

University of Maryland, College Park

Department of Public and Community Health

HLTH 688 U Geographic Information Systems in Public Health Surveillance

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| <p>Instructor: C. Ed Hsu, PhD, Assistant Professor of Public Health Informatics</p> <p>Office/Phone: HHP 2371 / 301-405-8161</p> <p>Email: edhsu@umd.edu</p> <p>Semester: Spring (Starting 3/13), 2006</p> <p>WebCT Time: The curriculum is on WebCT at all time Please complete course assignment in the week as specified.</p> | <p><u>OFFICE HOURS</u></p> <p>Monday – 17:00-20:00</p> <p>Tuesday – 17:00-20:00</p> <p>Wednesday – 17:00-20:00</p> |
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| Required Textbooks & Other Readings | <p>Required: Alan Melnick. <u>Introduction to Geographic Information Systems in Public Health</u>. ISBN: 083421878X. Jones and Bartlett Publishers. 2002.</p> <p>Other reading materials to be assigned.</p> |
| Course Description | <p>Geographic Information Systems provide essential support for public health preparedness, response and surveillance. The curricula concerns with GIS key components, informatics approaches to conducting health surveillance using technologies, and the GIS applications in health care and public health. It is designed to familiarize students with core concepts & applications confronting health managers in planning, implementation and evaluation of geographic information systems.</p> <p>Most modules include either one book chapter or one research article. Students are required to complete quiz or essay questions after each class. Students will also be expected to submit a project proposal and complete a final written project that demonstrates competencies of public health informatics practice and research.</p> |
| Course Objectives | <p><u>At the conclusion of this course, the student will be able to:</u></p> <ol style="list-style-type: none"> (1) List the major landmarks in the history of GIS health surveillance. (2) Demonstrate proficiency in hardware, software and Internet essentials, in order to implement GIS basics . (3) Explain the use of GIS in environmental health, communicable disease control, and community health assessment. (4) Apply the use of GIS in environmental health, communicable disease control, and community health assessment. (5) List the major limitations and potential problems of utilizing GIS. (6) Describe the connection between GIS technology and public health management and practice. |

Course Policies

Missed quiz or essay question assignments:

You are our greatest class resource. Your thoughts, ideas, questions and comments will enrich everyone's learning experience, so please be actively involved in class. Enthusiastic online discussions are welcome! Come to class prepared by reading the text and articles of each online module.

If you cannot complete the course requirement, or if you are ill or encountering personal difficulties, please call or email to the instructor as soon as possible. You can also contact the Learning Assistance Service (301-314-7693) and or the Counseling Center (301-314-7651). If you are unable to be in class on the day of a class or an assignment, please discuss this with the instructor **BEFORE** the actual week of the class or assignment.

Accommodations for students with disabilities:

If you have a documented disability and wish to discuss academic accommodations for class requirements or other needs, please talk to/email the instructor as soon as possible. You will need documentation from Disability Support Service (314-7682.) If you intend to take any or all exams at DSS it is your responsibility to notify me as soon as possible.

Academic Integrity:

The University's code of academic integrity is designed to ensure that the principle of academic honesty is upheld. Any of the following acts, when committed by a student, shall constitute academic dishonesty:

- ✓ CHEATING : intentionally using or attempting to use unauthorized materials, information, or study aids in an academic exercise.
- ✓ FABRICATION: intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
- ✓ FACILITATING ACADEMIC DISHONESTY: intentionally or knowingly helping or attempting to help another to violate any provision of this code.
- ✓ PLAGIARISM: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.

For more information see:

<http://www.inform.umd.edu/CampusInfo/Departments/PRES/policies/iii100a.html>

Religious Observances:

The University System of Maryland policy provides that students *should not be penalized because of observances of their religious beliefs; students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances.* **It is the student's responsibility to inform the instructor in advance of any intended absences for religious observance.**

GIS in Public Health Surveillance

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| Week 1 Week of 3/13 | Topic: Introduction: Course Outline. An overview of major concept and practice of GIS in health surveillance. Online library tour: Introducing UM Research Port (online database) available resources for conducting research in health information systems. Required Reading: Chapter 1. History uses of GIS in public health. |
| Week 2 Week of 3/20 | Topic: Introduction to research in GIS in public health. Required Reading : Geographic Information Systems and Public Health. By: Ricketts, Thomas C. Annual Review of Public Health, 2003, Vol. 24 Issue 1, p1, 6p |
| Week 3 Week of 3/27 | Topic: Getting Started with GIS: Hardware, Operating Systems, and GIS Software. Required Reading: Chapter 9. Getting Started with GIS: Hardware, Operating Systems, and GIS Software. |
| Week 4. Week of 4/3 | Topic: GIS Data Acquisition and Storage Required Reading. Chapter 2. Data Acquisition and Storage |
| Week 5. Week of 4/10 | Topic: GIS and Environmental Health Required Reading /Assignment: Chapter 3: GIS in Public Health Applications: GIS data transformation: making maps. Project Proposal Due. |
| Week 6 Week of 4/17 | Topic: GIS in disease prevention and surveillance. Required Reading / Assignment: Chapter 5. Public Health GIS Applications: Communicable Disease Prevention and Control. GIS and Disease. By: Cromley, Ellen K. Annual Review of Public Health, 2003, Vol. 24 Issue 1, p7, 18p |
| Week 7 Week of 4/24 | Required Reading: GIS AND Health Care. By: McLafferty, Sara L. Annual Review of Public Health, 2003, Vol. 24 Issue 1, p25, 18p |
| Week 8 Week of 5/1 | Topic: GIS & Chronic Disease Prevention. Required Reading: Chapter 7. Public Health GIS Applications: Chronic Disease Prevention. |
| Week 9 Week of 5/8 | Topic: Community Health Assessment and Planning. Required Reading: Chapter 8. Public Health GIS Applications: Community Health Assessment and Planning. |
| Week 10 Week of 5/15 | Topic: Limitations, Lessons Learned and Challenges. Required Reading Chapter 9. Limitations of Lessons Learned and Challenges. Slides: GIS case studies and limitations. Final Paper Due. |

| Grading | | | | | |
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| 190-200 points | A+ | 180-189 points | A | 170-179 points | A- |
| 160-169 points | B+ | 150-159 points | B | 140- 149 points | B- |
| 130-139 points | C+ | 120-129 points | C | 110-119 points | C- |
| 109 & below | F | | | | |

Course Requirements and Grades:

Grades will be based on the following criteria:

- 1) Module assignments: Quiz and essay questions (90 points).
- 2) Project proposal (50 points).
- 3) A final paper – a completed business plan (60 points).

Final grade: A letter grade will be assigned to as a final grade according to the aforementioned grading rules. The completion of reading and assignments is expected and 5 points may be docked per late assignment submitted. If a student misses more than 2 class assignments without advanced notice and/or due justifications (as explained in the “*course policies*” section). A 10% penalty will be assessed against late submissions. Final business plan should be conducted by individual student, and the Plan should not duplicate the contents submitted for other courses.

Proposals are expected to be no more than 3 pages, and papers are expected to be no more than 20 pages completed by individual students, and should utilize concepts acquired in this course. Papers are expected to be proofread before submission for a grade. Papers with excessive typos/grammar errors may not be graded. Potential topics should be discussed with the instructor. Examples of topics may include but are not limited to the following areas: hospital information systems, telemedicine, clinical decision-support systems, computer-based patient records, GIS applications in health, and community health information systems.

Final Project: A Business Plan for public health information Implementation

Students are expected to prepare a business plan outlining the use of a particular technology within a health care organization. A sample business plan will be provided. This business plan assignment shall at least address the following questions:

- 1) What is the type of GIS technology or innovation being considered?
- 2) What is the background of the health organization that uses this GIS technology?
- 3) How does this GIS technology fit in the overall plan of the organization? How does the business plan relate to the concept or theory introduced in class?
- 4) How will the plan be implemented?
- 5) What are the proposed budget items?
- 6) A “Strength, Weakness, Opportunity and Challenge” (SWOC) analysis.

This assignment will be completed in two phases:

Assignment 1: Proposal - 3 pages maximum due at the end of Week 5. 50 points.

Final Project (Business Plan). Less than 20 pages. 60 points. Due at the end of last week.

Competencies

This course most closely relates to the following competency criteria of **community health education** graduate programs

1. Collection, storage, retrieval, analysis and interpretation of health data;
2. Planning, organization, administration, management, and evaluation of health info systems;
3. Describe and analyze the distributions and determinants of disease.

In overall, the course provide an opportunity for students to understand community health analysis, with special reference to community description, analysis of communication pathways, coordinating provision of health education services, and roles of institutions in relation to learning and the behavioral change process.