Geography 173

Dynamic and Interactive Mapping
Fall 2007

Instructor:	Dr. Richard Taketa
Office:	Washington Square Hall 113A
Telephone:	408-924-5425 (650-329-4231)
email:	rtaketa@email.sjsu.edu (rtaketa@usgs.gov)
Office Hours:	MT 5:00-6:00, W 5:30-5:50, and by appointment.

Objectives: Geography 173 will introduce you to the concepts and tools for designing dynamic and interactive maps, including maps for the World-Wide Web, animation, multimedia presentation, and interactive interfaces for presenting geographic information.

Laboratory exercises will apply a variety of computer mapping, GIS, and computer graphics applications software. Designing Web pages for delivery of geographic information will be a major part of the lab experience. Most exercises will involve some level of programming or scripting. No prior computer programming experience is required. However, familiarity with at least one computer programming language will be helpful.

Methods: The course will involve a combination of lectures, discussions, and laboratory exercises. You should read the assigned sections of the textbook prior to the week in which they are discussed. The lectures/discussions will expand on the materials in the text.

Discussions will involve all members of the class. However, you will **not** be evaluated on participation.

Laboratory exercises will cover a range of dynamic and interactive mapping problems. Each student will prepare a brief (5-minute) demonstration of each laboratory project. For exercises taking more than one week, the demonstrations will be one week before the exercises are due. Students will then have an opportunity to update their projects based on feedback from the demonstrations. Otherwise, demonstrations will be given on the day the exercises are due. The demonstration is mandatory, and will make up 20% of the exercise grade.

Evaluation: Ten exercises creating a variety of map presentations will be assigned in the laboratory. Each exercise is due at the beginning of the laboratory following the demonstrations. Exercises will be evaluated on quality of data preparation, design, and graphic execution, the demonstration, and any written materials.

Two examinations covering materials from the lectures and readings. Examinations will consist of multiple-choice, short answer, and short essay questions. Make up examinations will be arranged as necessary, and may be based on different questions than those on the original examination.

The final project will involve creation of an interactive and/or dynamic presentation of geographic information. Project requirements are described on a separate sheet.

Grading: Examinations and exercises will be weighted as follows:

Exercises	40% (4% each)
Final Project	10%
Examinations	50% (25% each)

Late exercises will be reduced $^{1}/_{20}$ in grade for each week past the due date. An exercise will be treated as late if it is not turned in on the due date, unless other arrangements have been made in advance.

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Readings

Cooper, A., Reimann, R., and Cronin, D. (2007) *About Face 3: The Essentials of Interaction Design*. Wiley. (Required textbook)

Norman, D. (1989). *Design of Everyday Things*. Bantam. (Required textbook)

Goodman, D. (1994). *JavaScript Bible.* Peachpit Press. (Optional textbook)

Asche, H., and Herrmann, C.M. (1995). Designing interactive maps for planning and education. In MacEachren and Taylor, *Visualization in Modern Cartography*, p. 215-242.

Blok, C., Kobben, B., Cheng, T., & Kuterema, A. (1999) Visualization of Relationships Between Spatial Patterns in Time by Cartographic Animation. *Cartography and GIS*, *26*, p. 139.

Campbell, C.S., and Egbert, E.L. (1990). "Animated cartography: 30 years of scratching the surface." *Cartographica*, *27*, p. 24-46.

Cartwright, W. (1995). "Interactive multimedia for mapping." in MacEachren and Taylor, *Visualization in Modern Cartography*, p. 63-89.

Cartwright, W., Crampton, J., Gartner, G., Miller, S., Mitchell, K., Siekierska, E., and Wood, J. (2001) Geospatial information visualization user interface issues. *Cartography and GIS*, *28*, p. 45-60.

Cox, S., Daisey, P., Lake, R., Portele. C., and Whiteside, A. (2005). OpenGIS® Geography Markup Language (GML) Encoding Specification. Open GIS Consortium. (Available as a PDF from http://www.opengeospatial.org/).

DiBiase, D.W., MacEachren, A.M., Krygier, J.B., and Reeves, C. (1992). "Animation and the role of map design in scientific visualization." *Cartography and GIS*, *19*, p. 201-214.

Harold, E.R. (1999). *XML Bible*. IDG Books.

Lake R. (2001). "GML 2.0: Enabling the Geospatial Web" *Geospatial Solutions* (July), p38. (also available on the Web by searching the articles on www.geospatial-online.com).

MacEachren, A.M., and DiBiase, D.W. (1991). "Animated maps of aggregate data: conceptual and practical problems." *Cartography and GIS*, *18*, p

MacEachren, A.M., and Taylor, D.R.F., eds. (1995). *Visualization in Modern Cartography.* Pergamon.

Monmonier, M. (1995). "Graphic narratives for analyzing environmental risks." in MacEachren and Taylor, *Visualization in Modern Cartography*, p. 201-213.

Monmonier, M. (1992). "Authoring graphic scripts: experiences and principles." *Cartography and GIS*, *19*, p. 247-260.

Peterson, M. (1995). *Interactive and Animated Cartography*. Prentice-Hall.

Peterson, M. (1993). "Interactive cartographic animation." *Cartography and GIS*, 20, p. 40-44.

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Fall 2007 Class Schedule

Date		Discussion	Reading		Laboratory
Aug	28	Introduction; Interactive Mapping	Peterson (1995) p. 59-86, 173-183; Asche & Herrmann (1995), Cooper et al Ch 1-2, 12 (p. 249-259).	Ex 1:	Basic Web page
Sep	4	Designing Mapping User Interfaces	Norman, Ch 1-5; Cooper et al, Ch 3-6.		"
	11	"	Norman, Ch 6-7; Cooper et al, Ch 7-11, 13-14.	Ex 2:	Web image map
	18	Developing Mapping User Interfaces	Cooper et al, Ch 19-24; *Guide to Programming*.	Ex 3:	Map/Image display in JavaScript
	25	"	"	Ex 4:	Map/image browsers
Oct	2	"	"	Ex 5:	Geo-Calculator
	9	"	"	Ex 6:	Web Map 1
	16	"	Cooper et al, Ch 12 (p. 260-268), 25-26; scan Ch 15-18.	Ex 7:	Web Map 2
	23	**Examination 1**		Ex 8:	Internet Map Server
	30	Mapping and the Internet	XML Bible Ch1; Introduction to GML (Web reading)		"
Nov	6	Cartographic Animation and Multimedia	Cartwright (1995); DiBiase, et al. (1992); Monmonier (1990); Peterson (1993); Peterson (1995) p. 127-152, 185-197.	Ex 9:	Geographic animation 1
	13	"	Weber (1995); Wolfgram (1994) p. 57-78, 91-136.	Ex 10:	Geographic animation 2
	20	Applications	Peterson (1995) p. 184-204; Campbell & Egbert (1995); MacEachren & DiBiase (1991); Monmonier (1995).		" *Project Proposals Due*
	27	**Examination 2**			Final Project
Dec	4	Final project			"
	11	"			"
	18	***Project Presentations***			

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