps, Reference Systems & Projections  
Practical: Geometric Transformations (raster maps)./Assig. 3 |
| 6    | W   | 10/17  | Focus on Practical GIS work (Course Projects) + "clinic". |
| 7    | W   | 10/24  | **Guest lecture:** Peter Winkler: "Kestrel habitat mapping with GIS"  
Practical: Landscape Project; Course Project work. |
| 8    | W   | 10/31  | Building a GIS: Data Entry, Editing & TOPOLOGY  
Practical: Topological Relations, Assig. 4/Course Project work. |
| 9    | W   | 11/07  | **Mid-Term Exam (preceding topics only)** |
Virtual GIS, Visualization & Presentation of Geographic Information.* Practical: Course Project work. |
| 11   | W   | 11/21  | Practical: Course Project work |
| 12   | W   | 11/28  | Practical: Course Project work |
| 13   | W   | 12/05  | **Student Course Project Presentations** |
| 14   | W   | 12/12  | Designated as a Friday – no class |
| 15   | W   | 12/19  | **Final Examination (in-class)**  
*may be CPW |

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