January 10, 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: 11.9999

Prefix & Course Number: CS 4281 **Crosslisted With*:** _____

Course Title: Software Requirements

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

Credit Hours: 3 (3 + 0)

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

Lecture 45 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 4250 or permission of department

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Banner Enforced:

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

Catalog Course Description:

This course develops basic competency in software requirements engineering and management. Students gain knowledge and practical experience with the fundamentals of requirements elicitation, explication, validation, management, and assessment.

APPROVED:

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

Steve Beaty — 1/19/06
Department Chair **OR** Program Director — Date

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

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

*If crosslisted, attach completed Course Crosslisting Agreement Form

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Required Reading and Other Materials will be equivalent to:

Exploring Requirements: Quality Before Design by Gause & Weinberg, Dorset House, 1980

Mastering the Requirements Process by Robertson & Robertson, Addison-Wesley, 1999

System and Software Requirements Engineering Tutorial ed. By Thayer & Dorfman, IEEE Computer Society, 1990.

Various articles and reprints from journals and conference proceedings *(IEEE Software, CACM, IEEE Computer)*

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

1. Elicit requirements from identified stakeholders using various data collection and interview techniques
2. Create and maintain a Software Requirements Specification (SRS):
   a. Use and adapt a requirement template (shell)
   b. Use and modify SRS templates
   c. Identify ambiguities in requirements
   d. Evaluate requirements qualitatively
   e. Assure that requirements have quantitative satisfaction metrics
3. Explain the value and limitations of requirements management tools.
4. Select appropriate and effective management tools for a given environment from among various product offerings.

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

I. Overview of the role of requirements in software engineering
   A. The role of requirements throughout the software life-cycle
   B. The requirements process, methodologies, and nomenclature
   C. Functional and non-functional requirements
II. Ambiguity in requirements specifications
   A. Costs and sources of ambiguity
   B. Ambiguity identification heuristics
   C. Ambiguity reduction methods
III. Requirements elicitation
   A. Stakeholder participation
   B. Elicitation methods
   C. Use cases
IV. The Software Requirements Specification (SRS)
   A. Data collection using a requirement shell
   B. Converting potential requirements into specifications
   C. IEEE Standards and Guides for SRS and Software Product Specifications
   D. Volere SRS template
V. Requirements management
   A. Forward and backward traceability
   B. Automated software tools for requirements management
   C. Requirements reusability
VI. Requirements validation
   A. Quality gateway
VII. Requirements Verification
   A. Ambiguity metrics
   B. Reviews and walkthroughs
   C. Measuring satisfaction; testing

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Evaluation of Student Performance:

1. Homework assignments
2. Quizzes and examinations
3. Final examination
4. Projects
5. Research papers and/or book reports
6. Oral presentations

as determined by the instructor. Written and verbal communication skills will be applied in this course.