COMPUTER SCIENCE 5724
MODELS AND THEORIES OF HUMAN-COMPUTER INTERACTION
(ADP TITLE: MODELS OF HCI)

I.   **CATALOG DESCRIPTION:**

5724   **MODELS AND THEORIES OF HUMAN-COMPUTER
                            INTERACTION**

Survey of models and theories of users and their use of computer equipment; conditions of application for various approaches. Task analysis, task modeling, representations and notations.

Pre: Graduate Standing. (3H,3C). I.

II.   **LEARNING OBJECTIVES:**

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

1. describe user tasks and situations using a variety of task-analytic approaches,
2. critically analyze experiments and other empirical studies of usability from a variety of theoretical perspectives,
3. be able to organize and write a literature review for research papers in human-computer interaction and related areas.

III.   **JUSTIFICATION:**

In the last decade, human-computer interaction (HCI) has emerged as a core field of research, development, and application. A course such as this, focusing on the theoretical foundation of research in the field, should benefit students developing HCI-related thesis and dissertation projects in computer science, systems engineering, educational technology and other areas. This course will provide a survey of the major theoretical approaches to describing human-computer interaction.

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:**

Carroll, J.M. DESIGNING INTERACTION: PSYCHOLOGY AT THE HUMAN-COMPUTER INTERFACE. New York: Cambridge University Press, 1991. ix, 333.

Monk, A.F. & N. Gilbert. PERSPECTIVES ON HCI: DIVERSE APPROACHES. London: Academic Press, 1995. xi, 298.

VI.   **SYLLABUS:**

Percent of Course

1. The problem of how usability can guide the system development lifecycle: 10%
        What can be measured? What can be modeled? How can it be used?

Task analysis versus dialog modeling versus descriptive science, overview of an interdisciplinary approach

2. Task analysis as the starting point; history/survey   10%
3. Information processing approaches (Keystroke-level models, Fitts Law,   15%
    treatment of errors, German action psychology)
4. Cognitive modeling (overview, GOMS, NGOMSL)   10%
5. Syntactic models (treatment of goals and motives)   10%
    Reisner's BNF, Moran's Command Language Grammar,
    Payne's Task-Action Grammar
6. Formal methods, knowledge engineering, software engineering   15%
    e.g. Harrison, Dix, Hartson, Diaper's TAKD (Task Analysis for
    Knowledge Description)
7. Emerging conceptions of data and models
    a. activity theory   5%
    b. ethnography   5%
    c. organizational analysis   5%
    d. models of collaboration   5%
    e. technology affordance   5%
    f. artifact analysis   5%

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                                                                                        100%

VII.   OLD (CURRENT) SYLLABUS:

NA

VIII. CORE CURRICULUM GUIDELINES:

NA