

ENGG*3340 GIS IN ENVIRONMENTAL ENGINEERING

SCHOOL OF ENGINEERING, UNIVERSITY OF GUELPH

FALL 2010

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 9.3”, a popular desktop GIS and mapping software.

INSTRUCTOR

Dr. Bahram Gharabaghi, THRN 221, ext. 58451, bgharaba@uoguelph.ca
Homepage: http://www.soe.uoguelph.ca/faculty_pages/bahram_g.html

OFFICE HOURS

You are welcome to visit at your convenience and/or send me an email to book an appointment.

COURSE RESOURCES

Lectures: Tuesday and Thursday, 11:30AM - 12:50PM, THRN 1319

REQUIRED TEXTBOOK

Wilpen L. Gorr and Kristen S. Kurland. GIS Tutorial, Updated for ArcGIS 9.3. 2008, ESRI Press, ISBN 978-1-58948-205-0.

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

- Chapter 1: Introduction
- Chapter 2: Map Design
- Chapter 3: GIS Outputs
- Chapter 4: Geodatabases
- Chapter 5: Importing Spatial and Attribute Data
- Chapter 6: Digitizing
- Chapter 7: Geocoding
- Chapter 8: Spatial Data Processing
- Chapter 9: Spatial Analysis
- Chapter 10: ArcGIS 3D Analyst
- Chapter 11: ArcGIS Spatial Analyst

TERM PROJECT REPORT AND PRESENTATION

Students will form groups of 3 students and assume the identity of a consulting engineering firm providing services to a client and submit a proposal by **Thursday September 30th** that should include a description of the project as well as a detailed work plan. 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 (cover letter, 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 (ideas and organization lead to clear understandable writing)
- 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)
- Format (typed, line spacing, margins, page numbers, grammar, spelling, professionally written, organized, readable, completeness, clarity, conciseness, and consistency)

Each group will submit one term project report. The term project reports are due on **Thursday Nov. 18th, 2010** during the lecture.

Term projects will be presented to the class by all 3 members of the group (roughly 7 min for each student or 21 min in total per group plus 5 min for the question period), according to the following schedule:

Date	Term Project Presentation Schedule
Tuesday Nov. 23	Groups 1, 2, and 3
Thursday Nov. 25	Groups 4, 5, and 6
Tuesday Nov. 30	Groups 7, 8, and 9
Thursday Dec. 2	Groups 10, 11, and 12

EVALUATION

The final grade will be determined from the results of the Term Project Report and Presentation, and the Final Examination weighted as follows:

- Term Project Report 40%
- Term Project Presentation 10%
- Final Examination 50%

COURSELINK

Some of the course material will be made available and can be accessed on CourseLink: <https://courselink.uoguelph.ca/shared/login/login.html>

POLICY FOR MISSED EXAMINATION

If the Final Examination is not written, the procedures in the current University of Guelph Undergraduate Calendar must be followed.

PLEASE NOTE

The regulations concerning academic misconduct as outlined in the current University of Guelph undergraduate calendar will be strictly enforced.