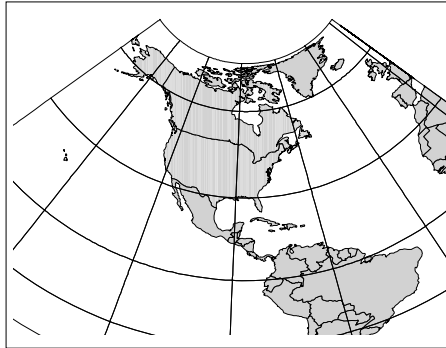


# COMPUTER CARTOGRAPHY

## Gpy 200, Sec. 01

### Fall 2010

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**Instructor: Kin M. Ma, Ph.D.**, Geography and Planning Dept.

**Office Hours:** Tue./Thu. 10:00-11:00am, Wed. 10:30-11:30AM, and by appt.

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Days	Meeting Time	Classroom
Tue.	11:30A-12:45 PM	116 Henry (HRY)
Thur.	11:30A-12:45 PM	116 Henry (HRY)

**Required Texts:** 1) **Dent, Borden, Torguson, J.S., and Hodler, T.W.** (2009). *Cartography: Thematic Map Design*, Sixth Edition, McGraw-Hill Higher Education: Boston, MA. ISBN: 978-0-07-294382-5

2) Ormsby, Tim, Napoloen, E., Burke, R., Groessl, C., and Bowden, L. (2008). *Getting to Know ArcGIS Desktop*, ESRI Press, Redlands, CA. With ArcGIS 9.3 CD-ROM (2) Software. ISBN: 978-1-58948-210-4.

Suggested: **GOODE's World Atlas**, 21st Edition (2004), Rand McNally, Chicago, or a relatively recent edition (20th Edition is acceptable). ISBN: 0-528-65000-3

### Content of the course

Cartography, a technical branch of geography, is the art and science of drawing or compiling maps or charts. Geography, on the other hand, is the science that describes the surface of the Earth and its associated physical, biological, economic, political, and demographic characteristics, especially in terms of large areas and the complex of interrelationships obtained among them.

Geography has been contributing to our understanding of place and space for a long time - consider that modern geography traces its roots to the Greeks. The ancient Arab geographers (some of the world's earliest geographers and from whom we get many of our geographical concepts, terms, and instruments) called geography "the mother of all sciences" (*umm al-'uluuum*), meaning that geography was the source of all knowledge. Perhaps those claims are unjustified today but, if you think about it, just about everything is geographic - everything is located somewhere and got there somehow, and is going somewhere else today or a thousand years from now. Geography today is a branch of science concerned with where things are and **how** and **why** they are where they are. It is the "whereness" of things that Geographers wish to understand and explain. Sometimes called the **spatial science**, geography always

involves the study of space and sometimes involves the study of space and time together. It is predominantly an empirical, quantitative discipline that follows the scientific method.

Cartography is a major tool that Geographers use to understand and represent the world. Other geographic tools are GIS (geographic information systems), remote sensing (the interpretation of aerial photography and satellite imagery), and sample survey research.

This course provides an introduction to the art and science of cartography and computers. The course is focused on concepts and principles in computer cartography using ArcView and ArcGIS software programs. As such, the course is like a workshop in which you will use the computer program to understand the sometimes complex theoretical and applied elements and processes of map design and production. The course assumes no prior knowledge on the part of the student about maps but assumes some familiarity with computers.

In this course you will learn how to make maps with a computer. You will also learn how to read and analyze maps. You will understand maps as a communication device with a symbology and organization that operates within a certain cultural context. Students completing this class should be able to critically read a thematic or general map, in particular with regard to its projection, statistical treatment of data, and suitability for use. Students will understand the history of cartography, locational reference systems, map projections and distortion, themes, and statistical distributions. The student will understand the differences and similarities between computer cartography and Geographic Information Systems (GIS). Students will acquire skills in graphics design, manipulation, and graphics data translation as it relates to the enhancement of computer maps.

ArcView 3.3 and ArcGIS 9.3 are Geographic Information System (GIS) programs developed by Environmental Systems Research Institute (ESRI). An ArcGIS 9.3 CD is included in your "Getting to Know ArcGIS" textbook and you have a 180-day trial software so that you can install it on your home computer and allow to be more familiar with the software program.

You may need to spend **ADDITIONAL** time in the lab to get the exercises completed. The B-2126 MAK lab is used by other classes. Check the weekly schedule outside the classroom for open hours. You may need to see the instructor regarding lab access. There is a possibility to obtain keycard access to the lab. You will need to sign an agreement to obtain this keycard for the semester. Student Code Section 224.00.

**Student Folders:** Networked Student Folders have been set up in the lab. You should COPY the data files from the assignments folder **INTO** your student folders and then work on your lab exercises in your personal student folders disk space.

These data folders can be accessed at home via file transfer protocol (FTP). See this directory

<http://www.gvsu.edu/it/student/> Click '**FTP files to Your Student Account'**  
**(Will connect to your PRIVATE N: Drive OR R: Lab Drive)**

Download program on your computer and follow directions.

### **Course objectives:**

- Basic understanding of scale, projections, map design with lettering and symbology
- Ability to distinguish/understand uses of dot, choropleth, and proportional symbol maps.
- Ability to utilize geographic information software, ArcView and introduction to ArcGIS to produce maps.
- Appreciation of cartography as a science and an art.
- Ability to use the Internet as a spatial database information resource.
- Critical thinking, reading comprehension, writing, and speaking skills.

### Important Dates

Exam #1	Oct. 5
Semester Project Topic	Oct. 19, 2010
Drop Deadline, 5:00PM	Oct. 29, 5:00PM
Exam #2	Nov. 9
Classes End	December 11, 2010
<b>Final Projects DUE</b>	<b>Tue., 12/7, 12:45 PM</b>
Final Presentations	Thu., 12/9, 11:30-12:45 PM
Final Presentations	<b>Wed, 12/15, 12:00-12:30 PM</b>
<b>Final Exam</b>	<b>Wed., 12/15, 12:35-1:50 PM</b>

### Course Grade Format

Item	Percent	Points
Exam #1	14.5%	100
Exam #2	14.5%	100
Lab #1	2.9%	20
Lab #2	7.2%	50
Lab #3	7.2%	50
Lab #4	2.9%	20
Lab #5	2.9%	20
Lab #6	7.2%	50
Lab #7	4.3%	30
Final Lab Project	14.5%	100
Attendance/Participation	7.2%	50
Final exam	14.5%	100
<b>Total</b>	<b>100%</b>	<b>690</b>

Note: Total may not add up to 100% because of rounding

#### Exams, Labs, Participation:

##### Exam Structure:

Exams (100 points each) and Final Exam (80 points)  
 35 Multiple Choice / Matching Questions (2 pts. each)  
 4 Short Essay Questions

Exams  
 70 points  
30 points  
 100 points

Requests for exams at times **other** than regularly scheduled are **strongly discouraged** and will be granted only for extreme emergencies (with proof required). Please contact me or CALL me EARLY before a potential time conflict so that we can make the proper arrangements.

**Participation and Attendance:** I believe in your commitment to the learning we share through dialogue with each other. Attending class is essential to mastering and understanding the material in class, **especially** in a hands-on laboratory class. Class Participation will be evaluated by in-class participation and/or also "significant dialogue" over e-mail. Attendance will also be taken at each class session. If you are **unable** to attend class for an extended period, please notify me via e-mail or phone **BEFORE** the time you will miss class.

#### My teaching philosophy:

I see my role as a facilitator of your learning and performance in this course. Availability, patience, and fairness are the principal guidelines used in this course. Please note that the instructor

cannot deliver all of the information and knowledge that is needed. This course is a medium for learning computer cartography. This course is a partnership between the instructor and students--both have the responsibility for your success.

Each student has the major responsibility for his/her education. Courses are delivered by instructors and university; education is developed by the **STUDENTS**. It is the student's role to have personal responsibility for learning and performance--learning the course material and achieving the course objectives. Please note that lack of preparation on your part does not constitute an emergency on the instructor's part.

### **Course Policies and Lab Exercises**

All students are expected to demonstrate proper classroom decorum. Please switch **OFF** cell phones before class begins. During Classtime, Work on Gpy 200 related course materials is **expected!!** If you have some free time, use it for the **Final Project!**

### **Lab Exercises**

Assignments are usually available on Blackboard one class session before the scheduled lab. Lab exercises are due according to the class schedule below.

#### **Late Exercises Policy**

The price of a late lab exercise is **25% per day late and progressively increases**. For example, ONE late day = **-25%**, TWO days late, **-75%** penalty. Late exercises will **NOT** be accepted TWO days after the deadline. If you have an extenuating circumstance, please come and discuss it with me or e-mail me at [makin@gvsu.edu](mailto:makin@gvsu.edu) **BEFORE** the deadline; the earlier the better.

#### **Final Project Exercise**

For your final project, you will need to present a poster as if you were participating in an illustrated paper presentation at the Association of American Geographers (AAG) Illustrated Poster Session. You will have 5 minutes to make an oral presentation. Your poster should not be just your maps, but should explain the maps in a larger context— 1) Research Question or Problem Statement Posed, 2) Question answered, 3) Methods used, 4) Research results and discussion, 5) Conclusions, 6) Acknowledgment, etc. You must write a final project proposal with a listing of data sources you will use to answer your research question and develop a map that does NOT currently exist. The final topic **MUST** be **reviewed** by the instructor before it is **acceptable**. More details regarding the final project will be provided later on.

Final Projects can be done individually or with **ONE** other fellow student. Individual or Group Final Project proposals are due on **Oct. 19, 2010** and the final project posters and Powerpoints are due on **Tues., Dec. 7, 2010, 12:45PM** in the classroom. **LATE** Final Projects will **NOT** be accepted. You will also need to present your poster after the project is submitted.

Final Project Proposal	5 pts.
Map project and design	70 pts.
<u>Project Presentation</u>	<u>25 pts.</u>
<b>Final Project Total</b>	<b>100 pts.</b>

**Course Withdrawal:** Following GVSU guidelines, the Course Withdrawal Deadline (in order to receive a grade of "W") is Friday, **Oct. 29, 2010 at 5:00 PM**.

**Incomplete Grade Policy:** An **"I"** grade may be given for student work that is lacking in quantity to meet course objectives. It may be assigned when extenuating circumstances, such as illness, necessary absence, or other reasons generally beyond the control of the student, prevent completion of the course requirements at the end of the semester. This grade **MAY NOT** be given as a substitute for a failing grade or withdrawal.

## Course Grade Distribution

A	A-	B+	B	B-	C+	C	C-	D+	D	F
95-100	90-94.9	87-89.9	84-86.9	80-83.9	77-79.9	74-76.9	70-73.9	66-69.9	60-65.9	<60

Note: There are NO 'A+' NOR 'D-' grades.

**Special Learning Challenges:** Each student learns in his or her own way. If you have a disability that will require special accommodations in this course, please contact the **Disability Support Services (DSS) in 200 Student Services (STU)** at (616) 331-2490. The DSS will assist me in providing the necessary accommodations in order to enhance the learning environment for you. If you have already done so, DSS will provide you with a letter that describes your specific needs and the necessary accommodations. Please bring that letter to my attention AS SOON AS POSSIBLE, and **PRIOR** to the date of the first lab assignment.

**Student Code and Plagiarism:** According to GVSU's General Academic Policies, here are the stated policies:

1. No student shall knowingly, without authorization, procure, provide, or accept any materials which contain questions or answers to any examination or assignment;
2. No student shall, without authorization, complete, in part or in total, any examination or assignment for another person;
3. No student shall, without authorization, allow any examination or assignment to be completed, in part or in total, by another person;
4. No student shall knowingly plagiarize or copy the work of another person and submit it as his or her own;
5. No student shall submit work that has been previously graded or is being submitted concurrently to more than one course without authorization from the instructor(s) of the class(es) to which the student wishes to submit it.

### Course Websites

- 1) Course Website: [http://faculty.gvsu.edu/gpy200/F10Gpy200\\_01Syllab.pdf](http://faculty.gvsu.edu/gpy200/F10Gpy200_01Syllab.pdf)
- 2) Blackboard Website: <http://bb.gvsu.edu> GPY 200-01

### Email

E-mail will be periodically sent to the entire class regarding items or class Powerpoint presentations that I have posted to the Blackboard website. It is important that you are checking REGULARLY your GVSU Google e-mail address you have been assigned. E-mail messages are sent to the CLASS and NOT to individuals. I am NOT responsible if your e-mail account reaches the disk space limit and the messages I send bounces. I **CANNOT** keep up with over 150 students and the potential bounce back of messages because of specific problems. It is **YOUR** responsibility to manage your email account and allow enough space for additional messages.

### **\*\*Sending Email\*\***

When writing email to the instructor, for easy identification of your name and class section, in the Subject Line of the messages, include your Class and Section Number. **e.g., "Gpy200-01, 'Your topic.'** Always sign your **FULL** name at the end of your e-mail. *Emails **without FULL Name NOR subject line** will NOT be responded to.*

## Tentative Course Outline

Instructor reserves right to update with adequate notice

<b>Wk</b>	<b>Date</b>	<b>Topics</b>	<b>Reading</b>	<b>Other/Assignment due</b>
1	Aug. 31	Introduction to Course	Ch. 1	
1*	Sep. 2	Thematic Mapping	Ch. 1	<b>9/3,5:00pm,Add Deadline</b>
2	Sep. 7	<b>Labor DAY (NO CLASSES)</b>		
2	Sep. 9	<b>LAB</b>		<b>Lab 1: Intro to ArcView</b>
3	Sep. 14	Earth Geometry/Projections	Ch. 2, 3	
3	Sep. 16	<b>LAB</b>		<b>Lab 2: ArcGIS Exer. 5A-5B, p. 89-110</b>
<b>Wk</b>	<b>Date</b>	<b>Topics</b>	<b>Reading</b>	<b>Other/Assignment due</b>
4	Sep. 21	Projections, Map Methods	Ch. 3, 12	
4	Sep. 23	<b>LAB</b>		<b>Projections Lab 3 Cont'd, DUE</b>
5	Sep. 28	Lettering and Symbols	Ch. 13, 4	
		Map Symbols	Ch. 4	
5	Sep. 30	Choropleth Mapping	Ch. 6	<b>Projections, Lab 3 DUE</b>
<b>6</b>	<b>Oct. 5</b>	<b>Exam #1</b>		<b>Chaps. 1, 2-4, 12-13</b>
6	Oct. 7	<b>LAB</b>		<b>Lab 4: Choropleth Mapping</b>
7	Oct. 12	Color Princip., Measure/Ratio	Ch. 14, 5	
7	Oct. 14	<b>LAB</b>		<b>Lab 4 Cont'd and DUE</b>
8	Oct. 19	Dot Mapping	Ch. 7	<b>Semester Project Topic DUE</b>
8	Oct. 21	<b>LAB</b>		<b>Lab 5: Dot Map</b>
9	Oct. 26	Proportional Symbol Map	Ch. 8	
9	Oct. 28	<b>LAB</b>	Ch. 10	<b>Lab 6:Propor.Symbol Mapping Lab 5 DUE</b>
<b>9</b>	<b>Oct. 29*</b>	<b>Drop Deadline to get a 'W'</b>		<b>10/29, 5:00PM, Deadline</b>
10	Nov. 2	Cartogram Mapping	Ch. 10	
10	Nov. 4	<b>LAB</b>		<b>Lab 7: Cartogram Lab 6 DUE</b>
<b>11</b>	<b>Nov. 9</b>	<b>Exam #2</b>		<b>Chaps. 6-8, 10, 14</b>
11	Nov. 11	<b>LAB</b>		<b>Lab 7 Cont'd and DUE</b>
12	Nov. 16	Geographic Info Systems	Ch. 6	
12	Nov. 18	<b>LAB</b>		Lab 7:GettingKnow <b>ArcGIS</b> Exercise Ch. 9 Exercise 9A, 9B
13	Nov. 23	Dynamic and Flow Mapping	Ch. 11	
<b>13</b>	<b>Nov. 25</b>	<b>Thanksgiving (NO CLASS)</b>		
14	Nov. 30	Digital Mapping Map Animation	Ch. 16 Sloc.,Ch20/22	<b>in Course Reserve</b>
14	Dec. 1	<b>LAB</b>		<b>Course E-Reserve, Lab 7 DUE</b>
15	Dec. 7	<b>LAB (Semester Project)</b>		<b>Final Project DUE, 12:45PM</b>
15	Dec. 9	<b>Project Presentations</b>		
<b>16</b>	<b>Dec. 15</b>	<b>Project Presentations</b>	<b>12:00-12:30pm</b>	
		<b>FINAL EXAM, 116 HRY</b>	<b>12:35-1:50pm</b>	<b>Ch. 6, 12, 17, Slocum Chap.20/22</b>