



Syllabus



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CMPL 622: Human Computer Interaction

Credits: 4, CRN #: 40171

Summer Term 2008, July 12th - September 5th

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Course Description

Overview

This course builds an understanding of human behavior with interactive objects, focusing on how to develop and evaluate interactive software using a human-centered approach. This includes examining the many different type of interactive software, understanding the principles of effective graphical user interface design, evaluating human-centered software and software development and exploring aspects of collaboration and communication as they affect individual and group interaction with software systems.

Human-computer interaction plays an important role in the success of a computer system. Systems described as intuitive often fail to meet that standard for all users. Systems without a clear graphical user interface that is consistent with accepted standards and in its behavior are often rejected by users. To ensure the development of well-designed interactive systems, learners can apply key principles and concepts. This course gives students an understanding of these key concepts in human-computer interaction and how they affect the design of interactive systems of all types. Learners will become aware of issues that determine the usability of an interactive computer system and some of the tools available to address those issues.

In the course of their study learners will develop an understanding of how different disciplines (human factors, cognitive psychology, engineering, graphic design) all influence the design of computer systems. They will examine the classification of input and output techniques, develop the specification for a human-computer dialogue, and learn the tools to design, prototype and evaluate a user interface.

Key topic areas include: user psychology; hardware (input/output) devices; models and metaphors; interaction styles; GUI and windows systems; design methodology; task analysis; guidelines, standards and metrics; evaluation; advanced interfaces.

Prerequisites

CMPL 515: Programming Fundamentals, or equivalent.

Blackboard Orientations

There are no face-to-face sessions for this course. If you have never taken an Online Interactive Course (OIC) at the college, we highly recommend that you attend one of the [2-hour Blackboard Orientation sessions](#) available throughout the state. If you choose not to attend a face-to-face session, you are encouraged to view our new [Online Orientation with audio](#) at your own convenience.

Required Resources

Textbook:

Interaction Design: Beyond Human-Computer Interaction, Jennifer Preece, Yvonne Rogers, Helen Sharp, 2nd Edition, ISBN: 978-0-470-01866-8, Paperback, 800 pages March 2007

The textbook is available online at MBS Direct at: <http://bookstore.mbsdirect.net/gsc.htm> (The course-CRN number for ordering this textbook is: 40171). Textbooks can also be purchased from MBS via phone, mail or fax. For additional information, visit the [Online Bookstore](#) section of the college web site.

Required Software:

- **Microsoft Visio Professional 2003**
NOTE: Visio will be provided to you at nominal cost under the terms of the Microsoft Developers Network Academic Alliance program. Licensing requirements and distribution methodologies will be detailed in the course.
- A Zip utility (for OIC file submission available at Download.com)

PLEASE NOTE: It is the learner's responsibility to have purchased all required course materials before the start of the course. Learners are expected to meet all course expectations even if the shipment of a required textbook or other learning resource is delayed. Be sure to choose the shipping option that will get your text/resource delivered in a timely manner.

Learning Outcomes

Completion of the work outlined in this course enables you to:

- Articulate how different disciplines (human factors, cognitive psychology, engineering, graphics design) influence the design of computer systems
 - Classify input/output devices and techniques and their effect on human-computer interaction
 - Specify human-computer interaction dialogues Describe the main concepts (conceptual model, metaphors and paradigms) that influence human-computer interaction) and demonstrate that influence
 - Describe the main theories of cognition and demonstrate how these are used when designing interactive systems
 - Describe and apply the process for designing interaction
 - Demonstrate why a user-centered approach is preferred
 - Choose the appropriate method for evaluating an interactive system
 - Model problems
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Evidence of Accomplishment

Participation

Participation is evidenced by active involvement in discussion sessions and deliverables, providing feedback on your peers' work, responding to my questions and posting your required materials on time. The details are outlined for this class...I am able to monitor your progress and participation on the discussion board through Blackboard's course software. I am as concerned with the thoughtfulness and quality of your contributions as I am with quantifying your participation. Participation is 20% of your final grade. The Participation Rubric outlines the various ways that participation in this class happens and is measured...

Note: Collaboration is immensely important to the success of developing solutions. In this course, collaboration is defined as learners working together to achieve answers and reasonable solutions to complex problems. Consider the instructor not as the purveyor of answers, but rather as your consultant. All questions related to problems assigned, your projects, or course content should be made to the discussion board and everyone is expected to offer insights as we work through the process.

Assignments

Each week you are assigned a problem to address. You will be encouraged (though not required) to work collaboratively to arrive at solutions to these problems. Most of these will be topic related exercises. While each of you will be responsible for submitting your own work individually, this approach mimics the collaborative nature of the industry. There will be more details in the course pages on how this will work.

Another element of your participation in the course is through group work. Groups will be assigned at the beginning of the course to facilitate your learning and to provide you with an opportunity for interaction and community. Each study group has its own discussion board and can manage its own schedule. Your study group is a place to bring your questions and concerns, and a way to share information and build community. In each module you'll be asked to answer some key questions that give you the ability to apply the knowledge you've been acquiring. You also have one project to work on as a group, that will feed into a full-class discussions. These group discussions and outcomes are 20% of your final grade. The Participation Rubric outlines the various ways that participation in this class happens and is measured...

Projects

To apply the concepts you are learning you will complete one Group project and one Final project as you work through the course. You will complete a full design and implementation of a user interface employing the course materials and employing Visio to display your project. The projects will involve design, user interface design and implementation, to support the interface, to be completed as a final project. Submission of your group and final projects will be accomplished on line through the Assignment Links found in Course Contents as well as posting to the Discussion Board Forums.

You may continue the collaborative work process in working through these assignments.

Self-Assessment

The Self-Assessment activity is a grade that you assign yourself based on your own self-assessment. To complete the self-assessment, and to achieve the full value of the self-assigned grade, four components must be provided.

1. First is a statement of your personal goals and objectives for this course.
2. Second is a preliminary assessment of your standing in relationship to the goals and objectives you have proposed.
3. Third is a journal recording your progress toward meeting your personal goals and objectives.
4. Fourth is a final self-assessment detailing the status of your goals and objectives, and a grade that represents your personal assessment of your work.

For more information on this assignment, see the Self-Assessment page. Self-Assessment is worth 15% of your final grade.

Academic Honesty

An academic community is based on honesty and integrity. All work that you submit should be your own. When summarizing or explaining ideas that are based on another's work, make sure to cite references appropriately. (For more information on proper citation, see the Library's website: <http://granite.edu/library/citing.htm>). Plagiarism will not be tolerated. Plagiarism is using another's words or even paraphrasing another's work without giving proper credit through the use of citations. For questions regarding Granite State College's academic honesty policy, see pages 65 of the college catalog.

Performance Evaluation

Activity	% of Final Grade

Participation on the Discussion Board	20%
Interactional Group Design Assignments (weekly)	20%
Group project	20%
Self-Assessment	15%
Final Project	25%
Total	100%

Course Grading Scale: The letter grade is representative of Granite State College's grading system.

A: 100-95	B: 86-84	C: 76-74	D: 66-64
A-: 94-90	B-: 83-80	C-: 73-70	D-: 63-60
B+: 89-87	C+: 79-77	D+: 69-67	F: 59-0

NOTE: Students must receive a grade of "C" or better for all courses in their major.

Outline of Course Structure & Content

This course is broken down into 8 learning modules, as outlines below:

Module	Assignments/Activities
<p>Module 1: July 12-18 Chap 1 What is Interaction Design? Chap 2 Understanding and Conceptualizing Interaction</p>	<p>Text: Overview of Chapters One & Two Topics:</p> <ul style="list-style-type: none"> • The difference between good and poor interaction design. • What is interaction design and how does it relate to human computer interaction and other fields. • What is usability. • What is involved in the process of interaction design. • The different forms of guidance used in interaction design. • What is good and bad about it in terms of the goals and principles of interaction design. • What is meant by the problem space. • How to conceptualize interaction. • What is a conceptual model • The pros and cons of using interface metaphors as conceptual models. • The pros and cons of using realism versus abstraction at the interface. • The relationship between conceptual design and physical design.
<p>Module 2: July 19-25 Understanding Users</p>	<p>Chapters Three and Four Text: Overview of Chapter Three Topics:</p> <ul style="list-style-type: none"> • What is cognition and why it is important for interaction design. • The main ways cognition has been applied to interaction design. • Cognitive research has led to the design of more

effective interactive products.

- What are mental models.
- Conceptual frameworks that are useful for interaction design.

Text: Overview of Chapter Four

Designing for Collaboration and Communication Topics:

- Communication and collaboration.
- The main kinds of social mechanisms that are used by people to communicate and collaborate.
- The range of collaborative systems that have been developed to support this kind of social behavior.
- How field studies and socially based theories can inform the design of collaborative systems.

Module 3: July 26-August 1

Affective Aspects

Chapters Five and Six

Text: Overview of Chapter Five

Topics:

- Expressive interfaces and the affects they can have on people.
- The problems of user frustration and how to reduce them.
- The pros and cons of applying anthropomorphism in interaction design.
- The believability of different kinds of agents and virtual characters.
- Critique the persuasive impact of e-commerce agents on customers.

Interfaces and Interactions

Text: Overview of Chapter Six

Topics:

- What 'doing' interaction design involves.
- Ask and provide answers for some important questions about the interaction design process. Introduce the idea of a lifecycle model to represent a set of activities and how they are related.
- Some lifecycle models from software engineering and HCI and discuss how they relate to the process of interaction design.
- A lifecycle model of interaction design.
- Different data gathering techniques
- Develop a "scenario," a "use case," and an "essential use case" from a simple description.

Module 4: August 2 - 8

Data Gatherin/Data Analysis

Text: Overview of Chapters Seven and Eight

Topics:

- Prototyping and different types of prototyping activities.
- Produce a simple prototype, a conceptual model for a system and justify your choices.
- Attempt some aspects of physical design.
- The use of scenarios and prototypes in conceptual design.
- Standards, guidelines, and rules available to help interaction designers.

Module 5: August 9 - 15

The Process of Interaction Design

Text: Overview of Chapters Nine and Ten

Topics:

Identifying Needs and Establishing Requirements

- The key concepts and terms used to discuss evaluation.
- Discuss and critique the Hutch World case study.

Module 6: August 16 - 22
Design, Prototyping and Construction
Introducing Evaluation

- Examine how different techniques are used at different stages in the development of Hutch World.
- Show how developers cope with real world constraints in the development of Hutch World.
- Continue to explain the key concepts and terms used to discuss evaluation.
- The evaluation paradigms and techniques used in interaction design.
- The conceptual, practical, and ethical issues to be considered when planning evaluation.
- Introduce the DECIDE framework to help you plan your own evaluation studies.

Text: Overview of Chapters Eleven and Twelve

Topics:

- The benefits and challenges of different types of observation.
- How to observe as an onlooker, a participant, and an ethnographer.
- How to collect, analyze and present data from observational evaluation.
- Examine key issues for doing think aloud evaluation, diary studies and interaction logging.
- Selecting and doing observational evaluation.
- In general, observing and talking to users usually go together, but we leave the details of interview techniques until Chapter 13.

Text: Overview of Chapters Thirteen and Fourteen

Topics:

- Discuss when it is appropriate to use different types of interviews and questionnaires
- Teach you the basics of questionnaire design.
- Describe how to do interviews, heuristic evaluation, and walkthroughs.
- Describe how to collect, analyze, and present data collected by the techniques mentioned above.
- Enable you to discuss the strengths and limitations of the techniques and select appropriate ones for your own use Explain how to do user testing.
- Discuss how and why a user test differs from an experiment. Discuss the contribution of user testing to usability testing. Discuss how to design simple experiments.
- Describe the GOMS model, the Keystroke level model and Fitts' law and discuss when these techniques are useful.
- Explain how to do a simple keystroke level analysis.

Text: Overview of Chapter Fifteen

Topics:

- How design and evaluation are brought together in the development of interactive products.
- How different combinations of design and evaluation methods are used in practice.
- The various design tradeoffs and decisions made in the real world.

Module 7: August 23 - 29
An Evaluation Framework
Usability Testing and Field Studies

Module 8: August 30 - September 5
Analytical Evaluation

End of Course

*****Final project due*****

*All course work must end no later than end of course

Note: The content of this syllabus is subject to change as needed.

ADA

Granite State College will provide qualified individuals with disabilities the same educational opportunities available to persons without disabilities. When an individual's documented disability creates a reasonable accommodation to remove the barrier. If you need assistance, it is important that you make contact early to ensure that your requests can be reviewed prior to the start of each term. If you wish to apply for accommodations, contact your academic advisor or the dean of learner services in the Administration Offices in Concord. See ADA in the college catalog for details.

Institutional Assessment

Assessment is an ongoing process that enables the College to improve its programs, courses, and teaching methods. Institutional evaluation may be embedded in tests, exams, and other measurements of student learning. As members of a learning community, students, faculty, and staff will be expected to participate in the important process of assessment on occasion. Confidentiality of any data that identify participants is maintained.

Technical Assistance

For assistance with accessing your course or with other technical issues regarding your online course, contact the GSC Technical Assistance Center (<http://bbresources.granite.edu/techassist/help.htm>) or call 1-888-372-4270 (Hours: M-F, 8:30-5:00, on weekends messages are checked daily)

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