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Minnesota State University, Mankato HOLD and CLEAR buttons only compatible with Acrobat V. 4 and 5
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):	Proposal #	284
College:	Science, Engineering and Technology	<input checked="" type="checkbox"/> Undergraduate	Effective Date of Change:	
Department:	Computer Science	<input checked="" type="checkbox"/> Graduate	Academic Year	06-07
Program:	Computer Science	CIP # 11.010104	(For Office Use Only)	
Type of Change	COURSE PROPOSALS		Course Designator and Number	Number of Credits
Proposed:	New Course			
Title Current:				
Title Proposed:	Advanced Programming Practices		CS 480/580	3
24-Char. Abbrev:	Adv. Program. Practices		(if applicable)	

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

This course covers advanced programming for general-purpose software development. Topics include tools and processes appropriate for employing object-oriented designs and programming within a significant software development environment and advanced data structures and algorithms, graphical user interfaces, and software development processes.

Pre: CS 300 and CS 380

Variable

This is part of the CS program redesign. Offerings of course electives will be on a two-year variable rotation.

For General Education or Cultural Diversity Courses Only

General Education Course:		Cultural Diversity Course:
GE Category #	GE Category Name (Maximum of 3 Categories)	(Please check one.)
N/A		<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.)
N/A		<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.)
N/A		

7 For Writing Intensive Courses, attach a description of the kind and quantity of writing.

7 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:

- Syllabus or course outline.
- Course's student learning outcomes associated with each GE competency or CD designation.
- 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	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 type="checkbox"/> Course is required for program		Computer Science	<input checked="" type="checkbox"/> Spring Semester
<input checked="" type="checkbox"/> Pre- or Co-requisites:	Prerequisites:	CS 300 and CS 380	<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:

- Syllabus or course outline.
- Course's student learning outcomes.
- A list of resources required to offer and support this course.
- A description of how teaching this course will affect department staffing.
- 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 _____)

David J. Haggli 10/17/06
Department Chair Date

Comments:

College Curriculum Committee

Recommended (Category/ies _____)
 Not Recommended (Category/ies _____)

Karen C. Chow 11/2/06
Committee Chair Date

Comments:

College Dean

Recommended (Category/ies _____)
 Not Recommended (Category/ies _____)

[Signature] 11/6/06
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 _____)

[Signature] 1-31-07
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 _____)

[Signature] 2/9/07
Assistant Vice President Date

Comments:

Senior Vice President and Vice President for Academic Affairs

Approved (Category/ies _____)
 Not Approved (Category/ies _____)

[Signature] 2/13/07
Sf. Vice President / Vice Pres. Academic Affairs Date

Comments:

CS 480: Advanced Programming Practices (3 credits)

Course Description:

The course provides the student with advanced instruction in programming with an object oriented programming language. The course objective is proficiency in the use of object oriented constructs for general purpose software development. The student will be introduced to tools and processes appropriate for employing object-oriented designs and programming within a significant software development environment. Students will acquire advanced knowledge and experience with object-oriented programming, data structures and algorithms, graphical user interfaces, and software development processes.

3 lecture hours per week.

Prerequisites: CS 300 and CS 380

Proposed Text:

- 1) *PSP: A Self-Improvement Process for Software Engineers*, Addison Wesley Professional, 2005.
- 2) *Java Programming: Advanced Concepts*, Course Technology, 2003.

Schedule of Topics:

- 1) Object Oriented Language Fundamentals (~ 1 wk)
- 2) Objects and Classes (~ 2 wks)
- 3) Concurrency (~ 2 wks)
- 4) Graphical User Interfaces (~ 2 wks)
- 5) Advanced Data Structures and Algorithms (~ 2 wks)
- 6) Software Engineering Practices (~ 2 wks)
- 7) Personal Software Process and Refinement (~ 2 wks)
- 8) Enacting and Analyzing Software Processes (~ 2 wks)

Student Outcomes:

Students who complete this course will be able to:

- 1) Apply good software engineering practices in the design and development of object-oriented programs.
- 2) Accurately measure software size and effort using statistical methods.
- 3) Apply the Personal Software Process by to develop detailed, accurate, and reliable software engineering plans.
- 4) Follow a development plan by tracking progress and identifying resource, schedule, and quality problems.
- 5) Describe the concepts and features of object-oriented programming.
- 6) Apply knowledge of information hiding, inheritance, and polymorphism to design and implement classes.
- 7) Describe the common graphical components used in GUI design by designing and implementing an application using GUI input and output.
- 8) Describe the key concepts and application of concurrent programming. Design and implement a multithreaded program.
- 9) Gain additional experience in designing, analyzing, and implementing data structures and algorithms.

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.