

The logo for Simon Fraser University, featuring the letters "SFU" in white on a black rectangular background.

SIMON FRASER UNIVERSITY
THINKING OF THE WORLD

Department of Geography

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To: Dr. Duncan Knowler, Assoc. Dean & Chair, FENV Curriculum Committee
From: Dr. Eugene McCann, Chair, Geography Graduate Studies Committee
Subject: Graduate curriculum change: 2010/2011 Calendar
Date: January 4, 2010

Enclosed please find a new course proposal for the Geography graduate program in the 2010/2011 Calendar. The course is Geog 657 (Geovisualization Interfaces). This proposal has been approved by the Geography Graduate Studies Committee, in its Dec 2nd 2009 meeting. It was approved by the Department of Geography on Jan 4th 2010.

Please bring this proposed addition to the Faculty of Environment Curriculum Committee for approval.

A handwritten signature in black ink, appearing to read "Eugene McCann".

Eugene McCann
Associate Professor
Graduate Program Chair



SIMON FRASER UNIVERSITY

NEW GRADUATE COURSE PROPOSAL FORM

When a department proposes a new course it must first be sent to the chairs of each faculty graduate program committee where there might be an overlap in course content. The chairs will indicate that overlap concerns have been dealt with by signing the appropriate space or via a separate memo or e-mail (attach). The new course proposal must also be sent to the Library for a report.

Once overlap concerns have been dealt with, signatures indicate approval by the department, home faculty and Senate Graduate Studies Committee.



Department or School: GEOGRAPHY

Proposed course number and title: GEOG 657 / GEOVISUALIZATION INTERFACES

Other Faculties:

Other Faculties approval indicates that the Dean(s) or designate of other Faculties affected by the proposed new course support(s) the approval of the new course.

Name of Faculty _____	Signature _____	Date _____
Name of Faculty _____	Signature _____	Date _____
Name of Faculty _____	Signature _____	Date _____
Name of Faculty _____	Signature _____	Date _____
Name of Faculty _____	Signature _____	Date _____

Departmental approval (non-departmentalized faculties need not sign)

Department Graduate Program Committee

Signature [Signature] Date Jun 4 2010

Department Chair

Signature [Signature] Date Jun 4 2010

Faculty approval

Faculty approval indicates that all the necessary course content and overlap concerns have been resolved, and that the Faculty/Department commits to providing the required Library funds and any other necessary resources

Faculty Graduate Program Committee

Signature _____ Date _____

SGSC approval

Signature _____ Date _____

SGSC approval indicates that the Library report has been seen, and all resource issues dealt with. Once approved, new course proposals are sent to Senate for information.



NEW GRADUATE COURSE PROPOSAL FORM

Subject: GEOG (max. 4 chars) Catalog Number: 657

Course Title: GEOVISUALIZATION INTERFACES (max. 80 char.)

Short Title (appears on transcripts etc.) GEOVIS INTERFACES (max. 25 char.)

Course Description for Calendar: (append a course outline as a separate document)

The concepts, theories and technology behind 3D representation and 3D geovisualization of complex spatial phenomena using emerging interactive, immersive and ubiquitous interface technologies. Combines geovisualization, geospatial interface research, geovirtual environments, GIScience, and spatial knowledge acquisition perspectives. Enrolment in any graduate program plus permission of the instructor. Graduate students from other disciplines are welcome to take this course.

Units: 4

Available Course Components: (select all that apply)

☒ Lecture

☒ Seminar

☒ Laboratory

☒ Practicum

Prerequisites: (if any)

Enrolment in any graduate program plus permission of the instructor.

Campus at which course will be offered: Burnaby

Estimated Enrolment: 12-18 The term course will first be offered: Spring 2011

Frequency of course offering: Once per year

Grading Basis: ☒ Graded ☐ Satisfactory/Unsatisfactory ☐ In Progress/Complete

Justification:

GEOG 657 is specifically aimed at providing students with the theory and technical skills to apply 3D geovisualization and interactive interface technologies to complex spatial phenomena and geographic research questions. GEOG 657 has previously been offered successfully as a STT course. This application is to formalize the course as a permanent graduate course in SFU Geography.

Resources:

Faculty member(s) who will normally teach this course:

(append information about their competency to teach the course)

1) Dr. N. Hedley, GEOGRAPHY; 2) Dr. S. Dragicevic, GEOGRAPHY

Number of additional faculty members required in order to offer this course: 0

Additional space required in order to offer this course: (append details) 0

Additional specialized equipment required in order to offer this course: (append details)

None

Additional Library resources required: (append details) Annually \$ Library review One-time \$ in progress

If additional resources are required to offer this course, the department proposing the course should be prepared to provide information on the source(s) of those additional resources.

Upon approval of the course proposal, the Dean of Graduate Studies office will consult with the department or school regarding other course attributes that may be required to enable the proper entry of the new course in the student record system.

QUALIFICATIONS OF PRIMARY INSTRUCTOR FOR GEOG 657

- **Dr. Nick Hedley** has been a geovisualization and geospatial interface researcher for 15 years
 - He has done extensive research experience in geovisualization using a range of interactive interface technologies (3D virtual environments, immersive VR, mixed reality, tangible AR), including at the Human Interface Research Lab (University of Washington 1997-2003)
 - He has been a professional geovisualization interface R&D consultant for numerous major organizations in government and industry
 - He has given more than 50 conference presentations and published research on the design, development and application of geovisualization and geospatial interface research to geographic questions.
 - He established the Spatial Interface Research Lab at SFU specifically to focus on geovisualization and geospatial interface research
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GEOG 657 | GEOVISUALIZATION INTERFACES

Instructor: Dr. Nick Hedley
Contact Info: RCB 7229 / 778 782 4515 / hedley@sfu.ca

Overview

With the emergence of new interface technologies, Geography has the potential to take a 'next big step' in geovisualization. This course focuses on this opportunity, by exploring 3D geospatial virtual environments and 3D geospatial interface research. This course sits within a broader context of bridging conventional 2D GIS and geovisualization, with 3D GIS and considering how 3D content requires us to consider better ways for interacting with such content.

With a strong emphasis on 3D geovisualization, this course identifies and explores a selection of 3D geovisualization techniques and technologies. This naturally requires us to determine what geovisualization capabilities they provide, what GIScience issues they raise, and how well-positioned Geography is to contribute and produce the next generation of geospatial information tools and experiences.

In GEOG 657, we build on our understanding of 3D geovisualization tools and techniques, and apply them to emerging geovisualization *interface* technologies and *geospatial interfaces* as critical emerging sector of geographic research. Students will explore a range of technologies, methods and their potential to increase and modify our ability to communicate and understand complex spatial phenomena.

In addition to representing phenomena in 3D, the emphasis in this course is how 3D geospatial interfaces mediate perception, navigation, reasoning and sense-making of complex spatial phenomena. We will also consider key concepts including collaboration and narrative in virtual environments, and the way in which emerging technologies may fundamentally change the way we explore geographic representations, and the spaces through which people interact with spatial information.

To integrate the concepts, techniques and geospatial interface design principles introduced in this course, students will design and build a 3D geovisualization interface/VE of their own throughout the semester.

Entry into the course

Prerequisite: Enrolment in any graduate program plus permission of the instructor. Graduate students from other disciplines are welcome to take this course. Students must have prior experience with GIS software and analysis.

Evaluation:

- 20% Geovisualization interface research paper : a review of literature and research related to your thesis topic; identification of geovisualization challenge, and grounded response to it.
- 10% Quiz
- 20% Interactive lab assignments (Participation in labs / Discussion/lead a discussion / show & tell /demos)
- 50% Final 3D geovisualization interface project and research paper

Expectations:

Students are expected to be proactive and self-motivated in participation, reading, discussion and project work. The course will run as an interactive/applied/hands-on working seminar.

Key technologies & objectives:

ArcGIS 3D analyst / Google Earth / Google SketchUp / 3DEM / Second Life / Mixed reality / 3D game engines

Course Materials:

There is no single textbook for this course. Individual readings will be assigned/are available from SFU library.