

#11

28 March 1987

SUBJECT: Resubmittal of Course Proposal: GE 416/516
Computer-Assisted Cartography

TO: Curriculum Committee

FROM: *Ruth I. Shirey*
Ruth I. Shirey, Chair
Geography and Regional Planning

Attached to this memorandum is the course proposal for GE 416/516 Computer-Assisted Cartography, revised as the committee requested. The list of exercises is on page 7. The bibliography begins on page 10.

Signoffs on this course were submitted previously. The catalog description is on page 5.

A3. This course is designed give our majors and minors experience in the use of the current cartographic technology. Without the information presented in this course students who wish to specialize as, and work as, cartographers, will be uncompetitive with students from other universities. This course is, and has been, a part of every geography department in major universities for at least 5 years. The course, as designed, is a natural continuation of geography 313 (cartography by hand). In GE 313 students learn the standard traditional methods

A4. No, the content of other courses is not affected.

Group

American Congress of Surveying and Mapping
American Society of Photogrammetry

B1.

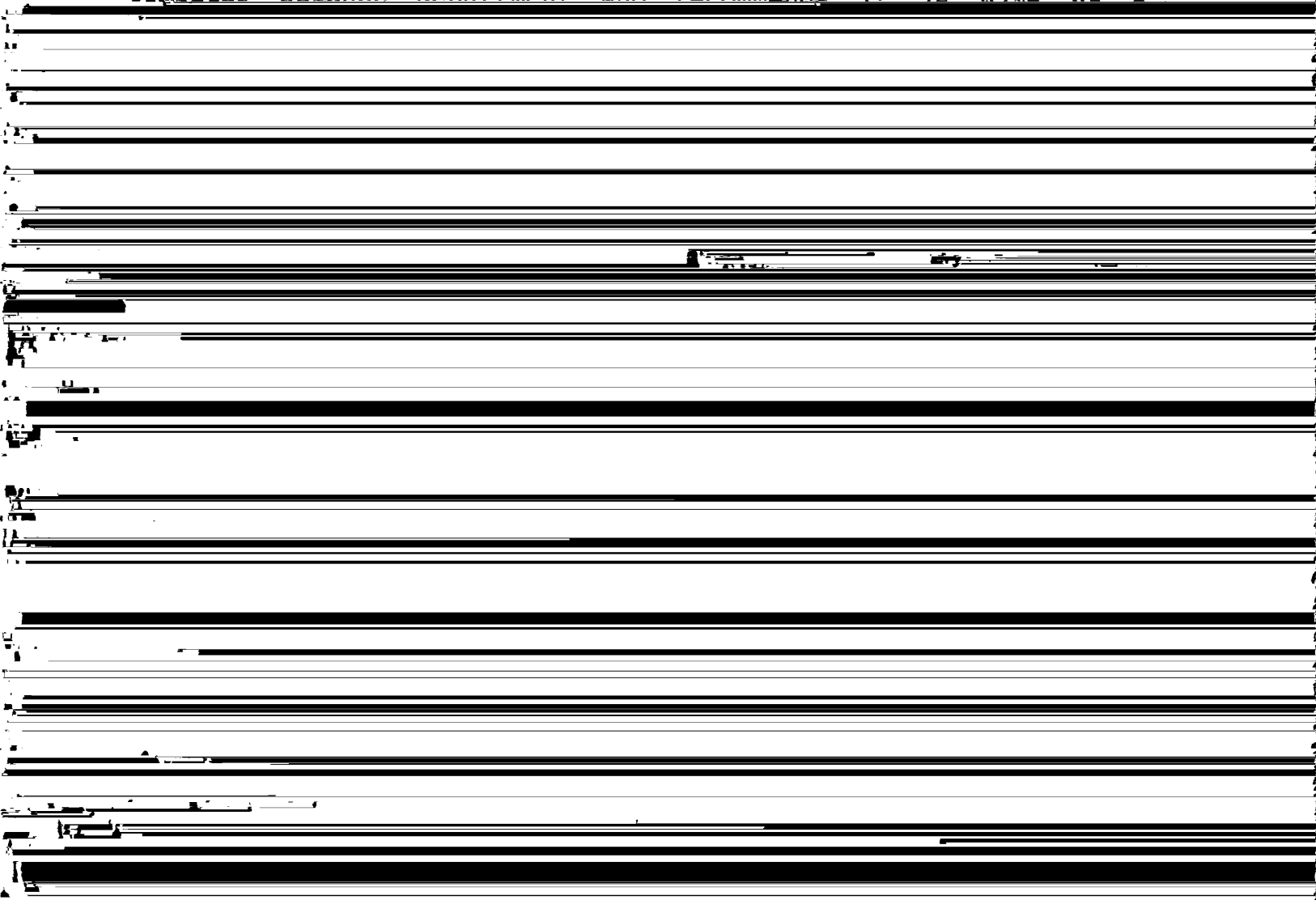
By a single instructor.

B2.

Yes. Several other courses are in the design phase and will be presented for approval at a later date. These courses include: Advanced cartography, Advanced Digital Cartography, and Geographic Information Systems. These courses, in addition to the proposed course and GE313, are necessary for students desiring a specialization in cartography. Without experience at multiple levels our students cannot hope to compete for cartographic positions with students from other programs where extensive cartographic training is the rule.

B3.

This could be an important application specific course for students from the Computer Science Department who wish to specialize in cartography. This has been discussed with the Computer Science Department who recommends it as part of a



Additionally, we need to obtain a matrix camera, such as the Polaroid Palette Box, for slide generation.

c. Students will be expected to provide their own diskettes, otherwise the prime material will be plotter pens and paper.

~~1. No additional laboratory material is required.~~

e. No travel funds will be required.

D2. Annually. The course will be offered in the spring. This is primarily because GE 313, a prerequisite, is offered in the fall.

D3. One.

D4. Twenty. Yes by laboratory space.

E. None.

Catalog Description

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~~CE 416 COMPUTER-ASSISTED CARTOGRAPHY~~

This course introduces automated cartographic production techniques. Topics include the use of cartographic hardware and software, the distinction between vector and raster representations, data bases, the cartographer-machine interface,

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INDIANA UNIVERSITY OF PENNSYLVANIA
Department of Geography and Regional Planning

COMPUTER-ASSISTED CARTOGRAPHY
GE 416/516

Spring Semester, 1986

Class Meeting: 8:00- 9:30 Tuesday and Thursday, Leonard Hall
Room 14

Instructor: Dr. Robert P. Sechrist, Leonard Hall, Room 2.

Required Texts:

Mark S. Monmonier, Computer-Assisted Cartography: Principles and Prospects, (Prentice-Hall Inc., Englewood Cliffs, NJ) 1982. ISBN 0-13-165308-3. x, 214pp.

James R. Carter, Computer Mapping: Progress in the 80s, Association of American Geographers, Washington DC) 1984. ISBN 0-89291-175-1. ix, 86pp.

I. Course Description

This course is designed to teach the student the proper use of microcomputer technology in the creation, storage, and production of maps. Students will learn how data are stored, methods for data entry, use of software to manipulate and display the data, and the use of peripherals for saving images on permanent media. The ability to rapidly produce maps will also enable the student to better comprehend standard cartographic principles such as the importance of scale, projection, and map design.

II. Purpose and Organization

In the last 10 years major changes have occurred in the production of maps. Producing a map used to be a formidable

the course is to show the student how to integrate his/her knowledge of cartographic principles learned in geography 313, or its equivalent, with the processing and display capabilities of the computer. Software currently available to generate maps, and new software anticipated over the several years, can draw the maps, yet the software cannot select design formats the way a trained cartographer can. A trained cartographer starts with

These assignments will represent 25% of the final grade.

Graduate students are expected to meet all of the above requirements and, to prepare in writing a report on an aspect of digital cartography, and to participate in a laboratory development project selected by the instructor.

IV. Materials Covered and Associated Readings

A. Introduction

Carter

- 1. Using Atlas AMP
- 2. Computer-assisted map design Monmonier ch. 8
- D. Data Capture
 - 1. Data transfer
 - 2. Equipment for Recording Spatial Coordinates
 - 3. Cartographic data bases
 - a. federal data bases available
 - b. extracting data from atlas

~~depicting linear and areal data~~

- d. polygon fill techniques
- 3. Raster Monmonier ch. 3 & 4
 - a. vector to raster conversion
 - b. economizing storage of
 - c. depicting linear and areal data
- 5. Cartographic Data structures Monmonier ch. 7

F. Student Project Reports

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Durfee, R.C. 1983. Geographic Processing Techniques Applicable to Regional Analysis. Oak Ridge: Geographic Data Systems Group, Oak Ridge National Laboratory (Draft document).

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