

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 4285 Crosslisted With*:

Course Title: Best Practices in Software Development

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 4260 or two of {CS 4281, CS 4282, CS 4283, CS 4284} or permission of department

Corequisite(s): none

Prerequisite(s) or Corequisite(s):

Banner Enforced:

Prerequisite(s):

Corequisite(s):

Prerequisite(s) or Corequisite(s):

Catalog Course Description:

This course exposes the student to current best practices and emerging methodologies in software engineering and software product development. Topics are chosen to reflect the current state of the art and practice. (A typical set of such topics for 2001 includes: software architecture as a discipline, design patterns, eXtreme Programming, recent technology in security, and aspect-oriented programming.)

APPROVED: Ruth G. Yaras

1-17-06

Department Curriculum Committee

Date

Mary Beatty
Department Chair OR Program Director

1/19/06

Date

Julia S. Curran
Dean OR Associate Dean

1/31/06

Date

Associate VP, Academic Affairs

2/2/06

Date

*If crosslisted, attach completed Course Crosslisting Agreement Form

Required Reading and Other Materials will be equivalent to:

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

Books chosen to reflect current best practices, if available.

(Examples for 2001:

Extreme Programming Explained by Beck, Addison-Wesley, 2000.

Software Architecture: Perspectives on an Emerging Discipline by Shaw & Garlan, Prentice Hall, 1996.

Design Patterns by Gamma et al., Addison-Wesley, 1995.)

Specific, Measurable Student Behavioral Learning Objectives:

Upon completion of this course the student should be able to:

1. Evaluate current software engineering practices and methods
2. Articulate key aspects of current software engineering technologies
3. Identify and apply best practices in software development to practical projects
4. Identify and perform objective assessment of emerging software engineering practices and methods
5. Discuss and critically analyze current literature in the field of software engineering

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

- I. Survey of the current state of the art and practice in software engineering
(2001: Software architecture as discipline; design patterns; XP; security and privacy implication of net ubiquity and recent advances in biometrics)
- II. Application of best practices
 - A. Models (2001: design patterns)
 - B. Methods (2001: software architecture as discipline)
 - C. Techniques (2001: XP)
 - D. Tools (2001: recent software advances with application to security and privacy)
- III. Evaluation of best practices
 - A. *Framework for evaluating alternative practices*
 - B. Application to current practices (2001: SWA, DP, XP, privacy and security)
 - C. How to apply to emerging practices
- IV. Identification of emerging "best practices"
 - A. Sources and references (2001: ACM (SIGSAC, SIGSOFT, ...), IEEE (Computer Society, ...))
 - B. Assessment: conduct critical analyses of proposed, but unproven, software development practices (2001: Aspect-Oriented Programming)

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.