

ENGG*3340 GIS IN ENVIRONMENTAL ENGINEERING
SCHOOL OF ENGINEERING, UNIVERSITY OF GUELPH
FALL 2011

COURSE DESCRIPTION

This course provides basic-level knowledge of Geographic Information System (GIS) principles, techniques and practice in Environmental Engineering and Natural Resources Management. In this course students will learn about data sources, visualization, query, analysis, and integration using “ESRI ArcGIS 10”, a popular desktop GIS and mapping software.

INSTRUCTOR

Nandana Perera, THRN 1415, ext. 56318, mperera@uoguelph.ca

Office hours: 4:00 PM – 5:00 PM Monday, 6:15 PM – 7:00 PM Wednesday, or send me an email to book an appointment.

TEACHING ASSISTANT

Andrew Beaton, VMI Building 124, abeato01@uoguelph.ca

Office hours: 1:30 PM – 2:30 PM Tuesday, 10:30 AM - 11:30 AM Thursday

SCHEDULE

Wednesday, 7:00 PM - 9:50 PM, THRN 2313

Each class will contain an introductory lecture on the topic and tutorial session based on the text book. Since practice is of great importance in learning GIS skills, regular attendance is emphasized.

Mid-term Exam: November 2, 2011, 7:00 PM – 8:30 PM, THRN 2313

REQUIRED TEXTBOOK

Maribeth Price. 2011. Mastering ArcGIS 5th Edition. McGraw-Hill, ISBN 978-0077462956.

LEARNING OUTCOMES

- Knowledge of the basic GIS structure and functions;
- Understanding data structuring and application program development;
- Familiarity with data input, display and analysis;
- Learning about various applications of GIS in environmental engineering and natural resource management projects; and
- Developing expertise for effective use of a GIS software package to build geographical information systems.

TOPICS OF STUDY

Date	Topic
September 14, 2011	Introduction to GIS
September 21, 2011	Mapping and Presenting GIS Data
September 28, 2011	GIS Data and Coordinate Systems
October 5, 2011	Geodatabases
October 12, 2011	Editing
October 19, 2011	Queries and Spatial Joins
October 26, 2011	Geoprocessing
November 2, 2011	Arc GIS Spatial Analyst and 3D Analyst
November 9, 2011	Network Analysis
November 16, 2011	GIS in Other Models
November 23, 2011	Term Project Presentations
November 30, 2011	Term Project Presentations

TERM PROJECT REPORT AND PRESENTATION

Students will form groups of 4 students. The groups should be formed no later than the **second week** of class. Each group should submit a proposal by Wednesday, **October 5th, 2011** that will include a description of the project as well as a detailed work plan.

Contribution of each member (with equal work load) of the group must be identified in the proposal. Proposals will be reviewed and general feedback will be provided. The main tasks will include project definition and objectives, background literature review, data collection, analysis, reporting, and presentation. Evaluation of the term project reports will be based on:

- Cover material (title page, table of contents, executive summary)
- The idea and topic (novel, genuine, applied, essential, clear objectives)
- Introduction (purpose, background, scope of work, available data)
- Content (provides specific, accurate, precise information)
- Organization (individual paragraphs integrate smoothly into the overall report)
- Writing (grammar, spelling, completeness, clarity, conciseness, and consistency)
- Professional appearance (high quality of text, figures and tables presented)
- Data (use of a variety of sources appropriate to the project)
- Analysis (use of a variety of ArcGIS functions and extensions)
- Results (clarity and accuracy of interpretation and discussion of the results)
- Conclusion (clarity of expression and understanding of concepts)
- Recommendations
- References (complete and properly formatted)

Each group will submit one term project report. The term project reports are due on **Wednesday Nov. 23rd, 2011** during the lecture.

Term projects will be presented to the class by all 4 members of the group (roughly 5 min for each student or 20 min in total per group plus 5 min for the question period), according to the following schedule:

Date	Group no.
November 23, 2011	1, 2, 3, 4, 5
November 30, 2011	6, 7, 8, 9, 10

EVALUATION

The final grade will be determined from the results of the Assignments, Mid-term Exam, and Term Project Report/Presentation weighted as follows:

- Assignments 20%
- Mid-term Examination 30%
- Term Project Report 40%
- Term Project Presentation 10%

COURSELINK

Some of the course material will be made available and can be accessed on Courselink:

<https://courselink.uoguelph.ca/shared/login/login.html>

Please Note:

The Regulations concerning Academic Misconduct as outlined in the University of Guelph, Undergraduate Calendar for 2011-2012 will be strictly enforced.

Disclaimer:

The instructor reserves the right to change any or all of the above in the event of appropriate circumstances, subject to the University of Guelph Academic Regulations.