Minnesota State University, Mankato

Curriculum Proposal

Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU's curricular process for recommendations and decisions.

(Check all that apply):

- Science, Engineering and Technology
- Undergraduate
- Computer Science
- Graduate
- CIP # 11.010104

Proposal #: 307
Effective Date of Change: 08-08
Academic Year: 06-07
(For Office Use Only)

Type of Change:

- COURSE PROPOSALS
- Proposed: New Course

Title Current:
Large-Scale Software Development

Title Proposed:
Large-Scale Software Development

24-Char. Abbrev:

CS 300
Number of Credits: 4
(if applicable)

Course Designator and Number:

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):

A team-based capstone experience for the mid-point of the CS program. Students are introduced to principles and methodologies of large-scale software development and engineering by working on a full life-cycle software project solving a substantial problem using multiple CS concepts.

Pre: CS 210 and CS 220
Spring

Rationale or Justification for change:

This is part of the CS program redesign and introduces a mid-program capstone experience.

***For General Education or Cultural Diversity Courses Only***

<table>
<thead>
<tr>
<th>GE Category #</th>
<th>GE Category Name (Maximum of 3 Categories)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

† For Writing Intensive Courses, attach a description of the kind and quantity of writing.
‡ For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.

Attach paper copies of the following:

a. Syllabus or course outline.
b. Course's student learning outcomes associated with each GE competency or CD designation.
c. List of strategies to be used to assess students' achievement of each GE competency or CD designation.

***For New Courses***

(Check all that apply):

- Instructional Type: Lecture/Lab

- Course is an elective.

- Course is required for program

- Pre- or Co-requisites:

  Computer Science

  Prerequisites: CS 210 and CS 220

- Other courses are being changed or eliminated. (Explain.)

- Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)

Attach paper copies of the following:

a. Syllabus or course outline.
b. Course's student learning outcomes.
c. A list of resources required to offer and support this course.
d. A description of how teaching this course will affect department staffing.
e. If 400/500 level course, an explanation of added expectations of graduate students.

Revised September 2002
CS 300: Large-Scale Software Development (4 credits)

Course Description:
This course provides a capstone experience for the mid-point of the computer science program. The course introduces students to the fundamental principles and methodologies of large-scale software development. Students will learn about the theory and practice of software engineering by working as part of a team on a full life-cycle software project solving a substantial problem using concepts that span several topic areas in computer science. Students must work together in teams to define the problem scope given a problem description, develop a solution plan, produce and demonstrate an artifact that solves the problem, and present their work using written and oral reports. Class time focuses primarily on the project design and implementation, but may include lectures on the practical application of topics. This course will serve as an introduction to computer science fields that will be studied in rest of the curriculum as well as an introduction to requirements analysis and specification, design, testing and the use of tools.

4 lecture hours per week

Pre-requisites: CS 210 and CS 230.

Proposed Text:
2) A text specific to the problem assigned for the term.

Schedule of Topics:
1) Introduction and overview of problem (~1 wk)
2) Software lifecycle
   a. Software requirements analysis and the life cycle (~1 wk)
   b. Software design and the life cycle (~1 wk)
   c. Software implementation and the life cycle (~1 wk)
   d. Software testing and the life cycle (~1 wk)
   e. Software maintenance and the life cycle (~1 wk)
3) Teamwork approaches and guidance for successful teamwork
   a. Managing vs. Leading (~1 wk)
   b. Group dynamics (~1 wk)
   c. Self-managing work teams (~1 wk)
   d. Leadership skills (~1 wk)
4) Specific topics necessary for the particular problem. (~4-5 wks)

Student Outcomes:
1) Work on projects large enough to require teams of several students over a semester.
2) Apply concepts from more than one subarea of computer science.
3) Engage in a substantial design effort.
4) Present work using formal oral presentations and written reports
5) Produce an interesting, working artifact.
6) Describe the major problems in large software system development.
7) Describe issues, principles, methods and technology associated with software engineering theory and practices.

Grades will be assigned based on exams, assignments and project performance.

Required Resources & Departmental Staffing:
Resources currently in place within the department, the college, and the university library will support this new course. No new resources are required.

There is no impact on staffing requirements.