



**Minnesota State University, Mankato** HOLD and CLEAR buttons only compatible with Acrobat V. 4 and 5  
**Curriculum Proposal**

08-114  
✓

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):		Proposal #	320
College:	Science, Engineering and Technology	<input checked="" type="checkbox"/> Undergraduate	Effective Date of Change:
Department:	Computer Science	<input checked="" type="checkbox"/> Graduate	Academic Year
Program:	Computer Science	CIP #	07-08
Type of Change	COURSE PROPOSALS	(For Office Use Only)	
Proposed:	New Course	<b>Course Designator and Number</b>	<b>Number of Credits</b>
Title Current:			
Title Proposed:	Software Verification	CS 482/582	3
24-Char. Abbrev:	Software Verification	(if applicable)	

*Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):*  
 Provides an introduction to software quality assurance with focus on software testing processes, methods, techniques and tools. Topics include formal verification and validation techniques; black box and white box testing; integration, regression, performance, stress, and acceptance testing of software.  
 Pre: CS 300, CS 380, and MATH 354 Variable

*Rationale or Justification for change:*  
 This course is part of the proposed Software Engineering major. The course fulfills part of the major's objectives as well as fulfilling part of the objectives identified in the ABET curriculum guidelines for Software Engineering.

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

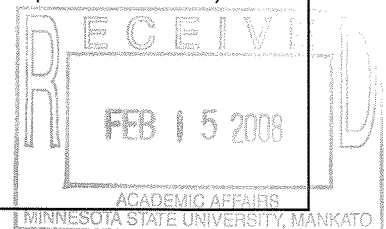
<p align="center"><b>General Education Course:</b></p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">GE Category #</th> <th>GE Category Name (Maximum of 3 Categories)</th> </tr> </thead> <tbody> <tr><td align="center">N/A</td><td></td></tr> <tr><td align="center">N/A</td><td></td></tr> <tr><td align="center">N/A</td><td></td></tr> </tbody> </table> <p><small>? 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.</small></p> <p>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.</p>	GE Category #	GE Category Name (Maximum of 3 Categories)	N/A		N/A		N/A		<p><b>Cultural Diversity Course:</b>          (Please check one.)</p> <p><input type="checkbox"/> Core (At least 75% devoted to topics of race, gender, sexual orientation, age, class, and disabilities as they occur in United States Society.)</p> <p><input type="checkbox"/> Related (At least 25% devoted to the above topics or to a global perspective on topics related to African American, Asian, Hispanic, and Native American inhabitants of the United States.)</p>
GE Category #	GE Category Name (Maximum of 3 Categories)								
N/A									
N/A									
N/A									

**\*\*\*For New Courses\*\*\***

(Check all that apply):	Instructional Type:	Lecture	Course will be offered:
<input checked="" type="checkbox"/> Course is an elective.	Grading Format:	<input checked="" type="checkbox"/> Grade <input type="checkbox"/> P/N	<input checked="" type="checkbox"/> Fall Semester
<input checked="" type="checkbox"/> Course is required for program		Software Engineering	<input checked="" type="checkbox"/> Spring Semester
<input checked="" type="checkbox"/> Pre- or Co-requisites:		Prerequisites: CS 300 and CS 380 + Math 354	<input type="checkbox"/> Summer Session
<input type="checkbox"/> 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.





Minnesota State University, Mankato  
Curriculum Proposal

\*\*\*Signature Page\*\*\*

**Department**

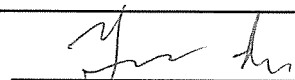
Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

 2-2-08  
Department Chair Date

Comments:

**College Curriculum Committee**

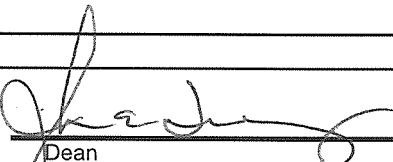
Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

 2/14/08  
Committee Chair Date

Comments:

**College Dean**

Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

 2/18/08  
Dean Date

Comments:

**General Education Subcommittee**


Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

\_\_\_\_\_  
General Education Subcommittee Chair Date

Comments:

**Undergraduate Curriculum and Academic Policy Committee**

Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

 3/18/08  
UCAP Faculty Chair Date

Comments:

**Faculty Association Graduate Committee**

Recommended  
 Not Recommended

\_\_\_\_\_  
Faculty Association Graduate Chair Date

Comments:

**Graduate Dean**

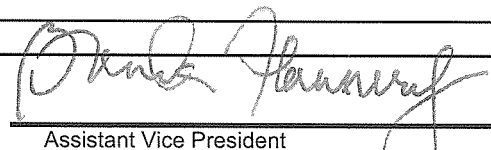
Recommended  
 Not Recommended

\_\_\_\_\_  
Graduate Dean Date

Comments:

**Academic Affairs Council**

Recommended (Category/ies \_\_\_\_\_)  
 Not Recommended (Category/ies \_\_\_\_\_)

 4/28/08  
Assistant Vice President Date

Comments:

**Senior Vice President and Vice President for Academic Affairs**

Approved (Category/ies \_\_\_\_\_)  
 Not Approved (Category/ies \_\_\_\_\_)

 4/28/08  
Sr. Vice President / Vice Pres. Academic Affairs Date

Comments:

CS 482: Software Verification (3 credits)

Course Description:

Provides an introduction to software quality assurance with focus on software testing processes, methods, techniques and tools. Topics include formal verification and validation techniques; black box and white box testing; integration, regression, performance, stress, and acceptance testing of software.

3 lecture hours per week.

Prerequisites: CS 300, CS 380 ,and MATH 354

Proposed Text:

*Software Testing: A Craftsman's Approach.* Paul Jorgensen. Auerbach, 2007. ISBN 0849374758.

Schedule of Topics:

- 1) Quality assurance (~ 2 wks)
- 2) Verification techniques (~ 2 wks)
- 3) Validation techniques (~ 2 wks)
- 4) Statistical techniques (~ 2 wks)
- 5) Test methods and types (~ 4 wk)
- 6) Test tools (~ 2 wk)
- 7) ISO 9000, CMM, and other verification issues (~1 wk)

Student Outcomes:

Students who complete this course will be able to:

- 1) Describe, discuss, and apply commonly accepted principles of software quality assurance.
- 2) Select an appropriate test procedure for a given software development scenario.
- 3) Describe the impact of quality assurance processes on a software development organization.
- 4) Implement object-oriented software test procedures, design test cases, execute test procedures, and document results.
- 5) Demonstrate proficiency in managing a software inspection and walkthrough – and know the difference between the two.
- 6) Describe the implementation of a statistical quality assurance program.
- 7) Demonstrate the ability to document their work to an acceptable standard.

Added Expectations of Graduate Students

- 1) Graduate students will be held to a higher standard in all coursework, including assignments and exams.
- 2) Graduate students will also be expected to perform in depth and thorough independent investigation of the subject matter.

Grades will be assigned based on exams and assignments.

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.