



07116

Minnesota State University, Mankato HOLD and CLEAR buttons only compatible with Acrobat V. 4 and 5
Curriculum Proposal

Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU's curricular process for recommendations and decisions.

		(Check all that apply):		Proposal # 113
College:	Science, Engineering and Technology	<input checked="" type="checkbox"/> Undergraduate		Effective Date of Change:
Department:	Computer and Information Sciences	<input checked="" type="checkbox"/> Graduate		Academic Year 06-07
Program:	Information Systems (ISYS)	CIP # 11.040100		(For Office Use Only)
Type of Change	COURSE PROPOSALS			Course Designator and Number Number of Credits
Proposed:	New Course			
Title Current:				
Title Proposed:	Human Computer Interaction			ISYS 482/582
24-Char. Abbrev:	Human Computer Interact.			4
				(if applicable)

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):
 Human factors issues in the development of software and design of user interfaces for interactive systems. Theories, models, usability studies, and controlled experimentation are used to evaluate software development with user-interface-development environments.

Pre: ISYS 380 or CS 210 or IT 380
 Fall

Rationale or Justification for change:

The human-computer interaction curriculum is not currently available and is critical to ABET accreditation for Information Systems.

*****For General Education or Cultural Diversity Courses Only*****

General Education Course:		Cultural Diversity Course: (Please check one.) <input type="checkbox"/> Core (At least 75% devoted to topics of race, gender, sexual orientation, age, class, and disabilities as they occur in United States Society.) <input type="checkbox"/> Related (At least 25% devoted to the above topics or to a global perspective on topics related to African American, Asian, Hispanic, and Native American inhabitants of the United States.)
GE Category #	GE Category Name (Maximum of 3 Categories)	
N/A		
N/A		
N/A		
<p>? For Writing Intensive Courses, attach a description of the kind and quantity of writing. ? For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.</p>		
<p>Attach paper copies of the following: a. Syllabus or course outline. b. Course's student learning outcomes associated with each GE competency or CD designation. c. List of strategies to be used to assess students' achievement of each GE competency or CD designation.</p>		

*****For New Courses*****

(Check all that apply):	Instructional Type: <input type="text" value="Lecture"/>	Course will be offered:
<input type="checkbox"/> Course is an elective.	Grading Format: <input checked="" type="checkbox"/> Grade <input type="checkbox"/> P/N	<input checked="" type="checkbox"/> Fall Semester
<input checked="" type="checkbox"/> Course is required for program	<input type="text" value="Information Systems (ISYS)"/>	<input type="checkbox"/> Spring Semester
<input checked="" type="checkbox"/> Pre- or Co-requisites:	<input type="text" value="ISYS 380 or IT 380"/>	<input type="checkbox"/> Summer Session
<input type="checkbox"/> Other courses are being changed or eliminated. (Explain.) _____		
<input type="checkbox"/> Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)		
<p>Attach paper copies of the following: a. Syllabus or course outline. b. Course's student learning outcomes. c. A list of resources required to offer and support this course. d. A description of how teaching this course will affect department staffing. e. If 400/500 level course, an explanation of added expectations of graduate students.</p>		

Proposal: ISYS 4/582: Human Computer Interaction

Catalog Description

Human factors issues in the development of software, use of database systems, and design of user interfaces for interactive systems. Science base (theories, models, usability studies, and controlled experimentation), and software development with user-interface-development environments. Issues include: command languages, menus, forms, and direct manipulation, graphical user interfaces, computer supported cooperative work, information search and visualization, World Wide Web design, input/output devices, and display design.

Prerequisites

- ISYS 380(4) Systems Analysis and Design (or IT 380) (or CS 210)

Topics

Knowledge Unit 1. *Human-Computer Interaction Fundamentals*

- Goal: to be able to demonstrate comprehension-level mastery of the importance of user interface design; the relationship of the discipline of user interface design to the science of human-computer interaction; examples such as word processors, spreadsheets, hypertext systems, programming environments, ATM's, voice answering systems and mail systems; application areas in human-computer interaction (a survey of relevant problems and characteristics)
- Approximate classroom hours: 3
- Mastery level 2: Comprehension
- Objectives:
 - 1.1 explain the importance of user interface design
 - 1.2 explain the relationship of the discipline of user interface design to the science of human-computer interaction
 - 1.3 explain why changing a system using direct manipulation produces different properties

Knowledge Unit 2. *Human-Computer Interface Quality and Evaluation*

- Goal: to be able to demonstrate comprehension-level mastery of measures of user interface quality; methods for observation and evaluation
- Approximate classroom hours: 4
- Mastery level 2: Comprehension
- Objectives:

- 2.1 list and explain measures of user interface quality
- 2.2 list and explain methods for observation and evaluation

Knowledge Unit 3. *Dimensions of Interface Variability*

- Goal: to be able to demonstrate comprehension-level mastery of languages, communication and interaction; dialogue genre and the role of metaphor; dialogue techniques (including windows, menus, icons, etc.); user support and assistance, documentation, training
- Approximate classroom hours: 8
- Mastery level 2: Comprehension
- Objectives:
 - 3.1 explain how help systems differ from other kinds of (printed) documentation
 - 3.2 explain the importance of user support and assistance in HCI
 - 3.3 explain the role of metaphor in dialogue genre
 - 3.4 explain when specific dialogue techniques are called for

Knowledge Unit 4. *User-Centered Design and Task Analysis*

- Goal: to be able to demonstrate comprehension-level mastery of software design models, user-centered design, participatory design; socio-technical issues; task analysis; prototyping and the iterative design cycle; the evolution of designs; the role of principles and guidelines
- Approximate classroom hours: 8
- Mastery level 2: Comprehension
- Objectives:
 - 4.1 explain how HCI designs evolve over time and how to reduce the resulting economic effects
 - 4.2 explain how socio-technical issues affect HCI development
 - 4.3 explain how user-centered design differs from traditional design techniques
 - 4.4 explain the process of prototyping and the iterative design cycle
 - 4.5 explain the role of principles and guidelines in HCI design
 - 4.6 explain where and how HCI fits into commonly-used software development design models

Knowledge Unit 5. *User Interface Implementation*

- Goal: to be able to demonstrate application-level mastery of prototyping tools and environments; input and output devices; ergonomic issues; basic results from computer graphics; interface modalities: color, sound, etc.; the role of graphic and industrial design; toolkits and interface development environments, e.g., window managers, UIDE's
- Approximate classroom hours: 11
- Mastery level 3: Application

- Objectives:
 - 5.1 demonstrate the ability to use HCI prototyping tools and environments to construct an effective user interface for a typical business application

Knowledge Unit 6. *HCI Science and Research*

- Goal: to be able to demonstrate comprehension-level mastery of the application of science to interface design; human information processing models and their role; specific disciplines that comprise HCI and information and solutions provided by each discipline
- Approximate classroom hours: 4
- Mastery level 2: Comprehension
- Objectives:
 - 6.1 list the specific disciplines that comprise HCI and explain the information and solutions provided by each discipline

Knowledge Unit 7. *HCI Development Process*

- Goal: to be able to demonstrate application-level mastery of alternative system development processes; inclusion of HCI discipline in the development process
- Approximate classroom hours: 1
- Mastery level 3: Application
- Objectives:
 - 7.1 demonstrate the ability to follow a standard development process (e.g., unified model) and include HCI in that development process
 - 7.2 demonstrate the ability to use alternative system development processes

Knowledge Unit 8. *Social Effects on HCI*

- Goal: to be able to demonstrate comprehension-level mastery of small group dynamics; theory of networks; organizational information flow; models of work, workflow and cooperative activity; impact on design
- Approximate classroom hours: 4
- Mastery level 2: Comprehension
- Objectives:
 - 8.1 explain how models of work, workflow and cooperative activity affect UI design
 - 8.2 explain how small group dynamics affects worker output
 - 8.3 explain how small group dynamics can affect UI design and vice-versa
 - 8.4 explain how to take social networks into account when designing a UI
 - 8.5 explain typical ways that information flows through an organization

Knowledge Unit 9. *HCI Methodology*

- Goal: to be able to demonstrate application-level mastery of methods for capturing, analyzing and applying data at the organizational and social level of human behavior; problems of validity; questionnaire design; conducting surveys; unobtrusive measures
- Approximate classroom hours: 3
- Mastery level 3: Application
- Objectives:
 - 9.1 demonstrate the ability to administer a survey
 - 9.2 demonstrate the ability to design an effective questionnaire
 - 9.3 demonstrate the ability to use unobtrusive measures

Knowledge Unit 10. *Human-Machine Fit and Adaptation*

- Goal: to be able to demonstrate comprehension-level mastery of the nature and theory of adaptive systems; theories of system adoption and methodology used to ascertain and motivate adoption; user adaptation: ease of learning, training methods; system adaptation to user types; relationship to system design
- Approximate classroom hours: 2
- Mastery level 2: Comprehension
- Objectives:
 - 10.1 explain how to design a system that adapts to different user types
 - 10.2 explain how users adapt to new environments and how this affects UI design
 - 10.3 explain the nature and theory of adaptive systems
 - 10.4 explain the relationship of UI design, user types, and system design
 - 10.5 list and explain theories of system adoption and methodology used to ascertain and motivate adoption
 - 10.6 list several methods for training and explain each one's advantages and disadvantages

Knowledge Unit 11. *Human Information Processor*

- Goal: to be able to demonstrate comprehension-level mastery of human architecture and performance of critical subunits (e.g., memory, perception, motor skills); models of human activity (e.g., GOMS models, Keystroke Level model); applications of model human information processor to example problems
- Approximate classroom hours: 10
- Mastery level 2: Comprehension
- Objectives:
 - 11.1 explain human architecture and performance of critical subunits (e.g., memory, perception, motor skills)
 - 11.2 list several applications of model human information processor and explain the relationship to UI design

Additional topics may also be covered based on time and student interest.

Graduate Students

Students taking the 500-level version of this course are required to perform beyond expectations of undergraduate students by completing one or more of the following, at the discretion of the instructor:

- A term paper that summarizes and critiques an article from a scholarly journal in the area of human-computer interaction.
- A project that implements advanced ideas in human-computer interaction.
- A presentation about an advanced area in human-computer interaction, or that presents the student's term paper or project.
- Some other activity that demonstrates grasp of the material beyond what is expected of undergraduates.

Instructional and Library

Resources currently in place within the department and the University Library will support this new course. No new resources are required.

Staffing

This course will be able to be staffed by the faculty that have been designated in the proposed Department of Information Systems and Technology by the Dean of the College of Science, Engineering, and Technology, Dr. John Frey. This course will be cross-listed between the "Information Systems" and "Information Technology" programs in the new department. This course will not need assistance from faculty of the new Computer Science Department.

Possible Textbook(s)

Benyon, Turner, Turner, *Designing Interactive Systems: People, Activities, Contexts, Technologies*, Addison-Wesley, 2005 (ISBN: 0321116291)

Carroll, *Human-Computer Interaction in the New Millennium*, Addison Wesley Professional, 2001 (ISBN: 0201704471)

Dix, Finlay, Abowd, Beale, *Human-Computer Interaction* (3rd edition), Prentice Hall, 2004 (ISBN: 0130461091)

Lauesen, *User Interface Design: A Software Engineering Perspective*, Addison-Wesley, 2005 (ISBN: 0321181433)

Lazar, *Web Usability: A User-Centered Design Approach*, Addison-Wesley, 2006 (ISBN: 0321321359)

McCracken, Wolfe, *User-Centered Web Site Development: A Human-Computer Interaction Approach* , Prentice Hall, 2004 (ISBN: 0130411612)

Shneiderman, Plaisant, *Designing the User Interface: Strategies for Effective Human-Computer Interaction* (4th edition) , Addison-Wesley, 2005 (ISBN: 0321197860)

Wickens, Lee, Liu, Gordon-Becker, *Introduction to Human Factors Engineering* (2nd edition) , Prentice Hall, 2004 (ISBN: 0131837362)

Syllabus for ISYS 4/582: Human Computer Interaction

Instructor

Name: Prof. Sample Faculty
Office: 200 Wissink Hall
Department: Information Systems and Technology, Minnesota State University, Mankato
Office hours: Monday through Friday from 1:00 to 4:00 pm
Phone: 507-389-1212
Email: sample.faculty@mnsu.edu
Course page: <https://d21.mnsu.edu/>

Meeting

MTRF 10-11

Catalog Description

Human factors issues in the development of software, use of database systems, and design of user interfaces for interactive systems. Science base (theories, models, usability studies, and controlled experimentation), and software development with user-interface-development environments. Issues include: command languages, menus, forms, and direct manipulation, graphical user interfaces, computer supported cooperative work, information search and visualization, World Wide Web design, input/output devices, and display design.

Prerequisites

- ISYS 380(4) Systems Analysis and Design (or IT 380) (or CS 210)

Topics

The following content areas will be covered.

1. Human-Computer Interaction Fundamentals (about 3 hours)
2. Human-Computer Interface Quality and Evaluation (about 4 hours)

3. Dimensions of Interface Variability (about 8 hours)
4. User-Centered Design and Task Analysis (about 8 hours)
5. User Interface Implementation (about 11 hours)
6. HCI Science and Research (about 4 hours)
7. HCI Development Process (about 1 hour)
8. Social Effects on HCI (about 4 hours)
9. HCI Methodology (about 3 hours)
10. Human-Machine Fit and Adaptation (about 2 hours)
11. Human Information Processor (about 10 hours)

Additional topics may also be covered based on time and student interest.

Objectives

By the end of this course, you should be able to

- explain the importance of user interface design
- explain the relationship of the discipline of user interface design to the science of human-computer interaction
- explain why changing a system using direct manipulation produces different properties
- list and explain measures of user interface quality
- list and explain methods for observation and evaluation
- explain how help systems differ from other kinds of (printed) documentation
- explain the importance of user support and assistance in HCI
- explain the role of metaphor in dialogue genre
- explain when specific dialogue techniques are called for
- explain how HCI designs evolve over time and how to reduce the resulting economic effects
- explain how socio-technical issues affect HCI development
- explain how user-centered design differs from traditional design techniques
- explain the process of prototyping and the iterative design cycle
- explain the role of principles and guidelines in HCI design
- explain where and how HCI fits into commonly-used software development design models
- demonstrate the ability to use HCI prototyping tools and environments to construct an effective user interface for a typical business application
- list the specific disciplines that comprise HCI and explain the information and solutions provided by each discipline
- demonstrate the ability to follow a standard development process (e.g., unified model) and include HCI in that development process
- demonstrate the ability to use alternative system development processes
- explain how models of work, workflow and cooperative activity affect UI design
- explain how small group dynamics affects worker output
- explain how small group dynamics can affect UI design and vice-versa
- explain how to take social networks into account when designing a UI

- explain typical ways that information flows through an organization
- demonstrate the ability to administer a survey
- demonstrate the ability to design an effective questionnaire
- demonstrate the ability to use unobtrusive measures
- explain how to design a system that adapts to different user types
- explain how users adapt to new environments and how this affects UI design
- explain the nature and theory of adaptive systems
- explain the relationship of UI design, user types, and system design
- list and explain theories of system adoption and methodology used to ascertain and motivate adoption
- list several methods for training and explain each one's advantages and disadvantages
- explain human architecture and performance of critical subunits (e.g., memory, perception, motor skills)
- list several applications of model human information processor and explain the relationship to UI design

Students with Disabilities

Every attempt will be made to accommodate qualified students with disabilities. If you are a student with a documented disability, please see me as early in the semester as possible to discuss the necessary accommodations, and/or contact the Disability Services Office at (507) 389-2825 (V) or 1-800-627-3529 (MRS/TTY).

Textbook

This course will use one more more of the following textbooks:

Benyon, Turner, Turner, *Designing Interactive Systems: People, Activities, Contexts, Technologies*, Addison-Wesley, 2005 (ISBN: 0321116291)

Carroll, *Human-Computer Interaction in the New Millennium*, Addison Wesley Professional, 2001 (ISBN: 0201704471)

Dix, Finlay, Abowd, Beale, *Human-Computer Interaction* (3rd), Prentice Hall, 2004 (ISBN: 0130461091)

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Wickens, Lee, Liu, Gordon-Becker, *Introduction to Human Factors Engineering* (2nd), Prentice Hall, 2004 (ISBN: 0131837362)

Additional readings may be assigned by the instructor.

Grading

Your course grade will be based on:

[Varies by faculty]

If you receive 90% or more of the possible points, you are guaranteed an A, 80% a B, et cetera. However, a score just below the grade cutoff will not necessarily earn the higher grade. Therefore, you should try to attain a score well above the cutoff to achieve the grade you want.

Exams

The exams will cover reading assignments, lectures, and class discussion. It is your responsibility to remember the exam schedule. If you forget to attend an exam or are more than ten minutes late for the exam, you must forfeit the grade for that exam.

You may take the exam at an alternate testing time if you participate in a university-sponsored activity that requires your attendance. You must arrange with the instructor at least a week ahead of the exam date.

If you miss an exam because of illness or family emergency, you may arrange with the instructor for a makeup exam. You must produce written proof of the reason you cannot take a test at the normally scheduled time.

Graduate Students

If you are taking the 500-level version of this course, you must complete one or more of the following additional requirements, at the discretion of the instructor:

- A term paper that summarizes and critiques an article from a scholarly journal in the area of human-computer interaction.
- A project that implements advanced ideas in human-computer interaction.
- A presentation about an advanced area in human-computer interaction, or that presents the student's term paper or project.
- Some other activity that demonstrates grasp of the material beyond what is expected of undergraduates.

Programming Assignments

[Varies by faculty]

Homework

[Varies by faculty]

Class Policies

Attendance

[Varies by faculty]

Late Policy

[Varies by faculty]

Academic Honesty

Please be aware that the University's policy for Academic Honesty appears in the Student Handbook. Each student is expected to have read this material. If you do not understand what is meant by this policy, or if you are confused by terms such as plagiarism, cheating, or collusion, please discuss this policy with me, your advisor, or another faculty member as soon as possible. I absolutely require that each student in this class will fulfill his or her academic obligations in a fair and honest manner.

Anything that you observe in other students that is of questionable integrity should be brought to my attention. You may do so anonymously if you desire (e-mail works fine for this).

For the writing of papers and program design documents, it is quite easy to define cheating in terms of traditional definitions of plagiarism; however, for the writing of computer programs, the distinction is not as obvious to many students. It is easy to use the English paper comparison when thinking about what is appropriate and what constitutes dishonest academic work when writing computer programs. Like writing a paper, you may discuss general ideas with fellow students.

You must write each programming assignment yourself. It is acceptable to discuss logic and other strategies such as the number of variables or methods, but it is NOT acceptable to show another student even a single line of your program until after the due date.

Protect your programming assignments. If another student obtains a copy of your program even though you are unaware of the infraction, you are still guilty of collusion.

Do not leave an ACC workstation unattended, even for a little while. Other students monitor may your patterns and, while you are out for even a few seconds, walk up to your workstation and email a copy of your program to themselves! You should also be careful where you leave paper copies of your program. Do not leave files on ACC computers. A trash receptacle anywhere near the ACC is likely to be rummaged. Make sure you log out of the course web site when you are done using it, close all browser windows, and log out of the system.

I strongly suggest you consult your student handbook or talk with me if you are unsure as to what is acceptable academic behavior. The consequences are quite severe. Academic misconduct will automatically result in my informing Judicial Affairs, a division of Student Affairs, of the misconduct. This misconduct usually results in a failing grade for the course. (And it can be worse.)

Specific items that will be considered cheating on programming assignments are:

- Turning in work done by somebody else as your own (with or without that person's consent). This includes turning in a copy of something that can be mechanically transformed into a copy of someone else's work. Do not try to disguise cheating by simply modifying someone else's work and calling it your own. I use software that detects this type of cheating.
- Allowing someone else to turn in your work as his or her own work. This includes allowing fellow students access to your copy, even without your knowledge or consent.
- Using a solution developed by a student in a previous semester or another section.

Errors in Grading

If something has been graded incorrectly, or if a grade has been recorded incorrectly, you must request a correction no later than one week after the grade has been posted. Course grades are final, and cannot be changed unless there has been a substantial error.

Grades are based on the quality of your work and on how well you are prepared for class. While working hard is admirable, your grade will not be based on how much time you spent working on an assignment or preparing for an examination.

Weather and Other Problems

In the event inclement weather conditions or other problems cause class not be held on a given day, any work due for that day will be due at the next class meeting. It will not cause any other changes in the schedule. Weather-related closings will be made by the university and announced on the Twin Cities and local media. You can call the MSU WeatherLine at 2463 for weather-related closing or cancellation information.

Classroom Etiquette

Please turn off or silence your cell phone or pager while in class. If you are expecting an urgent call (such as from your sick child):

- Use the "silent" mode of your cell phone or pager.
- Sit right next to the door.
- Leave the room as quietly as possible when you receive the call, so you do not disturb other students.