

MESABI RANGE COMMUNITY & TECHNICAL COLLEGE – VIRGINIA/EVELETH

Course Outline

Course Title: Fundamentals of Geographic Information Systems

Submitted By: Aaron Kelson/
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Semester Course Prefix and Number: GEOG 2455

Approval Date: December 2005

Old Quarter Course Prefix and Number:

Revision Date:

Number of Credits: 3

Number of Lecture Credits: 3

Semester(s) Offered:

Number of Lab Credits: **Number of Lab Hours:**

Class Size: 30

Number of Studio/Demonstration/Internship Credits:

Negotiated by AASC on

(Date)___

Course Purpose Code:

- 0 – Developmental Courses
- 1 – Non-transferable, General Education
- 2 – Technical course related to career programs
- 3 – College course which has the primary goal of applying certain concepts (e.g. vocal ensemble)
- 4 – Other college course not considered a part of general education (MNTC) e.g. computer science, health, physical education
- 5 – Course which is intended to fulfill the Minnesota Transfer Curriculum (MNTC) requirements.
- 9 – Continuing Education/Customized Training specialized credit course (not occurring in 0-5)

Catalog Description:

This course provides a broad introduction to cartography and Geographic Information Systems with emphases on both theory and practice. In addition, it explores fundamental principles of numerical data entry, digitizing, data manipulation and analysis, and interpretation of spatially referenced data. The course includes cartographic basics such as mapping, coordinate systems, projections and remote sensing. Students are introduced to the skills necessary to run a vector-based GIS.

Prerequisites and/or recommended entry skills/knowledge:

Course Prerequisite(s): Introduction to Computers and one of Physical Geography, Human Geography, Conservation of Natural Resources, or Environmental Science

Reading Prerequisite:

Composition Prerequisite:

Mathematics Prerequisite: High school algebra or CPT placement in higher algebra or above.

Career Programs and Transfer Majors Accessing this Course:

Geography

Environmental Studies

Minnesota Transfer Curriculum Goal(s) partially met by this course if applicable: Notes: No more than two goals may be met by any one course. (Curriculum Committee review and the Chief Academic Officer's approval are required).

- | | |
|----------------------------------------------------------------------------|--------------------------------------------------------------|
| 0. <input checked="" type="checkbox"/> None | 6. <input type="checkbox"/> The Humanities and Fine Arts |
| 1. <input type="checkbox"/> Communications | 7. <input type="checkbox"/> Human Diversity |
| 2. <input type="checkbox"/> Critical Thinking | 8. <input type="checkbox"/> Global Perspectives |
| 3. <input type="checkbox"/> Natural Sciences | 9. <input type="checkbox"/> Ethical and Civic Responsibility |
| 4. <input type="checkbox"/> Mathematical/Logical Reasoning | 10. <input type="checkbox"/> People and the Environment |
| 5. <input type="checkbox"/> History and the Social and Behavioral Sciences | |

Learning outcomes, including any relevant competencies listed in the Minnesota Transfer Curriculum:

Students will be able to illustrate historical and contemporary applications of mathematical/logical systems by using spatial data to design thematic maps covering a wide range of applications.

Students will be able to clearly express mathematical/logical ideas in writing by interpreting thematic maps created using geographic information systems for decision-making purposes.

Students will be able to discern patterns and interrelationships of bio-physical and socio-cultural systems through visually representing those patterns using powerful computer-aided technology.

Students will be able to critically examine environmental and natural resource issues in light of understanding about interrelationships, ecosystems, and institutions by using spatial representations as tools in making predictions about future conditions.

Students will be able to propose and assess alternative solutions to environmental problems by studying the impact of human intervention on natural systems, such as septic system runoff, yard maintenance runoff, forest practices, highway construction, and more.

Student assessment methods:

This course is heavily focused on the completion of geographic information projects. Students will complete 3 to 5 significant mapping projects using available spatial data. Each project will focus on a particular ecosystem management issue.

Students will be tested on knowledge of geographic information system terminology and techniques.

Students will present the results of a completed project to the class and/or interested community members.

Use of instructional technology (includes software, interactive video and other instructional technologies):

ArcView GIS software, PowerPoint, Internet resources.

Outline of the major course content:

- I. Introduction to desktop GIS
- II. ArcView GIS Basics
- III. Working with Spatial Data
- IV. Querying Data
- V. Managing Tabular Data
- VI. Presenting Information
- VII. Creating New Data
- VIII. Future GIS Applications

Additional special information (special fees, directives on hazardous materials, etc.)

Transfer Information: (Please list colleges/majors that accept this course in transfer.)
St. Cloud State, Bemidji State

Approvals:

Body	Representative Signatures	Date
Curriculum Committee		
Faculty Association		
Academic Affairs Standards Committee		
Chief Academic Officer		

Distribution: Original – Administrative Office
Copies: Curriculum Committee Chair, Learning Center, Library, Originating Faculty Member, Records, Student Services, Scheduler, Transfer Specialist
Revised February 10, 2004