

# CS - 4250 - Software Engineering Principles

## zo8. UG Course Modification #2 (Substantive College/School)

### Due Dates

Deadlines for curriculum can be found:

[Curriculum SharePoint](#)

[Curriculum Website](#)

[Procedural Calendar](#)

On your Curriculog dashboard under 'My Upcoming Events'

In order to meet the deadline, this proposal must be on the *Substantive College/School Level Review* step on or before the listed due date.

### Directions for Form

Please read instructions and information below before you begin your curriculum proposal. You may also consult the following resources which can provide additional assistance in understanding this form and the curriculum process.

Originator How-To Guide

[Curriculum SharePoint](#)

[Example Proposal](#)

This form **SHOULD** be used for the following:

Modifying a course **without** a special designation (General Studies, Service Learning, Multicultural, or Senior Experience).

Converting an omnibus or individual variable topic course to a regular course.

This form **SHOULD NOT** be used for the following:

Modifying a course with a special designation (General Studies, Service Learning, Multicultural, or Senior Experience).

Creating a new course with or without a special designation (General Studies, Service Learning, Multicultural, or Senior Experience).

Changing a course prefix or changing the ownership of a course.

Modifying or creating graduate courses.

## Instructions:

Import the course you wish to modify with the import button at the top of this page.

Fill in the required information in the following fields:

Originator Name and Email

Curriculum Proposal Justification and Resource Implication Subsection

Review for Conflict and Overlap (end of form)

Launch the Proposal

**DO NOT MAKE CHANGES TO YOUR PROPOSAL UNTIL AFTER YOU LAUNCH THE PROPOSAL** in order to track changes. Failure to use the track changes feature may cause a delay or denial of your proposal.

Modify course components as needed

Approve the proposal

Use the checkmark icon on the right of the screen to approve the proposal.

## Additional Information

You may collapse individual sections of this form by clicking the arrow or "V" icon to the right of the section title.

All fields that are marked with an asterisk (\*) are required.

Each section may have additional directions attached. Please follow instructions. Proposals that are incomplete or filled out incorrectly will be returned to the originator.

If you have questions or need assistance in filling out this proposal form, you may contact the [Director of Curriculum and Catalog](#).

### Department and Originator Information

College/School:\*

College of Health and Applied Sciences

Department:\*

Department of Computer Sciences

Name of Proposal Originator\* Jody Paul

Email of Proposal Originator\* pauljod@msudenver.edu

## Curriculum Proposal Justification and Resource Implication

**Justification and Rationale for Curriculum Proposal:\***

Address restructuring of BS CS degree program and redistribution of content in the curriculum.

**Resource Implication Narrative:\***

No resource implications associated with this proposal.

**Related Curriculum Proposals:\***

Major in Computer Science <https://msudenver.curriculog.com/proposal:6734/form>

Please select from the below list all of the course modifications you are making. If you wish to change something that is not listed, please refer to the other course modification forms in Curriculog. **Please do not make changes to fields you do not specify are being modified and make sure to list ALL fields that you modify.**

**Note: This form CANNOT be used to change courses with special designations (Multicultural, Service Learning, Senior Experience, General Studies)**

**Course Modifications:\***

Registration restrictions

Course description

Banner Enforced prerequisites, corequisites, pre/corequisites

Prerequisites, corequisites, pre/corequisites

Evaluation of student

Outline

Required reading

Student Behavioral Learning Objectives (SBLOs)

**Impact Report Results:\***

### Impact Report for CS 4250

Source: 2021-2022 Undergraduate Catalog	
Description:	CS 4260 - Software Engineering Practices
Prerequisite(s):	CS 4260 - Software Engineering Practices
	CS 4281 - Software Requirements
	CS 4282 - Software Development Management
	CS 4283 - Software Testing and Quality Assurance
	CS 4284 - Software Product Engineering
Programs	Advanced Software Engineering Techniques Certificate [INACTIVE]
	Computer Science Major, B.S.
	Senior Experience Graduation Requirements

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### Course Title Information

Prefix:\*

CS

Course Number:\* 4250

Course Title:\* Software Engineering Principles

Transcript/Banner Course Title:\* Software Engineering Principle

Course Type:\*

Computer Science

CIP Code: 11.0701

### Course Hours, Restrictions, and Repeat Information

**Please check all that apply from the selections below. You may select more than one option if applicable.**

- Check All that Apply:\*
- Required for Major
  - Required for Minor
  - Required for Concentration
  - Required for Certificate
  - Elective
  - Specified Elective

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

**Federal Credit Hour Definition:** A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:

(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or (2) at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward to the award of credit hours. 34CFR 600.2 (11/1/2010)

Credits:\* 4

Distribution of Credits:\* (4 + 0)

Schedule Type(s):\*

Lecture

Grade Mode(s):\*

Letter

#### Face-to-Face or Equivalent Hours per course

Consult Appendix B and C of the [Curriculum Manual](#) to determine the hours for the course

Lecture: 60

Lab:

Internship:

Practicum:

Other Hours:

Additional Student Work Hours: 120

**Please answer yes or no to the below questions. If you answer yes to any of the questions, please fill out the related field on the right.**

Is this course a specified repeatable course?\*

No  
 Yes

If yes, indicate specified repeatable number of credits and/or repeats allowed:

A specified repeatable course is a course that allows a student to repeat the course either in its entirety or for a certain identified total number of credit hours. If you decide to make your course repeatable, please specify either how many times a student can repeat the course for credit, or for the total number of credits they can receive.

Is this course a variable topics umbrella course?\*

No  
 Yes

If yes, indicate variable topic number of credits and/or repeats available:

Are there course  No

If yes, list all CSI 4250

equivalencies?\*  No  Yes

equivalent courses:

A crosslisting is when a course is made available under additional prefixes for students in other programs.

An equivalency is when two courses are coded in Banner to be equal to each other.

Generally equivalencies are used when an old, archived course is needed to be equal to a new course. Crosslistings are used for all active courses. Supporting documentation should be included to demonstrate approval for crosslistings.

Are there course crosslistings?\*  No  Yes

If yes, list all crosslistings:

## Registration Restrictions

Program:

Major:

Level:

Class:

Student Attribute:

## Catalog Course Information

The following fields will allow you to attach prerequisites, corequisites, or prerequisites or corequisites to your course. Please specify if you want and of these prerequisites, corequisites, or prerequisites or corequisites Banner enforced.

Banner enforcement means that the requirement will be enforced when the student attempts to register for a course. If you do not Banner enforce the requirement, the system will not check the student's record for the requirement to be met.

Please also indicate the minimum passing grade. If you do not indicate a minimum passing grade, it will default to a "D-" and you will be required to complete another curriculum proposal to modify this minimum passing grade, even if your program has a different minimum passing grade.

**Prerequisite(s):** CS 3250, CS 2240, and COMM 1010 or COMM 1100, all with a grade of "C-" or better; or permission of instructor

**Banner Enforced Prerequisite(s):** CS 3250 AND (CS 2240 OR MTH 3170) AND (COMM 1010 OR COMM 1100)

**Minimum Passing Grade for Banner Enforced Prerequisite(s):** C- or T

**Corequisite(s):**

**Banner Enforced  
Corequisite(s):**

**Prerequisite(s) or  
Corequisite(s):**

**Banner Enforced  
Prerequisite(s) or  
Corequisite(s):**

**Minimum Passing  
Grade for Banner  
Enforced  
Prerequisite(s) or  
Corequisite(s):**

**Catalog Course Description:**\* Students in this course explore key principles and best practices that support production and delivery of professional quality software. Current professional software engineering techniques are reviewed and applied through an active-learning approach. The awareness and skills developed in this course prepare students for success in professional software engineering endeavors, including the development of quality products and effective interactions with product and project stakeholders.

**The note field DOES show up in the course listing in the university catalog. A note should be made in specific instances where additional information about a course needs to be conveyed to students. The most common reasons for adding a note are:**

The course is crosslisted Example: *(Note: Credit will be granted for only one prefix.)*

Variable credit courses Example: *(Note: Variable Credit)*

A course is repeatable Example: *(Note: This course may be repeated up to 3 times under different topics) OR (Note: This course is repeatable for a maximum of six semester hours)*

If a student cannot take two courses and earn credit for both Example: *(Note: Students cannot earn credit for XXX1234 and XXX2345)*

**Note:**

**Lab Fees:**

**Field Trips:**

**Course Content**

The following section is the course content. You must adhere to the following format for each section:

**Required reading: Smith, J.R. (2014). *Book of Examples*. New York, NY: McGraw-Hill**

**List each material in this format. If there are multiple materials please format them in a bullet or list style**

**Specific Measurable Student Behavioral Learning Objectives: 1, a, i, ii, etc.**

**Detailed Outline of Course Content or Outline of Field Experience/Internship: I, A, 1, a, etc.**

**Evaluation of Student Performance: 1, a, i, ii, etc.**

**You must use the numbering list feature within the toolbar above each field. Right click on a number in the list and select "Numbered List Properties" to change the numbering style to adhere to the above formatting requirements.**

**Reminder: DO NOT MAKE CHANGES TO YOUR PROPOSAL UNTIL AFTER YOU LAUNCH THE PROPOSAL in order to track changes. Failure to use the track changes feature may cause a delay or denial of your proposal.**

**Required reading and other materials will be equivalent to:\***

Martin, R. C. (2022). *Clean Craftsmanship: Disciplines, Standards, and Ethics*, Addison-Wesley Professional; ISBN 9781680502961

Fowler, M. (2018) *Refactoring: Improving the Design of Existing Code, Second Edition*, Addison-Wesley Professional; ISBN 9780134757599

Dinwiddie, G. (2019) *Software Estimation Without Guessing: Effective Planning in an Imperfect World*, Pragmatic Bookshelf; ISBN 9781680506983

Lencioni, P. M. (2002). *The Five Dysfunctions of a Team*, Jossey-Bass; ISBN 0787960756

DeMarco, T. (1997). *The Deadline*, Dorset House; ISBN 0932633390

**Specific, Measurable  
Student Behavioral  
Learning Objectives:\***

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

1. Categorize and interrelate principal software engineering activities and artifacts
2. Interpret and analyze software engineering artifacts
3. Design and develop software engineering artifacts
4. Assess the effectiveness of a software engineering process and formulate changes to improve the process
5. Articulate and demonstrate behaviors supportive of an inclusive, collaborative software engineering environment
6. Appraise the impact of a software engineering process on outcome quality
7. Communicate effectively with project stakeholders

**Detailed Outline of  
Course Content  
(Major Topics and  
Subtopics) or Outline  
of Field  
Experience/Internship \***

1. Software Life Cycle and Software Life Cycle Models
2. Software Quality and Implications of Quality
  1. Quality metrics, assessment, and improvement
3. Human Factors in Software Engineering
  1. Stakeholder interaction
  2. Implications of cognition in software development
  3. Collaborative development
  4. Organizational ramifications
4. Requirements Engineering
  1. Requirements elicitation, specification, validation, and verification
5. Ethical, Legal, Economic, and Social Issues in Software Engineering
6. Managing Risk in Software Engineering
  1. Risk assessment and mitigation
7. Software Engineering as a Profession

**Evaluation of Student  
Performance:\***

1. Participatory contributions
2. Software engineering artifacts
3. Written reflections
4. Oral and written presentations
5. Quizzes / Exams

## Review for Conflict and Overlap

According to the Undergraduate Curriculum Manual, it is the responsibility of both the originator as well as each level of review to consider potential overlap and curriculum conflict. Any potential overlap or conflict with existing curriculum should be reviewed, and the impacted department(s) should be requested to provide a letter of notification or support, depending on the circumstances. Full information on overlap/conflict can be found [here](#).

Attach documentation that supports affected Departments were notified and/or provided support of the proposed changes in the Proposal Toolbox by clicking on the paperclip icon on the right side of the form.

**Please Confirm That:**\*  I, the originator of this proposal, have completed the necessary due diligence to review this proposal for any potential overlap and/or conflict with existing curriculum. Any departments identified as having potential overlap and/or conflicts have been contacted and a letter of notification and/or a letter of support has been obtained.

## Academic Affairs and Registrar's Office Use Only

**Notes** This course modification will be effective for the University 2022-2023 Undergraduate Catalog and will be reflected in Banner beginning in Fall 2022.

*Form Revised August 2021*