Geography 360   Statistical & Multimedia Cartography   Spring, 2017

Instructor: Dr. Keith Rice

Office Hours: Tuesday   11:00 – 11:50am
                           Wednesday   10:00 – 11:50pm
                           or by appointment

**Office Phone, Room
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This course is a detailed study of the *cartographic data gathering, classification, symbolization and presentation* process. It centers on the statistical handling, analysis, generalization, and representation of mappable data. After a general review of the map conception and development process, several different types of phenomena will be analyzed in terms of their spatial characteristics, how they were measured and tabulated, and in what fashion they can be symbolized on a map. Thematic maps will be created using various enumeration structures through the use of multiple cartographic and GIS techniques, spatial analysis, and statistical investigation. Common techniques, such as, choropleth mapping will be explored in detail as well as the more challenging integrative methods (e.g. multivariate mapping). The semester will also concentrate on the presentation and delivery of thematic maps using animated, web (e.g. Google), social-network (e.g. Twitter) and integrated multimedia formats.

Lectures: Lecture sessions will be on Tuesday and Thursday mornings and will concentrate on both theoretical and applied mapping considerations, that will develop the groundwork of the laboratory assignments.

Laboratory: The lab session, two hours in length on Tuesday afternoons, will usually deal with the development of a cartographic and GIS project and the discussion of associated mapping techniques. In some instances, lab time may also be used to continue lectures from the morning hour. There will be <u>ten mapping projects</u>, varying in worth from six to twelve percent, for a total of <u>80 percent</u> of your grade for the course. A few of the projects will also integrate information from previous assignments. Some of the projects will also necessitate written narration to accompany the map product, while others may only require the actual construction of the map itself. Your finished *mapping* projects will be graded on proper data manipulation & symbolization, the quality of your professional finished maps, and (if needed) appropriate responses to requested written material.

You will be using a multitude of software programs to develop your map projects. These likely will include using (Adobe) *Illustrator, Dreamweaver, Animate*, HTML5, Google Fusion & API's, as well as *ArcGIS (10.3.1), MapViewer,* and (Avenza) *Map Publisher*.

It should be noted that most of the laboratory projects will take longer than the allocated lab session time. Most laboratory periods will spend the first half of the period discussing the assignment as well as providing interactive demonstration of the required procedures. The second half of the lab time, however, should normally be available for teacher/student question sessions.   These projects should be completed and handed in on or before the due date indicated by the instructor. Similarly, reading assignments should be completed before the class session for which they are assigned.

Text: **Cartography: Thematic Map Design**, 6th edition, by Borden Dent, Jeffrey Torguson, and Thomas Hodler, McGraw-Hill Higher Education, 2009. *[Text Rental Book]*

Thematic Cartography & Geographic Visualization, 3rd edition by Terry A. Slocum, Robert B. McMaster, Fritz C. Kessler and Hugh H. Howard, Prentice-Hall, 2009 *[Text Rental Book]*

Examinations: There will be one examination, a final comprehensive exam covering the fifteen weeks of the course. It will count <u>20 percent</u> of your final grade. The final exam will consist of multiple choice and matching questions. The final exam date and time is **Monday, May 15th, 8:00 - 10:00am**.

Attendance: Although class attendance records will not be kept, it is strongly urged that class sessions not be missed. Also keep in mind that the success of class discussions is keyed to verbal participation and with a small class one person can make a significant difference in aiding a classmate's understanding of a topic.

Readings: A separate handout delineates the main reading assignments of the semester. Additional materials for reading (as noted) will also be assigned during the term.

Student Rights and Responsibilities: Please make note of the following web-based pdf documents, that explains your responsibilities and rights within the UWSP campus community, including required behavior by students and faculty within the classroom environment: http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/rightsCommBillRights.pdf, and http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.pdf

Geography 360 Grading Outline

Map Projects	% of Final Grade
1. Dot Maps	10
2. Proportional Symbol Maps	7
3. Choropleth Mapping	10
4. Animated Dot Maps	6
5. Animating the Choropleth Map	6
6. Map Mashups, Social Media & Fusion Tables	7
7. Univariate Mapping - Cartograms	5
8. Bivariate & Multivariate Mapping	7
9. Atlas Scripting & Story Maps	7
10. Digital Map Atlas (Team Project)	15
<u>Final Exam</u>	20
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	100 %

GEOGRAPHY 360: STATISTICAL and MULTIMEDIA CARTOGRAPHY

Outline of the Course: General Topics

Spring, 2017

January

  24 & 26   Introduction and Review: Symbolizing Spatial Data – Guidelines

31 & (Feb. 2)   Dot Maps: History, Data, Dot Size Selection, Dot Location,
                      Scaling, Methods of Construction, Applications

February

  7 & 9   * Dot Maps: GIS Dot Density Mapping, Region Perception Variability, Pointillism,
                    Dasymetric Mapping

14 & 16   * Proportional Symbol Maps: Data, Scaling Techniques, Legend Construction,
                    Design Problems

21 & 23   Choropleth Mapping: Data, Number of Classes, Class Limit Determination
                    Classification Techniques

28 & (March 2)   * Choropleth Mapping: Map Design Considerations, Error Measurement, Color
                    Schemes, GIS Data Classification, GIS Data Integration

March

  7 & 9   * Map Animation: Nontemporal – Technique Pattern Variation, Temporal Change,
                    Visualizing Pattern Change using Point Data, Dot Map Animation

14 & 16   * Map Animation: Visualization, Graphic Scripts, and Dynamic Map Narration,
                    Choropleth Map Animation Methodologies

21 & 23   *[Spring Break]*

28 & 30   * Map Mashups - Google Map API's, Lines & Polygons with Fusion Tables,
                    Geo-tags, Online Mapping, Social Media Data Gathering, Twitter,
                    and Community Geovisualization

April

  4 & 6   * Univariate and Bivariate Mapping Techniques: Cartograms, Bivariate Indexes

11 & 13   * Multidimensional & Multivariate Mapping: Segmented Symbols, Chernoff faces,
                    Polygonal Glyphs, Cluster Analysis, Weaver Crop Index

18 & 20   * Story Mapping and Online Dissemination, Scripting Spatial Data using ArcGIS
                    templates and tools, Media Storyboards

25 & 27   * Geographic Visualization (Gvis), Virtual Reality & Realism: Digital Atlases,
                    Interactive Map Displays, Virtual Web Tours, Distributed Mapping

May

    2 & 4   Data Exploration, Visualizing Map Cyberspace, and New Map Horizons

    9 & 11   Future Research & Developments, Course Summary/Review and Evaluation

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Final Exam is scheduled on Monday, May 15th (8:00 - 10:00am)   * Graded *Map* Projects

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