COMPUTER SCIENCE 5714 (ISE 5714)
USABILITY ENGINEERING
(ADP TITLE: USABILITY ENGINEERING)

I.   CATALOG DESCRIPTION:

5714 (ISE 5714)   USABILITY ENGINEERING

Design and evaluation of effective user interfaces, beginning with principles for designing the product.   Development process for user interaction separate from interactive software development. Development process includes iterative life cycle management, systems analysis, design, usability specifications, design representation techniques, prototyping, formative user-based evaluation. Integrative and cross-disciplinary approach with main emphasis on usability methods and the user interaction development process.

Pre: Graduate Standing. (3H,3C). II. Alternate years.

II.   LEARNING OBJECTIVES:

Having successfully completed this course, the student will be able to:

1. apply human factors principles and guidelines in design and evaluation of human-computer interfaces,
2. relate cognitive characteristics of users to interface design,
3. identify uses and limitations of various interaction styles,
4. apply iterative evaluation-centered life cycle for user interaction development within a broader traditional software life cycle,
5. formulate quantitative usability specifications for user interface designs,
6. build a rapid prototype,
7. perform formative usability evaluation using appropriate users as subjects/participants,
8. analyze quantitative and qualitative evaluation data, and
9. perform cost/importance and other analyses for management of the iterative life cycle.

III.   JUSTIFICATION:

Usability has become *the* preeminent requirement of interactive software. To meet this necessity, human-computer interaction (HCI) has emerged in the last decade and a half as a serious field of research, development, and application. Despite this attention to usability on some levels, as any computer user knows, interactive software is still too difficult to use.

A major cause underlying poor usability is a lack of understanding of the user interaction development process.   Software developers still have primary responsibility for developing interactive systems, but most are not trained in usability methods and, therefore, do not have the knowledge and skills to include usability methods in their life cycle activities. This course has been redesigned to focus on usability methods and the user interaction development process.

Because of the significance of usability for all software development and because of the interdisciplinary approach used, this course is of interest to students in computer science as well as students in systems engineering, psychology, curriculum and instruction, and other disciplines.

The field of HCI is developing very rapidly. The syllabus has been updated to reflect significant advances that have been made in the time since this syllabus was last changed. This new syllabus

also reflects the incorporation into the curriculum of 5724, a new course covering some of the more general and theoretical aspects of HCI. That will allow 5714 to concentrate on the user interaction development process.

IV. PREREQUISITES AND COREQUISITES:

Graduate standing is required in order to insure that students have the educational maturity and the discipline-specific background necessary for this course.

V. TEXTS AND SPECIAL TEACHING AIDS:

Required text:

Hix, D. and H. R. Hartson. DEVELOPING USER INTERFACES: ENSURING USABILITY THROUGH PRODUCT AND PROCESS. New York: John Wiley & Sons, Inc., 1993. xxix, 381.

VI. SYLLABUS:

		Percent of Course
1.	User Interaction Design Guidelines	15%
2.	Interaction Styles in User Interfaces	5%
3.	An Iterative, Evaluation-Centered Life Cycle for User Interaction Development	10%
4.	Systems Analysis and Design	10%
5.	Design Representation, Design Rationale, Documentation	5%
6.	Task Description Notation	10%
7.	Usability Specification Techniques	15%
8.	Rapid Prototyping in Development and Evaluation of Interfaces	10%
9.	Formative Evaluation of Interfaces	15%
10.	Brief Introduction to User Interface Development Tools	5%
		100%

VII. OLD (CURRENT) SYLLABUS:

		Percent of Course
1.	An Iterative, Evaluation-Centered Life Cycle for Interface Development	10%
2.	Systems Analysis and Design	10%
3.	The Role of Psychology and Human Factors	3%
4.	Forms of Human Factors Information	5%
5.	User Interface Design Guidelines	10%
6.	Behavioral Representation Techniques for Interface Designs	10%
7.	Interaction Styles in User Interface Design	10%
8.	Usability Specification Techniques	10%
9.	Rapid Prototyping in Development and Evaluation of Interfaces	10%
10.	Formative Evaluation of Interfaces	10%
11.	Interaction Devices	5%
12.	User Interface Development Tools	5%
13.	Human-to-Human Communication	2%
		100%

VIII.   CORE CURRICULUM GUIDELINES:

NA