

**Master Syllabus**  
***Department of Geography***

**GEOG 341: Cartography and Visualization of Spatial Data 2**

**Course Description**

Advanced techniques in data classification and the making of general purpose and thematic maps, improvement of techniques learned in GEOG 340, and introduction to cartography and GIS professional organizations and literature. Prerequisites: GEOG 240, Map Reading; GEOG 250, Spatial Analytical Methods in Geography; and GEOG 340, Geography and Visualization of spatial Data 1. (3 credit hours).

**Course Objectives**

The objectives of the course are to perfect skills acquired in GEOG 340 and to introduce students to professional organizations and literature of the cartography community. Students are required to read relevant journal articles and books and write précis and book reports. Advanced data collection and standardization as well as advanced map-making techniques are taught. Students make a series of maps illustrating a variety of classification techniques using *Illustrator CS5*. Microsoft *Excel* is used for standardization of data. Students master the acquisition of vector shapefiles as needed for display of US Census block-group demographics in atlas form.

The specific aims of the course are to (1) hone skills associated with the use of *Illustrator* in the construction of maps, (2) perfect application of the conventions of the International Cartographic Association as related to visual hierarchy, lettering, element placement, and composition, (3) learn advanced methods of classification including the variety of quantiles and the standard measures of spread. (4) hone data management functions of *Excel* necessary for processing large data sets, (5) collect a variety of relevant data and produce a graphic history of a place (usually the home town) in atlas form.

**Course Rationale**

Cartography consists of the selection, assembly and graphic presentation of information required for the preparation of maps. Students hone their knowledge of cartographic conventions for the correct construction of maps and learn about the professional community they will join as professional cartographers and GIS practitioners. Techniques learned are foundational for Geography 444, Advanced Cartography. Geography 341 partially fulfills requirements for Option III, GIScience, and the advanced cartography required for those seeking qualification as “GIS Specialists” the title awarded to those completing the GIS certificate program sanctioned by the University Consortium for Geographic Information Science.

## Course Content and Format

Students will be presented content material in a lecture style and will meet frequently with the instructor for critique of précis writing and book reporting. Atlas construction is monitored and guided during pre-arranged individual sessions.

- I. Survey of atlases held in Bracken Library
  - A. Identification and description of good atlases
  - B. Identification and description of bad atlases
- II. Survey of cartography-related journals held in Bracken (print and ejournals)
  - A. Selection of article for précis writing
  - B. Writing of the précis
- III. Survey of the AAG Cartography Specialty Group website
  - A. Identification and description of potential employers
  - B. Review of US academic cartography for possible advanced cartography/GIS education
  - C. Survey of books about cartography; writing of book report
- IV. Quantitative mapping basics from Slocum, *et al.*
  - A. Statistical and graphical foundations
  - B. Population and sample
  - C. Descriptive vs. inferential statistics
  - D. Data classification
- V. Geographic variables
  - A. Nature of geographic phenomena
  - B. Levels of measurement
  - C. Visual variables
  - D. Mapping geographic variables (four maps)
- VI. Advanced choropleth mapping techniques (eight maps)
  - A. Color schemes for choropleth mapping
  - B. Classification schemes for choropleth mapping
- VII. Atlas construction
- VIII. Data sources

### **Textbook Suggestions**

Slocum, Terry A., McMaster, Robert B., Kessler, Fritz C. and Howard, Hugh H. 2009: *Thematic Cartography and Geographic Visualization*, 3<sup>rd</sup> Ed. Upper Saddle River, NJ: Pearson Prentice Hall.

### **Methods for Evaluating Student Performance:**

Forms of evaluation include examinations and mapping projects including an atlas. Fifty percent of the final grade will be from the final project. This involves graphic development of the history, demographics and current economy of a place in atlas form.

### **Evaluation of the Course**

Student evaluation of the course using university (and departmental) course evaluation forms.