January 6, 2006

METROPOLITAN STATE COLLEGE *of* DENVER
Office of Academic Affairs

REGULAR COURSE SYLLABUS

School of: Letters, Arts, and Sciences

Department: Mathematical and Computer Sciences

CIP Code: 11.0701

Prefix & Course Number: CS 3140 **Crosslisted With*:** _____

Course Title: Human-Computer Interaction

Check All That Apply: Required for Major: _____ Required for Minor: _____ Specified Elective: _____
Required for Concentration: _____ Elective: X Service Course: _____

Credit Hours: 4 (0 + 0)

Total Contact Hours per semester (assuming 15-16 week semester):

Lecture 60 Lab 0 Internship 0 Practicum 0 Other (please specify type and hours): 0

Schedule Type(s): Lecture **Grading Mode(s):** Letter

Variable Topics Courses (list restrictions, including the maximum number of hours that can be earned**):

_____

** **NOTE: This information must be included in the course description.**

Restrictions (Variable Topics Course): _____

Prerequisite(s): CS 2050 with grade of "C" or better, or permission of instructor

Corequisite(s): None

Prerequisite(s) or Corequisite(s): _____

Banner Enforced:

Prerequisite(s): _____
Corequisite(s): _____
Prerequisite(s) or Corequisite(s): _____

Catalog Course Description:
This course explores and develops knowledge that enables computer scientists to improve human-computer interaction through the exploitation of cognitive science theories about how people interact with their environments. Topics include: how people interact with each other and with computer; insights provided by models of cognition, memory, perception, attention, and thought; defining, specifying and assessing usability; and the roles of computer interface elements and behaviors. Students will examine theories and use interactive computer systems as the vehicles for the study of human-computer interaction and design for usability. Students will evaluate the effectiveness of existing interfaces and will experiment with authoring their own.

APPROVED:

Ruth G. Yarar — 1-17-06
Department Curriculum Committee — Date

Diane Beaty — 1/19/06
Department Chair ~~OR~~ Program Director — Date

Hal Tamty — 1/31/06
Dean **OR** Associate Dean — Date

Linda S. Cuman — 2/2/06
Associate VP, Academic Affairs — Date

*If crosslisted, attach completed Course Crosslisting Agreement Form

Prefix and Course Number: CS 3140 January 6, 2006

Required Reading and Other Materials will be equivalent to:

Internet Resrouces:
Apple Computer, Macintosh Human Interface Guidelines
http://developer.apple.com/techpubs/mac/HIGuidelines/HIGuidelines-2.html
http://developer.apple.com/techpubs/Mac/pdf/HIGuidelines.pdf
Jakob Nielsen, Usable Information Technology
http://www.usiet.com/

Books:
Norman, Don (2002). *The Design of Everyday Things*. Prentice Hall
Faulkner, Christine (1998). *The Essence of Human-Computer Interaction*. Prentice Hall
[alt for Faulkner:] Jordan, Patrick W. (1998). *An Introduction to Usability*. Taylor & Francis.
Spolsky, Joel (2001). *User Interface Design for Programmers*. Apress
Krug, Steve (2000). *Don't Make Me Think: A Common Sense Approach to Web Usability*. Queue.

Specific, *Measurable* Student Behavioral Learning Objectives:
Upon completion of this course the student should be able to:

1. Describe usability and human-computer interaction.
2. Create, apply and evaluate human-interface guidelines and specifications.
3. Specify, design, document and assess human-computer interfaces.
4. Predict and analyze usability performance of specific user interface mechanisms and approaches using knowledge of the relationship between human cognition and usability.
5. Choose user-interface structures, techniques, and paradigms appropriate to a given context.
6. Plan, conduct and analyze usability assessments for computer-based systems and applications.
7. Discuss ethical issues concerning usability and accessibility.
8. Create user-interface designs that address Universal Access (including compliance with ADA, etc.).

Detailed Outline of Course Content (Major Topics and Subtopics):

I. Overview of Usability, Human-computer Interactions and Cognitive Science
   A. Descriptions
   B. Definitions
   C. Relationships
II. Characteristics of Users
   A. Physical
   B. Cognitive
   C. Experiential
III. Human Action Cycle
   A. Perception, goals and execution
   B. Design guidance
IV. Human Cognition
   A. Models, mechanistic and explanatory
   B. Understanding and communication
   C. Usability implications
V. Human Error
   A. Cognitive models
   B. Mistakes vs. Slips
   C. Design guidance

VI. User and Task Analysis
   A. Conceptual foundations
   B. Pragmatics
VII. Software Development Organization
   A. Implications of and for usability
   B. Resource estimation, allocation and management
   C. Usability requirements engineering and testing
   D. Development methods
   E. Participatory design.
VIII. Universal Access
   A. Accommodating diversity
   B. Special considerations for disability
   C. Target audience restriction and expansion
IX. Usability Assessment
   A. Methods, tools, techniques
   B. Pragmatics
X. Implementation
   A. Specification and design tools
   B. Development tools
   C. Evaluation and critiquing tools

Evaluation of Student Performance:

The following as determined by the instructor

1. Final Examination
2. Assignments
3. Quizzes and Examinations
4. Research papers and/or Book Reports
5. Oral Presentation
6. Programming Projects.