Geomatics (GEOM)

Geomatics (GEOM) Courses

GEOM 1004 [0.5 credit]
Maps, Satellites and the Geospatial Revolution
Introduction to the creation and use of maps using a variety of geospatial tools to better understand and resolve physical, social and environmental problems. Overview of geomatics (cartography and map design, geographic information systems, GPS, remote sensing).
Includes: Experiential Learning Activity
Also listed as ERTH 2004.
Precludes additional credit for GEOM 2004 (no longer offered).
Lectures and laboratory, four hours a week.

GEOM 2005 [0.5 credit]
Introduction to Geospatial Programming
Computer programming for geomatics students focusing on storage, manipulation, management, visualization and analysis of geospatial data; Essential coding concepts and best practices including variables, loops, and conditional statements; programmatic handling of raster and vector data structures; batch geoprocessing and map production; GIS tool customization.
Includes: Experiential Learning Activity
Lectures and laboratory, four hours per week.

GEOM 2007 [0.5 credit]
Points, Lines and Polygons
Storage, visualization, manipulation and analysis of vector geospatial data. Vector geoprocessing including buffering, overlays and topological analysis; feature classification and cartographic representation; managing coordinate reference systems for vector layers; selected applications of vector GIS such as urban planning, environmental and resource management and socio-economic mapping.
Includes: Experiential Learning Activity
Prerequisite(s): GEOM 1004 or permission of the Department.
Lectures and laboratory, four hours a week.

GEOM 2008 [0.5 credit]
Pixels and Grids
Storage, visualization, manipulation, and analysis of gridded geospatial data; 3D raster visualization; digital terrain analysis; interpolation and filtering; raster geoprocessing and projections; selected topics in raster GIS such as least-cost path analysis, natural hazard assessment, pollution mapping, hotspot analysis for crime and disease mapping.
Includes: Experiential Learning Activity
Prerequisite(s): GEOM 1004 or permission of the Department.
Lectures and laboratory, four hours per week.

GEOM 3002 [0.5 credit]
Introduction to Remote Sensing
Principles and methods of remote sensing; visual interpretation of air photos and satellite imagery; digital image processing, analysis and classification for thematic mapping; introduction to various active and passive remote sensing imagery types such as optical, hyperspectral, RADAR and LiDAR.
Includes: Experiential Learning Activity
Prerequisite(s): GEOM 2008 and third-year standing, or permission of the Department.
Lectures two hours a week, laboratory two hours a week.

GEOM 3005 [0.5 credit]
Geospatial Analysis
An advanced course in geospatial analysis theory and practice; geoprocessing; geo-visualization; geostatistics; spatial modelling; working with spatio-temporal data structures; advanced site-suitability and network analysis; intermediate GIS tool customization.
Includes: Experiential Learning Activity
Prerequisite(s): GEOM 2007 and GEOM 2008.
Lecture and laboratories five hours a week.

GEOM 3007 [0.5 credit]
Cartographic Theory and Design
Principles of and issues in cartography, cartographic communication and map design; practical aspects of cartographic representation using multimedia and online/interactive mapping.
Includes: Experiential Learning Activity
Prerequisite(s): GEOM 2007 or GEOM 2008 or permission of the Department.
Lectures and laboratory four hours a week.

GEOM 3999 [0.0 credit]
Co-operative Work Term
Includes: Experiential Learning Activity

GEOM 4001 [0.5 credit]
Special Topics in Geomatics
A seminar focusing on selected topics in geomatics including advanced theory and/or application.
Includes: Experiential Learning Activity
Prerequisite(s): fourth-year Honours standing in Geomatics or permission of the department.
Laboratory or seminar three hours a week.

GEOM 4003 [0.5 credit]
Remote Sensing of the Environment
Advanced image enhancement; land cover classification for thematic mapping; biophysical modeling; applications in resources, environment, and urban mapping.
Includes: Experiential Learning Activity
Prerequisite(s): GEOM 3002 and Honours standing, or permission of the Department.
Lectures two hours a week, laboratory two hours a week.
GEOM 4005 [0.5 credit]
Directed Studies in Geomatics
Students pursue their interest in a selected theme in Geomatics on a tutorial basis with a member of the Department.
Prerequisite(s): permission of the Department.

GEOM 4008 [0.5 credit]
Advanced Topics in Geographic Information Systems
Advanced methods and techniques in GIS applications including: positional and attribute error analysis, multiple criteria decision making, interpolation, elevation modeling and ortho-imaging, and spatial pattern measurement.
Includes: Experiential Learning Activity
Prerequisite(s): GEOM 3005 and Honours standing.
Lectures two hours a week, laboratory two hours a week.

GEOM 4009 [0.5 credit]
Applications in Geographic Information Systems
Project design and customization, application development within a GIS, digital atlas compilation and geomatics education.
Includes: Experiential Learning Activity
Prerequisite(s): GEOM 3005 and (COMP 1006 or GEOG 3003), or permission of the department.
Workshop three hours a week.

GEOM 4406 [0.5 credit]
Practicum I
Experience in an employment environment through field placement. Observation and involvement in issues and research methods used by professional geographers. May be taken for credit in addition to GEOG/GEOM 4408.
Includes: Experiential Learning Activity
Also listed as GEOG 4406.
Prerequisite(s): fourth-year Honours standing in Geomatics or Geography and permission of the Department.
Field placement one day a week.

GEOM 4408 [0.5 credit]
Practicum II
Experience in an employment environment through field placement. Observation and involvement in issues and research methods used by professional geographers. May be taken for credit in addition to GEOG/GEOM 4406.
Includes: Experiential Learning Activity
Also listed as GEOG 4408.
Prerequisite(s): fourth-year Honours standing in Geomatics or Geography and permission of the Department.
Field placement one day a week.

GEOM 4906 [1.0 credit]
Honours Research Project
Candidates for B.Sc. with Concentration in Geomatics undertake a research project within their area of specialization. The project is supervised by a member of the department and a written report must be submitted. The candidate may be examined orally on the report.
Includes: Experiential Learning Activity
Precludes additional credit for GEOG 4904/GEOM 4904 (no longer offered), GEOG 4906, GEOM 4909, GEOM 4909, ENST 4906, and ENST 4907.
Prerequisite(s): fourth-year Honours standing in BSc Geomatics, and an approved research topic and adviser.
Hours to be arranged with faculty adviser.

GEOM 4909 [1.0 credit]
Honours Research Thesis
Independent design and implementation of a research project leading to the submission of a research thesis. Students work with an individual faculty adviser. The subject for research is decided upon in consultation with the supervisor.
Includes: Experiential Learning Activity
Precludes additional credit for GEOG 4904 / GEOM 4904 (no longer offered), GEOG 4906, GEOM 4906, GEOM 4909, ENST 4906 and ENST 4907.
Prerequisite(s): fourth-year Honours standing in B.A. Geomatics, a minimum CGPA of 9.00 in the major or permission of the Department, and an approved research topic and adviser.
Hours to be arranged with faculty adviser.