South Dakota School of Mines and Technology  
CSC 470 – Software Engineering - Spring 2010  
Course Syllabus

Instructor:  
Dr. Manuel L. Penaloza (office: room McLaury 312, phone 394-6077)  
Email address: Manuel.Penaloza@sdsmt.edu  
Course Website: http://sdmines.sdsmt.edu/sdsmt/directory/courses/2010sp/csc470M001

Office Hours:  MWF: 1:00-2:00, Th.: 11:00-noon, or by appointment.

Class schedule:  MWF 3:00-3:50 PM [McLaury building, room 313].

Current Catalog Description:  
(3-0) 3 credits. Prerequisites: CSC 300. An introduction to the software engineering process,  
including lifecycle phases, problem analysis, specification, project estimation and resource  
estimation, design, implementation, testing/maintenance, and project management. In particular,  
software validation and verification as well as scheduling and schedule assessment techniques will  
be discussed.

Required Text:  
Steve McConell. Code Complete: A Practical Handbook of Software Construction, 2nd edition,  

References:  
Selected IEEE Software papers and/or articles.  
Leszek A. Maciaszek. Requirements Analysis and System Design: Developing Information Systems  
Perdita Stevens and Rob Pooley. Using UML, Software Engineering with Objects and Components,  
Robert Glass. Software Creativity 2.0, 2006 developers.* books, Atlanta, Georgia.

Course Goals:  
This course provides students with team experience and knowledge necessary for the development  
of software engineering applications. It covers topics such as software crisis, software life cycle,  
software requirements, software design, software integration and testing, software quality, software  
process, and project management. Students will work in teams in the implementation of the same  
project which you will work outside of class. The problem definition for the team project will be  
discussed near the beginning of the semester. Teams consisting of three students will be assigned to  
a team. The entire team must share the responsibility of the different development tasks, which are  
described in class. The teams will be selected early in the semester. Project documentation and  
outcome for each phase will be presented as team assignments. The instructor plays the role of the  
client and division manager.

Each team is expected to meet for at least 30 minutes each week. A team leader must be selected  
for each team. He or she must arrange this weekly meeting. Every team member is responsible for
finding times and places where all members of team meet at the same time. The team leader must
generate tasks for the team members to work on (including the team leader), and track the
implementation of these tasks. The team leader must submit biweekly status report to the division
manager (the instructor) about the progress of the project. The development of the project for this
class is about TEAMWORK, not just the development of subparts of an entire project by a team
member. That is, your team must work together, brainstorming together, helping each other,
evaluating and critiquing each other’s work (to improve project performance), jointly reviewing and
approving team milestones. The first team assignment will describe the set of milestones and a
submission schedule. Documentation templates for some of the milestones will be published on the
course website. Your team must follow these templates. Class presentations will be used by teams
to show the progress of their projects, their prototypes and their final implementations. Oral and
written communications will be assessed in this course.

The course has been designed so that students will participate more actively in class. It will include
lecture sessions, discussion (or activity) sessions, student presentations, and other assigned
activities. This course requires a great amount of reading, writing documents, and doing
assignments. The students must complete assigned readings before the class session that will cover
these readings. Discussions in class may be based on these reading assignments. Active
participation in class is expected. Class attendance, frequency and quality of your participation will
be part of your participation grade. You will also have the opportunity to provide feedback to the
other members of the team, and may review some of the documents produced by other teams.

Attendance Policy
Attendance is required for all class sessions. Students are expected to attend and participate in all
the discussion sessions. If you must miss a discussion session for some important reason, please
send the instructor an email BEFORE the session is scheduled to start explaining the reason for your
absence. Attendance is also required for all presentations, whether your team is presenting or not.
2% of your final grade will be deducted for every unexcused absence to a discussion (or activity)
session, and 3% of your final grade if you miss a team presentation.

Make-up Policy
The instructor will give you a make-up exam in case you have a legitimate reason for missing an
exam, and ONLY if you have called the instructor or the Department office (605-394-2471)
BEFORE the exam is scheduled to begin. Keep in mind that makeup exams are usually harder than
scheduled exams.

Course Objectives:
1. Understand what software engineering is and why it is important.
2. Understand process models for software requirements engineering, software development,
testing and evolution.
3. Understand a number of testing techniques that are used to discover program faults
4. Identify the important phases of software development
5. Analyze and model complex software application(s) utilizing OOA/OOD or structural
methodologies

Course Outcomes:
Upon completion of this course, students should, at a minimum able to:
1. Determine the important features and activities of the software engineering process.
2. Determine the importance of people, product, project, and process during the development of a
software product.
3. Identify and apply quality features to software applications such as reliability, performance,
safety, and security.
5. Create and deliver the different documents produced during a software life cycle.
6. Evaluate the various styles of information presentation and know when graphical representation of information is appropriate.
7. Apply tools that are commonly used in software development.
8. Design and implement software applications utilizing object-oriented and structured or functional methodologies in software development.
9. Determine how to measure software process quality.
10. Implement the strategies, techniques, and tools used in software testing.
11. Determine how to estimate cost and schedule of a software product.
12. Evaluate the importance of software risk analysis and management.
13. Determine how to evaluate the “maturity” of a software process.
14. Determine how to develop software as part of a software team.

**Grading:**
The final grade for this course will be based on team assignments or milestones (40%), team presentations (10%), individual assignments (15%), class participation (5%), and 2 exams (15% each). There is no final exam in this course. The complete set of documentation and the final implementation of your project replace the final exam. They must be submitted in a CD. In general, students in a team receive the same grade on team assignments. However, the performance evaluation of each student made by the teammates and leader, the student performance on each presentation, and absences to presentations may lead to a different grade to each team member. The tentative date for the first exam is 2/26, and for the second exam is 4/16.

The grade scale for this course is:

- A: 90.00 – up
- B: 80.00 - 89.99
- C: 70.00 - 79.99
- D: 60.00 - 69.99
- F: less than 60.00

**Freedom in Learning.** Students are responsible for learning the content of any course of study in which they are enrolled. Under Board of Regents and University policy, student academic performance shall be evaluated solely on an academic basis and students should be free to take reasoned exception to the data or views offered in any course of study. Students who believe that an academic evaluation is unrelated to academic standards but is related instead to judgment of their personal opinion or conduct should contact the dean of the college which offers the class to initiate a review of the evaluation.

**Special Needs:** Students with special needs or requiring special accommodations should contact your instructor, or the campus ADA coordinator (Ms. Jolie McCoy at 394-1924) at the earliest opportunity.

**Electronic Devices Policy:** Please turn off cell phones and pagers before class starts*. There is to be no text messaging, no accessing email, no use of audio players and no headphone use during class. Mute the speakers of any laptops/PDA used in class. No use of any other electronic or computer device is allowed during class time.

**NOTES and POLICIES:**
1) The instructor’s office hours are for you. If you are having trouble with an assignment please see me immediately. If you want to communicate with me after 5pm and before 9:30pm, please send me an email. I will try to respond you as soon as I can. Any messages after 9:30pm will be answered the next day.
2) All work must be handed in at the beginning of class on the due date.
3) The instructor will not accept any work of a student who is not present in class, unless the student has been excused from the class.
4) Late assignments are not accepted. Any type of assignment not turned in or exams not taken count as ZEROS.

5) Some course material will be posted on the course website. I don’t expect to post the assignments and lectures on this website.

6) The work to be handed in for individual assignments must be an individual effort unless the instructor has explicitly stated otherwise. The instructor expects every student to produce his/her own solution and work. Coping someone else’s code or work is not acceptable. The minimum penalty for any violation to this policy will be a zero to the assignment, project, or exam and one lower final letter grade. Please read and follow the Academic Integrity document on the department website.

7) Each completed project should be well documented. The assignment sheet will indicate what is expected for documentation.

8) The school has computer, software, network, and academic conduct guidelines and policies. Please make sure you are well familiar with them.