



07283

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 #	352
College:	Science, Engineering and Technology	<input checked="" type="checkbox"/>	Undergraduate	Effective Date of Change:	
Department:	Computer Science	<input type="checkbox"/>	Graduate	Academic Year	06-07
Program:	Computer Science	CIP # 11.010104		(For Office Use Only)	
Type of Change	COURSE PROPOSALS				
Proposed:	Change in Credits				
Title Current:	Machine Structures and Programming			Course Designator and Number	Number of Credits
Title Proposed:	Machine Structures and Programming			CS 220	4
24-Char. Abbrev:	Machine Struct/Program			CS 220	3
				(if applicable)	

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

This course introduces students to assembly language programming and basic machine structures. Topics include number systems; basic central processing unit (CPU) organization, instruction formats, addressing modes and their use with a variety of data structures; and parameter passing techniques.

Pre: CS 110 and EE 106 F, S

Rationale or Justification for change:

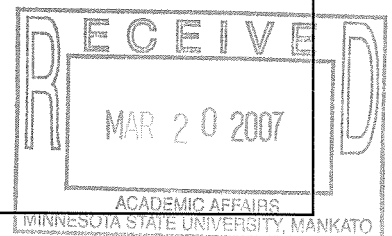
This course is to be divided into a 3-credit lecture and a 1-credit lab. The 1-credit lab will be separate so that Computer Science students can take CS 221 (a new course) and EE/CE students can take an appropriate laboratory course from the EE/CE curriculum.

*****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			
<p>For Writing Intensive Courses, attach a description of the kind and quantity of writing.</p> <p>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.</p> <p>Attach paper copies of the following:</p> <ol style="list-style-type: none"> 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: <input type="text" value="Lecture"/>	Course will be offered:
<input type="checkbox"/> Course is an elective.	Grading Format: <input type="checkbox"/> Grade <input type="checkbox"/> P/N	<input type="checkbox"/> Fall Semester
<input type="checkbox"/> Course is required for program	<input type="text"/>	<input type="checkbox"/> Spring Semester
<input type="checkbox"/> Pre- or Co-requisites:	<input type="text"/>	<input type="checkbox"/> Summer Session
<input type="checkbox"/> Other courses are being changed or eliminated. (Explain.) _____		
<input type="checkbox"/> 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:		
<ol style="list-style-type: none"> 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 _____)

Daniel J. Hoyle 2/28/07
Department Chair Date

Comments:

College Curriculum Committee

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

Karen C. Chou 3/9/07
Committee Chair Date

Comments:

College Dean

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

[Signature] 3/19/07
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] 4/18/07
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 _____)

David J. Hennery 4/20/07
Assistant Vice President Date

Comments:

Senior Vice President and Vice President for Academic Affairs

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

[Signature] 4/20/07
Sr. Vice President / Vice Pres. Academic Affairs Date

Comments:

CS 220: Machine Structures and Programming (3 credits)

Course Description:

This course will introduce students to assembly language programming and basic machine structures. Topics include number systems and their rules for arithmetic; basic central processing unit (CPU) organization, instruction formats, addressing modes and their use with a variety of data structures; and parameter passing techniques including the use of a stack frame.

3 lecture hours per week.

Prerequisites: CS 110 and EE 106

Proposed Text:

Introduction to Assembly Language Programming: For Pentium and RISC Processors, 2nd edition, by Sivarama Dandamudi, Springer, 2004.

Schedule of Topics:

1. Basic computer organization (~1 wk)
2. Overview of Assembly Language Instructions (~1-1.5 wks)
3. Procedures and the Stack (~2-2.5 wks)
4. Addressing Modes (~1.5-2 wks)
5. Arithmetic Flags and Instructions (~1.5-2 wks)
6. Selection and Iteration (~1.5-2 wks)
7. Logical and Bit Operations (~1.5-2 wks)
8. String Processing (~1.5-2 wks)
9. ASCII, BCD, and Floating-Point Arithmetic (~1.5-2 wks)

Student Outcomes.

Students who complete this course will be able to:

- 1) Describe the basic architecture of a modern microprocessor
- 2) Express numbers in the decimal, binary, and hexadecimal number systems
- 3) Describe the implementation of two's complement number representation on typical machines
- 4) Describe typical methods used to encode standard data types so that they may be stored and manipulated at the machine level.
- 5) Demonstrate methods of accessing information in machine memory using direct or indirect addressing schemes.
- 6) Describe how modern microprocessors interface with externally-connected hardware and I/O devices.
- 7) Be well acquainted with the stack (LIFO) data structure and use stack instructions and stack frames where appropriate at the machine level.
- 8) Demonstrate how to set up standard data structures (such as arrays) in computer memory and explain how these structures are accessed at the machine level.
- 9) Translate high-level programming languages (HLLs) and their source statements to corresponding machine language

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.