

CURRICULUM PROPOSAL FORM  
University-Wide Undergraduate Curriculum Committee

UWUCC USE ONLY

Number	<u>23A</u>
Action	_____
Date	_____

I. TITLE/AUTHOR OF CHANGE

COURSE/PROGRAM TITLE GE213: Introduction to cartography

DEPARTMENT Geography and Regional Planning

CONTACT PERSON Robert Sechrist

II. APPROVALS

[Signature]  
Department Curriculum Committee

[Signature]  
Department Chairperson

[Signature]  
College Curriculum Committee

[Signature]  
College Dean

\_\_\_\_\_  
Director of Liberal Studies  
(where applicable)

\_\_\_\_\_  
Provost  
(where applicable)

\* COLLEGE DEAN MUST CONSULT WITH PROVOST BEFORE APPROVING CURRICULUM CHANGES. APPROVAL BY COLLEGE DEAN INDICATES THAT THE PROPOSED CHANGE IS CONSISTENT WITH LONG RANGE PLANNING DOCUMENTS, THAT ALL REQUESTS FOR RESOURCES, MADE AS PART OF THE PROPOSAL, CAN BE MET, AND THAT THE PROPOSAL HAS THE SUPPORT OF THE UNIVERSITY ADMINISTRATION.

III. TIMETABLE

Date Submitted  
to UWUCC \_\_\_\_\_

Semester/Year to be  
Implemented \_\_\_\_\_

Date to be published  
in Catalog \_\_\_\_\_

IV. DESCRIPTION OF CURRICULUM CHANGE

(Attach remaining parts of proposal to this form).

GE 213 Introduction to Cartography

3c-01-3sh

This course introduces students to principles of thematic map construction. Emphasis is on the techniques of choropleth mapping and the production of scientific graphs and charts.

A1. Need fulfilled: Maps and graphs are becoming increasingly important methods of information dissemination. Unfortunately, most of these maps and graphs are being produced by people with no training in their production. Key elements are often forgotten, hindering reader comprehension. Students instructed in this course will learn the proper techniques and organizational principles of map production. This course, coupled with the existing course (GE313), will provide a two semester sequence in traditional cartographic techniques. The traditional techniques course provide a basis for the advanced computer-assisted cartography course. This course is designed primarily for majors, but can obviously benefit students in a number of fields where the need for quality data display is growing. This course is not designed for inclusion in the liberal studies course list because of its technical nature.

A2. Effect on other courses: Initiation of this course will effect GE313 greatly, for the better. Currently GE313 is the only cartography course taught by the department. A single semester is inadequate to prepare students in all the methods and techniques of cartography. By expanding the cartography offerings to two courses all traditional methods can be covered. The first course (that being currently proposed) will cover basic drafting, graph construction and choropleth mapping. The second course (GE313) will focus on advanced techniques such as graduated symbol maps, isopleth mapping, mapping from imagery, stepped surfaces, and cartograms.

A3. Does this course follow traditional offerings in the department? Yes. It represents an expansion of our cartographic offerings which is an area of departmental concentration.

A4. Has this course been offered at IUP on a trial basis? No, although much of the content is currently covered in GE313.

A5. Is this a dual level course? NO

A6. No.

A7. Do other universities offer this course? Yes, a list of nearby schools that offer two undergraduate cartography courses follows:

Penn State, Slippery Rock, Kutztown, Ohio State, Temple

#### B. INTERDISCIPLINARY IMPLICATIONS

B1. A single instructor will teach the course.

B2. Yes, this course represents the initial exposure of a student to cartography. GE313 will represent the second exposure. It is anticipated that not all students taking GE213 will take GE313, so while the two courses follow a logical sequence GE213 can be taken by non-majors desiring cartographic knowledge.

B3. This course does not duplicate the content of other courses offered by other departments.

B4. Yes, as more and more businesses are becoming involved in mapping and graphing data knowledge of proper presentation format would be an important tool for working people in an information age.

### C. IMPLEMENTATION

C1. The course will require an instructor per semester as it will be offered each spring and fall. The course will be taught in Leonard 8 which is our cartography lab. The department has a variety of drafting equipment for student use. Students will be expected to purchase some equipment and expendable supplies. Library materials already exist, and the course will require no travel funds.

C2. No.

C3. each spring and fall. There are no seasonal implications.

C4. one

C5. Seating in the cartography lab is limited to 18 students per semester.

C6. Is this course recommended or required by a professional society? Yes, the American Congress of Surveying and Mapping and the North American Cartographic Information Society both suggest a minimum of six hours training in traditional cartographic methods.

Syllabus GE213

GE213: Introduction to Cartography  
Leonard 8, MWF: 10:30-11:30

Instructor: Robert Sechrist  
Office: 2 Leonard

Text: Principles of Thematic Map Design by Borden Dent. Addison Wesley:  
Reading, MA.

The Elements of Graphing Data by William Cleveland. Wadsworth:  
Monterey, CA. (Reserve Reading)

**Required Materials:** Technical Pen Set, Drafting Triangles, mylar (18x24 sheets), erasers, technical pencils, x-acto knife

**Course Objectives:** Students will learn the basics of several types of thematic map and quantitative data display production. These include the proper construction of bar, pie, and line graphs, and the varieties of choropleth maps including equal interval, equal distribution, statistical, and natural breaks. Emphasis is placed on technical accuracy and display design. Students will become familiar with a variety of published data sources, their organization, and extraction.

**Schedule of Activities**

Week      Activity

- 1 Discuss the purpose of displaying data graphically, including charts, graphs, and maps. Emphasis on data-ink to chart-junk ratio. First assignment, edit handout to improve data-ink ratio. **Read Cleveland Chapter 1, Dent Chapter 1, 4.**
- 2 Discuss basic concepts of graphing data to include necessary inclusions and exclusions on graphic presentations. Second assignment, to introduce use of technical pens and line drawing techniques. **Read Cleveland Chapter 2.**
- 3 Introduce and discuss data types, nominal, ordinal, interval and ratio. Discuss data sources. Field trip to library and introduction to library use by Government Documents Librarian. Gather data for assignment number three. **Read Dent Chapters 5 & 6**
- 4 Introduce methods of ranging or ranking data for graphic display. Explore various methods of data display, line, bar, and pie chart. Third assignment, graph data gathered using the appropriate display method. **Read Cleveland Chapter 3 pp 103-154.**
- 5 Introduce computer generated graphs using Lotus software program. Fourth assignment, create graphs using data from previous exercise.
- 6 Introduction to maps and mapping. Examine various types of maps; topographic, choropleth, dasymetric, and isoline. Fifth assignment involves map reading and identification.
- 7 Finish introduction to maps with emphasis on topographic and choropleth maps. Intensify discussion of choropleth maps. Mid-term

exam. **Dent Chapter 7**

- 8 Discuss Stepped Statistical Surface map. Sixth assignment to gather data to be used for the remaining weeks which will be directed toward the final project, see assignment handout.
- 9 Discuss and create even interval map.
- 10 Discuss and create (n)tile or equal distribution map.
- 11 Discuss and create natural break map.
- 12 Discuss and create statistical map.
- 13 Continuation of assignments.
- 14 Presentation of final project.

Course Bibliography

- 526C1521 **Campbell, J.**, 1984. Introductory Cartography Prentice Hall, Inc.
- 526C895t **Cuff, D.J., Mattson, M.T.**, 1982. Thematic Maps, Methuen & Co.
- 526D434p **Dent, B.D.**, 1985. Principles of Thematic Map Design, Addison-Wesley Publishing.
- 526E1263c5 **Robinson, A.H., et.al**, 1984. Elements of Cartography, Wiley & Sons Inc.
- 526k22c **Keates, J.S.**, 1973. Cartographic Design and Production, Longman Group Limited.
- 526B937m **Burnside, C.D.**, 1979. Mapping From Aerial Photographs, Granada Publishing.
- 526C894e "Teaching Some Basic Concepts of Mathematical Geography", 1961. The Geographical Research Institute, Denoyer-Geppert Company.
- 526E126e **Cliff, Haggett, Bassett, Davies**, 1975. Elements of Spatial Structure, Cambridge University Press.
- 526L956p **Lorton, J.**, 1980. Practical Map Production, John Wiley & Sons.
- 526M886t **Muehrke, P.**, 1972. Thematic Cartography, Association of American Geographers.
- 526N219c **Guelke, L.**, (ed.), 1977. The Nature of Cartographic Communication, University of Toronto Press.
- 526R56n **Robinson, A.H.**, 1976. The Nature of Maps, The University of Chicago Press.

526St48c Steward, H.J., 1974. Cartographic Generalization, University of Toronto Press.

526T416m Joseph, N., Thrower, W., 1972. Maps and Man, Prentice-Hall Inc.

526.07C249a Lawrence, G.P.R., 1984. Cartographic Education for the Future, British Cartographic Society.

526.09415An26p Andrews, J.H., 1975. A Paper Landscape, Oxford University Press.

526.0973T375m Thompson, M.M., 1979. Maps for America, U.S. Department of the Interior.

526.1T567 Todhunter, I., 1962. The Figure of the Earth, Dover Publications.

#### Journals and Published Material

##### Key #

041000	American Cartographer
013400	ACTA Geographie/Finland
013500	ACTA Geographie/Paris/Societe De Geographic
205000	Canadian Cartographer
214900	Cart Actual
215000	Cartographer/Canada
215130	Cartographica
215120	Cartography
439800	Geographic Survey
631210	Land Use Planning Report
978550	Revista Cartografica
001043230	Society of Cartographers Bulletin
001079700	Survey & Mapping
001200955	World Cartography
606330	Journal of Surveying Engineering

**Evaluation:** Student grades are based on cartographic projects (there will be six specific projects and one midterm and final exams. Each project, midterm and final will be weighted equally.