

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 EARTH 2004.

Prerequisites: 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]

Vector GIS: 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]

Raster GIS: Pixels and Grids

Storage, visualization, manipulation, and analysis of gridded geospatial data; 3D visualization; digital terrain analysis; interpolation and filtering; raster geoprocessing and projections; selected topics and applications in raster GIS such as least-cost path analysis, natural hazard assessment, pollution mapping and hotspot analysis for population geography.

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]**Custom Geomatics Applications**

Development and implementation of custom geomatics applications and workflows using programming and various geoprocessing tools. Project design, application development, GIS automation and documentation.

Includes: Experiential Learning Activity

Prerequisite(s): GEOM 2005 and (GEOM 3002 or GEOM 3005 or GEOM 3007), or permission of the department.

Workshop three hours a week.

GEOM 4406 [0.5 credit]**Practicum I**

Students apply their knowledge and research skills and gain experience through field placements in government, the private sector, non-government organisations and with community organisations in the environmental field.

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**

Students apply their knowledge and research skills and gain experience through field placements in government, the private sector, non-government organisations and with community organisations in the environmental field.

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, GEOG 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, GEOG 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.