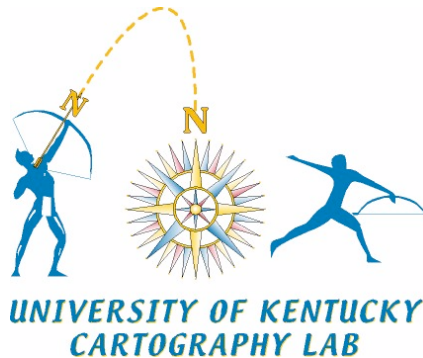


**Elements of Cartography**  
**GEO 305-401**  
**Fall 2007**  
**Classroom Building Room 301**  
**Tuesday & Thursday 6:00 – 7:15 pm**



Instructor: Richard "Dick" Gilbreath  
Classroom: Room 301, Classroom Building  
Office: Miller Hall - Room 5 (basement)  
Phone: (859) 257-4745  
Office Hours: 1:30 – 4:00 p.m. Monday and Wednesday  
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*... that master tool, geography's perfection, the map.—Richard U. Light*

Course Description:

This course is intended to introduce the student to the concepts and techniques of cartographic design and production. It can be said that the map is the most important statement of the professional geographer. It is useful to all natural and social scientists, engineers, politicians, military planners, road builders, farmers, and countless others, but it is the essential expression of the geographer's primary concern with location, distribution, and spatial interaction. This necessitates that all geographers have a fundamental understanding of cartography.

You will receive instruction in map drafting, compilation, symbolization, map scale, map projections, typography, and map design and production. In addition, you will learn how to interpret topographic maps. Upon completion of this course you will be able to clearly convey geographic phenomena using understandable maps and graphs. Should you later choose to pursue a career other than one as a geographer the skills you will obtain this semester will not be wasted. They will improve your communicative ability - an asset in any field.

Course Format and Attendance:

This course will be taught primarily as a lecture. During the lecture period I will cover the basic concepts of cartography as well as provide some background information on your mapping projects. These projects will require a great deal of "out-of-class" time. I will, however, forego some lectures, especially early on, in order to demonstrate procedures which will assist you in the completion of these projects. I will also set aside

time to discuss specific problems you are having with your project.

Attendance is “required” and roll will be taken. After all this is not a correspondence course. Your presence is required because I will lecture from my own notes as well as from the text! **I will allow each student four (4) excused/unexcused absences. Each absence beyond that will “cost” the student one percentage point off of his/her final grade.** If you cannot make it to a class or, especially, an exam, let me know beforehand! Class participation is a factor in every instructor’s mind where grading is concerned. Makeup examinations will be given only in cases of excused absences (as explained in *Student Rights and Responsibilities*).

### Course Assignments and Exams:

#### Exercises:

There will be six projects that will give you the opportunity to exercise both the knowledge you have obtained from lectures (plus text readings) and your drafting ability. I will announce the due date when I distribute the exercise. A 5% deduction will be imposed for each class period that a project is late. Budget your time and don’t procrastinate! The six projects and their associated point values are\*:

1) Drafting exercise	60 points
2) Projection exercise	80 points
3) Simple surveying exercise	100 points
4) Topographic exercise (in/out class)	100 points
5) Planimetric map	100 points
6) Graduated Circle or Dot map	<u>100 points</u>
TOTAL	540 points

\*not necessarily in this order

#### Graded Homework:

A number of homework assignments (4) will be collected and graded. Their total point value will be 60 points.

#### Exams:

There will be two exams (mid-term and final) given this semester which will test your retention/understanding of information from lectures, assigned text readings, lab sessions, and projects. Each exam will be worth 200 points.

The mid-term exam will be given on Thursday, **October 18th at 6:00 pm**

The final exam will be given on Tuesday, **December 11th at 6:00 pm** and will not be cumulative.

#### Quizzes:

There will be approximately 4 in class quizzes (extra credit) designed to reward those students who conduct out-of-class research.

#### Grading:

I refer you to the previous section. As you can see, the exercises account for 60% of your final grade and the two exams account for 40%. I think this constitutes a proper balance of knowledge and skill required to succeed in the profession. Remember that there is a penalty for exercises that are turned in late and that class attendance and class participation count. Letter grades associated with point totals will be awarded to students as follows:

A = 900-1000 points    B = 800-899 points    C = 700-799 points  
D = 650-699 points    E = below 650 points

Cheating and Plagiarism:

These offenses will not be tolerated! I will prosecute to the max (see *Student Rights and Responsibilities*).

Text (optional to purchase):

Borden Dent, *Cartography: Thematic Map Design*, 4<sup>th</sup> ed., 1996, William C. Brown publishers. On reserve at Young Library

Text (additional resources):

John Krygier and Denis Wood, *Making Maps: A Visual Guide to Map Design for GIS*, 2005, The Guilford Press.

Terry Slocum, et al, *Thematic Cartography and Geographic Visualization*, 2nd ed., 2004, Pearson Prentice Hall publishers.

Arthur Robinson, et al, *Elements of Cartography*, 6<sup>th</sup> ed., 1995, John Wiley & Sons publishers.

John Campbell, *Map Use & Analysis*, 4th ed., 2004, McGraw-Hill publishers.

Phillip & Juliana Muehrcke, *Map Use: Reading Analysis and Interpretation*, 4<sup>th</sup> ed., 1998, JP Publications.

David Greenhood, *Mapping*, 1964, The University of Chicago Press.

Course Outline:

I. Introduction (Ch. 1)

II. Theoretical Principles

- A) Oblate spheroid and its cartographic “problems” (Ch. 2)
- B) Map scale, coordinate systems, and reckoning (Ch. 2)
- C) Map projections (Ch. 2 and 3)
- D) Typography and lettering the map (Ch. 14)
- E) Geographical phenomena (Ch. 4)
- F) Graphic design (Ch. 12)
- G) Types of thematic maps (Ch. 6-11)
- H) Map organization (Ch. 13)

III. Data Manipulation and Generalization

- A) Mapping place data (Ch. 7 and 8)
- B) Mapping linear data (Ch. 9)
- C) Mapping areal or volumetric data (Ch. 6 and 11)

IV. Changes in Cartographic Technology (Ch. 16 and 17)

From manual techniques of the ancient past to electronic technology and its cartographic applications today.

### Laboratory Supplies:

The cost of supplies for this class appears to be high, I realize, but it is an unavoidable fact that you need this stuff to produce even the simplest maps. On the up side, these items will be useful to you for a long time to come and if you wish, they can be sold to future cartography students.

**I have asked the Art Supplies department at Kennedy's Bookstore to put together a "lab kit" for this class. It consists of the following items which will be sold to you at a discount:**

### **GEO 305 LAB KIT**

KOH-I-NOOR Slim Pack (3165-SP7P)  
(Pack of 7 technical pens-#000 to #4)

X-ACTO Knife #1

8H Pencil

KOH-I-NOOR Eraser #9600 (yellow)

STAEDTLER-MARS Plastic Eraser #526-50 (white)

SCOTCH Drafting Tape 3/4" x 400"

Eraser Shield

CHARTPAK Transparent Plastic Grid (10 blocks/inch)

8 1/2" x 11" double matte frosted mylar (10 sheets)

8 1/2" x 11" drafting vellum (10 sheets)

8 1/2" x 11" Chartpak appliqué-clear matte for laser printers (4 sheets)

Engineer's plastic scale (graduated in ten units/inch)

T-square (24" minimum)

Graduated circles template (1/16" to 3" diameter)

Clear triangle (8" minimum)

Protractor (360°, 6")—Alvin P260

**You are free to purchase the "lab kit" items wherever you wish. Some of you may already have some or many of the supplies mentioned.**