COURSE GUIDE

FOR

MMIS 680 HUMAN-COMPUTER INTERACTION

ONLINE FORMAT

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Getting Started

Welcome to the HCI course! This document provides specific instructions on what you need to do to complete the course. As you know, much of your work will be completed in a computer-based format. In this dynamic environment, you will study human-computer interaction by researching and completing assignments and by discussing issues with your professor and fellow students.

Getting organized and maintaining organization is important for successful completion of this course. Please read this document carefully and login regularly to check for special announcements.

Online Access to Course Materials and Activities:

The HCI online study area is your direct link to the course, the professor, and fellow students. A course menu was designed for the purpose of centralizing and managing course activities. The most essential course materials (except required articles selected by the professor) are contained in files or menus off of the HCI online study area. In addition, this is the site where the professor frequently posts announcements to the class. Consider this online study area to be the “classroom” where you go to learn and communicate about HCI.

The HCI online study area is best viewed with a graphical browser such as Netscape. The URL address is: http://scis.nova.edu/nova/hci/top.html

To access the text or Lynx version of the HCI online study area from your NSU online account, login directly to your account on the scis machine. At your prompt, type hci (lowercase letters).

Information Requested Early!

- Please contact Dr. Dringus by email as soon as you are registered for the course so that your name can be checked against the class list given to me from the program office.

- Prepare a short "bio" about yourself. You will be able to post this information in a thread the professor establishes in the first week of the course in the Student Forums/HCI Discussion Groups. Do not email the bio to the professor. Wait until the thread is established in the Forums. In your bio, indicate your full name, your SCIS account username, what term this is for you, and anything else of interest to your fellow students.
Instruction Methods:

During the term, the class will be conducted in a computer-based format, primarily completed through the use of computer-mediated communication tools available through Nova Southeastern University's online environment:

The “HCI” web site -- an online study area that presents this course and provides students with access to electronic mail (directly to the professor) and access to electronic conferencing (Student Forums).

electronic student (ESET) -- the Web-based online tool available for submitting assignments. Note: accessible only with SCIS login and password.

electronic conferencing (Student Forums) -- for student participation and discussion. Can be accessed through the “HCI” web site. Note: accessible only with SCIS login and password.

Accessing the “HCI” Online Study Area:

A “sample” screen printout of the Web browser view of “HCI” is provided in the back of this course guide. You should check many links out regularly to stay current with the course.

➤ Visit the “Learning Connections” link. That will lead you to your course section, lecture notes and other things to empower your learning experience.

➤ Visit the “Announcements” link. I often post messages to the class weekly.

➤ Visit the “HCI Web Exploration” link. There are several “HCI” related links that will help you with your research.

NOTE: Revisions to the interface and other additional items will probably occur to the “HCI” online study area during the term. Remember, this is a dynamic environment!
About Student Forums -- Class Participation

The “Student Forums” is a Web-based conferencing system designed to serve as a discussion environment in which students and the professor discuss HCI issues throughout the term. To access "Student Forums," choose the “Interactive Exchanges” link from the “HCI” web site and then the “Student Forums” link. Once you access the bulletin board corresponding to your course, you will be given topical areas pertinent to HCI. The professor will be posting topics throughout the term.

There will be several “threads” or mini-conference themes relating to Human-Computer Interaction (HCI). Specific topics will be posted throughout the term in “Student Forums/HCI Discussion Groups,” available through the HCI Online Study Area web site. Each student is required to participate in the discussions. Points will be given on the basis of effort and meaningful contribution to the discussions throughout the term. Several short responses are encouraged, but they should be responses that reflect thought and promote further interest in the topic, not just responses for the sake of meeting the participation requirement.

You may be the first student to contribute to a theme! Don’t be shy. Special recognition will be given to students who really contribute to the conference activity -- those who contribute first to a theme and those who participate regularly.

Please DO NOT establish your own threads or themes. If there is a particular topic you would like to discuss as a theme, send Dr. Dringus a request via email. From there, the professor will post all conference threads or themes. Essentially the professor is the gatekeeper of the forums. As gatekeeper, I reserve the right to delete any student postings that are considered inappropriate or irrelevant to the discussions. Scholarly discussions are expected for this class discussion activity.

A couple of “starter” topics will be posted early in the term so that you can practice using the Student Forums conferencing system. The first formal discussion topic will be posted around the 3rd week of the term. Note that Student Forums is an asynchronous system enabling students to participate AT ANY TIME in the discussions. Participation on a specific evening at a specific time is not required by this professor. However, to keep the discussions lively and active, students should plan as part of the weekly activity, to check out and perhaps contribute to the ongoing themes. The Student Forums works best when everyone participates throughout the term. This is an opportunity for students to get to know one another during the term!
DETAILS ON COURSE ASSIGNMENTS

ASSIGNMENTS:

These assignments require outside literature research and activity beyond required texts and readings:

Assignment #1: Due on or before Sunday, May 4, 2003

Software evaluations: You will evaluate the user interface of your choice using the principles of good design and usability attributes presented in the texts. You will prepare a 8 to 10 page paper that discusses the good and poor design aspects of the interface. Discuss your reactions to the interface based on the principles of good design and make recommendations for improving the product. Instructions for completing this assignment are presented in this course guide.

Assignment #2 -- Due on or before Sunday, June 8, 2003

Usability evaluations -- Conduct and report a usability test using a minimum of three subjects. If the test is planned and executed effectively, the results of the usability evaluation can lead to valuable recommendations for improving the quality of the product under evaluation. You will prepare a detailed report that will contain a presentation and discussion of the entire usability evaluation process (from conceptualization to reporting results and making recommendations). This exercise will give you direct experience of assessing user interface design by performing systematic observation of test subjects. Instructions for completing this assignment are presented in this course guide.

The usability evaluation can be based on previous investigations of products or interfaces evaluated from Assignment #1.
INSTRUCTIONS FOR COMPLETING ASSIGNMENT #1:

After becoming familiar with user interface design strategies, the student will evaluate a user interface using the principles of good design and usability presented in the texts. The student may evaluate:

- any software program or interface of the student’s choice (e.g. a Web site, Windows 95, OS/2, MAC -- any kind of wordprocessing, spreadsheet, communications software, etc.). Review of hardware products such as touchscreens, mouse, touchpen, etc., are acceptable also.

The evaluation will involve the preparation of a discussion paper (8 to ten pages) for the interface evaluation. The usability principles and attributes discussed in the texts will be used as a basis for the student’s subjective evaluation of the interface. The discussion paper is a critique of the design and usability of the interface being evaluated. It is a scholarly synthesis of the HCI principles, strategies, and guidelines that pertain to the design and usability of user interfaces. The paper should contain a discussion of each usability principle and some sort of rating as to the extent the principle was met or not. Additionally, you should discuss your recommendations for improving the design of the user interface. Your discussions and recommendations must be substantiated by the literature. Even though this is a subjective evaluation (you are the evaluator), write the paper in third person narrative and rely on the literature to substantiate and synthesize your critique.

A note about your recommendations and substantiation of literature. Essentially, you are analyzing an interface of your choice. Here you have an opportunity to integrate into your paper pertinent information that you have gained from the required readings and from your own literature search. The literature integration will serve as a conceptual bridge between what you believe should be improved with the interface and what the experts say.

Follow APA style guidelines for making proper literature citations in the body of the text. If you are not familiar with APA style, buy the manual. It is a requirement for this program. Follow APA guidelines for preparation of text, references, and appendices (if appropriate).
Some “example” usability attributes mentioned in the texts (there are more -- study hard and don’t forget to review the principles of good design also):

learnability, efficiency, memorability, recovery from errors, user satisfaction, ease of use.....

Tips on format:
Title page – your full name, course #, title of your evaluation
Table of Contents
Introduction – about the issues and about the interface being evaluated
HCI issues or Usability Attributes/Principles Used to Evaluate the Interface (again, you have to be creative as to how you want to organize the issues or categories of the evaluation).
Indepth discussion of the above relative to the interface
Recommendations for Improving the Interface Design
Conclusion
Reference List
INSTRUCTIONS FOR COMPLETING ASSIGNMENT #3:

Required Reading: (1) Review required texts for background on usability evaluation, (2) Review professor's notes on usability evaluation, and (3) locate additional (outside) usability articles or sources.

The student will conduct a usability evaluation. The results of the usability test can lead to valuable recommendations for improving the quality of the product under evaluation. This exercise will also give the student first-hand experience in assessing user interface design through systematic observation. Note: these instructions are a GENERAL guide to usability evaluation. Your usability evaluation will have to expand this general method. Some of these issues may or may not be applicable to your usability evaluation.

General Method

You will need a minimum of three subjects for this exercise. Choose a hardware platform and software package that you can arrange for your subjects (one at a time if necessary) to work through the major features of the software package you have chosen. You will prepare a list of tasks that each subject will perform with a brief description of each task to be performed on the system. You may (if appropriate) prepare a flowchart showing the order tasks are to be performed and other important events and sequences. Your job is to give each subject written or verbal directions on how to complete the task; observe the subject working through the task; and record the sequence of events. Upon collecting data from all subjects involved, prepare a report describing the test process and the results of the usability test.

Individual IRB approvals are not necessary. IRB approvals have been granted for this course. If the student wishes to publish outside of the classroom the results of the assignment, then additional IRB approvals may be necessary. (Contact the professor.)

GUIDELINES FOR CONDUCTING THE USABILITY EVALUATION

The following guidelines have been adapted from the list of references at the end of this section. These guidelines are provided to give you some ideas for organizing your usability test. Some guidelines will be applicable to your test; some will not. Conversely, you may have other ideas not mentioned here that would appropriately fit your test goal.

As you plan, conduct, analyze, and report your usability test, follow this format as appropriate:

Planning Stage
1. Identify the test goals.
2. Describe what test method(s) you will use to reach test goals.
3. Identify test subjects. This process should give attention to:
* a. user experience level/skills/capabilities
* b. education
* c. attitudes/willingness
* d. demographics (age, sex, language, etc.)
* e. user satisfaction of the product

*Note: This information is normally generated through a questionnaire. You should develop a paper questionnaire or a list of interview questions to help you collect this information from your subjects.

You may also need to determine the requirements of users in regard to:
  a. speed required of user
  b. skill required of user
  c. physical capability of user
  d. responsibility required of user
  e. ease of use considered for the user
  f. the user's potential for misuse or error

4. Create workable tasks that test the product design.
   FOR EXAMPLE (these are not inclusive):
   a. Copy a table from a spreadsheet to a word processor document.
   b. Define a new printer.
   c. Print a document.
   d. Change a filename.
   e. Change the name of an icon.
   f. Change desktop colors and mouse speed.
   g. Move a file from one subdirectory to another.

5. Order and prioritize the tasks.

6. Determine which performance and subjective measurements to take.

7. Create the scenario (test lab) needed to conduct the test. (The "test lab" can be your office, home, or wherever you can set up the hardware and software.)

Remember to establish the following:
  a. workstation arrangement
  b. comfort/space of the testing lab
  c. modifiability of the testing environment
  d. room details (lighting/heat/air/cleanliness/noise/distractions.)
8. In regard to tasks, be sure to:
   a. Provide a general description of each task to be performed.
   b. Describe what steps are in each task.
   c. Distinguish interaction with other tasks.
   d. Identify if it is an individual or group task (as applicable).

**Conducting the Test/Collecting Data**

There are different strategies for structuring the test for your subjects. You can either have all subjects work together at the same time (if you have access to multiple workstations), test a pair of subjects at one time (if you have at least two workstations), or test one subject at a time. Whichever option is workable for you, your main role will be to initially describe the test procedures to the subject and RECORD their actions. (By RECORD, this means either get a script file or you will need to write down their actions on paper.) It is recommended that you do not offer assistance to subjects during the test period.

1. Explain and describe the procedures to the subject.

2. Record on paper the subject's actions during the usability test. Recording possibilities could include, but are not limited to:
   a. the subject's comments (This is known as the "Think Aloud" Method).
   b. time spent on single tasks and overall test.
   c. time of day and the date subject completed test.
   d. the number of errors the subject made.
   e. the number of successes the subject gained.
   f. how the user was able to recover from errors.
   g. how often the user could not recover from errors.
   h. did the user seek help through online help, or written documentation.
   i. the number of times the subject sought assistance from you.

1. Be sure to follow good practices when working with test subjects. Treat them with respect; explain you are testing the system, not them; explain they can stop the test at any time, if they are uncomfortable; explain their results will be reported without identifying information about them; express appreciation and thank them for their participation.

**Reporting the Data**

Prepare a report that describes what you did and what you found. Include the entire process (planning stage through collecting data) and the results of the usability test. You should be able to highlight unique events that occurred on the basis of the subject's performance and your systematic observation. Identify the major variables associated with
usability of the product you have chosen (e.g. discuss learning factors, performance factors, error recovery factors, effort to complete a task or set of tasks, user's attitude toward program, etc). Give recommendations for improving the user interface or the software package in general. Discuss your results in relation to concepts presented in the required texts and in class. Also, provide integrate other literature sources that support or contradict findings relative to your usability evaluation. The report should be about 20 pages.

**Format for the Usability Evaluation**

1. Follow all standard format procedures (title page, line spacing, margins, proper citation format, etc.) as established in the SCIS Dissertation Guide.
2. Provide an introduction section to describe what software or product is being evaluated and the general scope of the report.
3. The body of the report should contain an examination of the “process” of usability evaluation. The author should reflect on the process and integrate literature throughout the entire report to provide support for the discussion.
4. Provide a Reference List using strict APA format.
5. If appropriate, provide Appendices – can include surveys, task list, forms to organize observation and think aloud, other information gathering forms.

Note: Assignment #2 REQUIRES extensive discussion of detail about PROCESS. Outcomes are secondary to demonstrating an understanding of process. Synthesize the literature to support your notions or decisions regarding PROCESS.
READING ASSIGNMENTS -- SELECTED ACM ARTICLES

Note: A variety of articles from publications of the Association of Computing Machinery (ACM) have been selected for reading during the term. This reading schedule is to be used in conjunction with the reading schedule in the syllabus. It is also to be used as reference material for assignments.

IMPORTANT! READ ME! -- While full citations are given below on all required articles to read, you must first access the NSU Electronic Library, go to the ACM Digital Library (requires NSU login and password from the NSU E-Library), and then search for these articles. At the end of this schedule, I give some tips on how to easily find these. Sorry, I can’t link them directly, but copyright laws limit this.

Week #1:

Week #3:

Week #4:

Week #5:

Week #6:

Week #10:
Tips on How to Find These Articles in the ACM Digital Library:

1. Go to the NSU’s Electronic Library from the main NSU web site (www.nova.edu).
   Under NSU Databases, review this first: How to Access Databases. (www.nova.edu/library/eleclib/remotensu.htm). See Browser settings. This is important for those of you NOT accessing the system on the local NSU LAN – you’ll need to set up a proxy setting in your browser so that ACM recognizes that you are connecting through NSU. Also, see the link on “Troubleshooting” from the main NSU Electronic Library page.

2. Under NSU Databases, Click by Provider/Vendor or Databases in Alpha order. (The system will prompt you at some point to enter your name and NSU ID number.)

3. Select ACM Digital Library Database.

4. Once at ACM, you can search by the publication. ACM Interactions and Communications of the ACM can be found under “Magazines”. The CHI Proceedings can be found under Proceedings. Select the appropriate category, then select the appropriate publication. Once you see the publication view, type in the last name of the author to search for the article title. From there you should be able to find the .pdf full text file to access the full article.

I was able to find all articles or conference proceeding papers this way.

End of Reading Schedule