



Minnesota State University, Mankato  
Curriculum Proposal

0661

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):

College: Science, Engineering and Technology  Undergraduate  
 Department: Mechanical Engineering  Graduate  
 Program: Civil Engineering CIP # \_\_\_\_\_  
 Type of Change: PROGRAM PROPOSALS  
 Proposed: Change in Requirements-Course(s) Added

Proposal # 213 ✓  
 Effective Date of Change: \_\_\_\_\_  
 Academic Year 05-06  
 (For Office Use Only)

Course Designator and Number	Number of Credits

(if applicable)

Title Current: \_\_\_\_\_  
 Title Proposed: \_\_\_\_\_  
 24-Char. Abbrev: \_\_\_\_\_

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

Add CIVE 380 (3) - Environmental Engineering as required course  
 Drop EE 230 (3) - Circuit Analysis I as required course  
 Add EE 230 (3) - Circuit Analysis I to Approved Technical Elective list

*see attached revisions*

**Rationale or Justification for change:**

During the ABET visits of 2003 and 2005, both teams of evaluators recommended the Civil Engineering Program to include at least one course in the Environmental Engineering area to the disciplines of civil engineering currently available to the students. Environmental Engineering is one of the major disciplines in civil engineering. There was concern that dropping EE 230 may have adverse effects on the students' performance in the Fundamental of Engineering exam. Questions related to circuit are asked during the morning session and the topics are generally covered in Physics 222 at MSU.

**\*\*\*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.) <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		
N/A		

? 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\*\*\***

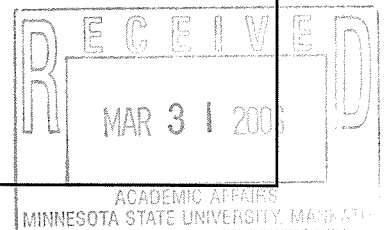
(Check all that apply):

Instructional Type: Lecture  
 Grading Format:  Grade  P/N  
 Course is an elective.  
 Course is required for program  
 Pre- or Co-requisites: \_\_\_\_\_  
 Other courses are being changed or eliminated. (Explain.) \_\_\_\_\_

Course will be offered:  
 Fall Semester  
 Spring Semester  
 Summer Session

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 \_\_\_\_\_)

Saeed Mooni 3/20/06  
Department Chair Date

Comments:

**College Curriculum Committee**

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

Ally Maloney 3-28-06  
Committee Chair Date

Comments:

**College Dean**

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

John E. Fong 3/28/06  
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 \_\_\_\_\_)

Mark Tomije 4/20/06  
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] 5/4/06  
Assistant Vice President Date

Comments:

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

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

[Signature] 5/14/06  
Sr. Vice President / Vice Pres. Academic Affairs Date

Comments:

## **Curriculum Revision Proposal Civil Engineering**

*Proposed changes:* DROP EE 230 – Circuit Analysis I (3 credits) as required course  
ADD CIVE 380 – Environmental Engineering (3 credits) as required course  
ADD EE 230 – Circuit Analysis I to approved technical elective list

*Rationale:* During the ABET (Accreditation Board for Engineering and Technology) accreditation visits of 2003 and 2005, both teams of evaluators recommended the Civil Engineering Program to include at least one course in the Environmental Engineering area to the disciplines of civil engineering currently available to the students. Environmental Engineering is one of the major disciplines in civil engineering.

There was concern that dropping EE 230 may have adverse effects on the students' performance in the Fundamental of Engineering exam. Questions related to circuit are asked during the morning session and the topics are generally covered in Physics 222 at MSU.

### *Other Supporting Information:*

- Survey of 10 schools, Rose Hulman, University of Minnesota, University of Wisconsin – Milwaukee, University of Wisconsin – Madison, University of Wisconsin – Platteville, North Dakota State University, South Dakota State University, California Polytechnic State University – San Luis Obispo, Iowa State University, and University of Tennessee – Knoxville, showed that 7 of them do not require a course similar to EE 230; 2 schools require an introduction to Electrical Engineering or Application of Electrical Engineering course; and 1 school gives a choice of a course from electrical engineering or chemical engineering department.
- Since mid to late 1990, many civil engineering programs in the country have examined the requirement of circuit in their curriculum. Many have removed the circuit course from their curriculum and tracked the effect of this deletion. There was no evidence indicating that the lack of circuit course would inversely impact the FE exam outcome.
- Since spring 2005, the Department of Mechanical & Civil Engineering has offered CIVE 380 as civil engineering electives. The enrollment was 15. This semester, there are 9 students enrolled. This elective course has the highest enrollment among all the civil engineering electives we have offered so far.

## CIVIL ENGINEERING BS

CURRENT REQUIREMENTS	PROPOSED REQUIREMENTS
<p><b>Required (Special General Education, 23 cr.):</b>            In the interest of making engineers fully aware of their social responsibilities and better able to consider related factors in the decision-making process, students pursuing the Bachelor of Science degree in Civil Engineering are required to acquire general education through courses in communication, humanities and social sciences.</p>	<p><b>Required (Special General Education, 23 cr.):</b>            NO CHANGES</p>
<p><b>Required Communication Courses (7 cr.):</b>            ENG 101                      Composition (4)            SPEE 102                   Public Speaking (3)                or SPEE 233 Public Speaking for Technical Professional                or ENG 271 Technical Communication (4)</p>	<p><b>Required Communication Courses (7 cr.):</b>            NO CHANGES</p>
<p><b>Required Humanities and Social Science Courses</b>            To satisfy this requirement, the courses selected must provide both breadth and depth and not be limited to a selection of unrelated introductory courses. Not all courses in humanities and social sciences are acceptable, i.e. skill developing courses are not acceptable. Courses should be chosen to simultaneously satisfy the university cultural diversity requirement. Each student should discuss with his/her civil engineering advisor on the selection of courses to meet this requirement. All students are urged to discuss this plan with their civil engineering advisors early in their academic career. An updated list of acceptable courses is posted in the department office.</p> <p>Specifically, the minimum requirements consist of (a) three credits of microeconomics or macroeconomics, (b) at least 6 credits in the humanities area, and (c) at least 6 credits in the social science area; again (a), (b), and (c) must total at least 16 credits.</p> <p>To provide the measure of depth to the courses of study, at least 3 credits at the 300-level or above must be included in the 16 credit requirement. At least one upper division course must follow a course in the same subject area.</p>	<p><b>Required Humanities and Social Science Courses</b>            NO CHANGES</p>

**Required for Major (Prerequisites, 62-63 cr.):***Mathematics (16 cr.):*

- MATH 121 Calculus I (4)
- MATH 122 Calculus II (4)
- MATH 223 Calculus III (4)
- MATH 321 Differential Equations (4)

*Basic Science (19-20 cr.):*

- CHEM 201 General Chemistry I (5)
- PHYS 221 General Physics I (5)
- PHYS 222 General Physics II (5)

Science Elective from approved list (4-5)

*Engineering Science (27 cr.):*

- CIVE 101 Intro. to Engrg. - Civil (2)
- CIVE 145 CAD for Civil Engrg. (2)
- EE 230 Circuit I (3)
- ME 206 Material Science (3)
- ME/CIVE 212 Statics (3)
- ME/CIVE 214 Dynamics (3)
- ME/CIVE 223 Mechanics of Materials (3)
- ME 291 Engineering Analysis (3)
- ME 299 Thermo Analysis (2)
- ME/CIVE 321 Fluid Mechanics (3)

**Required for Major (Prerequisites, 59-60 cr.):***Mathematics (16 cr.):*

- MATH 121 Calculus I (4)
- MATH 122 Calculus II (4)
- MATH 223 Calculus III (4)
- MATH 321 Differential Equations (4)

*Basic Science (19-20 cr.):*

- CHEM 201 General Chemistry I (5)
- PHYS 221 General Physics I (5)
- PHYS 222 General Physics II (5)

Science Elective from approved list (4-5)

*Engineering Science (24 cr.):*

- CIVE 101 Intro. to Engrg.-Civil (2)
- CIVE 145 CAD for Civil Engrg. (2)
- ~~EE 230~~ ~~Circuit I (3)~~
- ME 206 Material Science (3)
- ME/CIVE 212 Statics (3)
- ME/CIVE 214 Dynamics (3)
- ME/CIVE 223 Mechanics of Materials (3)
- ME 291 Engineering Analysis (3)
- ME 299 Thermo Analysis (2)
- ME/CIVE 321 Fluid Mechanics (3)

**Required for Major (42-43 cr.):**

- CIVE 201 Intro. To Problem Solving & Civil Engineering Design (2)
- CIVE 271 Civil Engrg. Measurements (2)
- CIVE 340 Structural Analysis (3)
- CIVE 350 Hydraulics & Hydrology (4)
- CIVE 360 Geotechnical Engineering (4)
- CIVE 370 Transportation Engineering (4)
- CIVE 401 Civil Engineering Design I (1)
- CIVE 402 Civil Engineering Design II (2)
- CIVE 435 Civil Engrg. Experimentation I (2)
- CIVE 436 Civil Engrg. Experimentation II (2)
- CIVE 446 or CIVE 448 Structural Design Elective (3)
- CIVE electives (7-10 cr.)
- Technical Electives from approved list (2-4 cr.)

**Required for Major (45-46 cr.):**

- CIVE 201 Intro. To Problem Solving & Civil Engineering Design (2)
- CIVE 271 Civil Engrg. Measurements (2)
- CIVE 340 Structural Analysis (3)
- CIVE 350 Hydraulics & Hydrology (4)
- CIVE 360 Geotechnical Engineering (4)
- CIVE 370 Transportation Engineering (4)
- CIVE 380 Environmental Engineering (3)**
- CIVE 401 Civil Engineering Design I (2)
- CIVE 402 Civil Engineering Design II (3)
- CIVE 435 Civil Engrg. Experimentation I (2)
- CIVE 436 Civil Engrg. Experimentation II (2)
- CIVE 446 or CIVE 448 Structural Design Elective (3)
- CIVE electives (7-10 cr.)
- Technical Electives from approved list (2-4 cr.)

**Required Minor: None.****Required Minor: None.**

<p><b>Civil, Science and Technical Electives</b>  A Civil Engineering student is required to choose a minimum of 16 credits in CIVE, science and technical electives: science elective (4-5 cr.), technical electives (2-4 cr.), and CIVE electives (7-10 cr.). The science and technical electives are recommended to be taken after the student has identified his/her area of interest in consultation with his/her academic advisor. Science elective must be selected from the approved list (shown below) which would complement the student's area of interest in civil engineering. Technical electives must be selected from the approved list (shown below) which would enhance the student's experience in civil engineering.</p>	<p><b>Civil, Science and Technical Electives</b>  NO CHANGES</p>
<p><b>Approved Science Electives:</b>  BIO 105      General Biology I (5)  CHEM 202    General Chemistry II (5)  ENVR 101    Perspective in Environ. Science (4)  GEOL 121    Physical Geology (4)</p>	<p><b>Approved Science Electives:</b>  NO CHANGES</p>
<p><b>Approved Technical Electives:</b>  All CIVE courses except required courses  All EE courses 300 levels and above and EE 250 (Engineering Economics)   All ME courses 300 levels and above  BIO 270      Microbiology (4)  BLAW 450    Contracts, Sales &amp; Prof. Resp. (3)  BLAW 453    Int'l Legal Env. of Business (3)  BLAW 474    Env. Regulation &amp; Land Use (3)  BLAW 476    Construction and Design Law (3)  CHEM 305    Analytical Chemistry (4)  CHEM 407    Water Chemistry (3)  ENVR 440    Environmental Regulations (3)  ENVR 450    Environ. Pollution Control (3)  ENVR 460    Analysis of Pollutants (3)  GEOL 270    Structural Geology (4)  GEOL 351    Engineering Geology (2)  GEOL 450    Hydrogeology (3)</p>	<p><b>Approved Technical Electives:</b>  All CIVE courses except required courses  All EE courses 300 levels and above, <b><u>EE 230 (Circuit Analysis I)</u></b>, and EE 250 (Engineering Economics)   All ME courses 300 levels and above  BIO 270      Microbiology (4)  BLAW 450    Contracts, Sales &amp; Prof. Resp. (3)  BLAW 453    Int'l Legal Env. of Business (3)  BLAW 474    Env. Regulation &amp; Land Use (3)  BLAW 476    Construction and Design Law (3)  CHEM 305    Analytical Chemistry (4)  CHEM 407    Water Chemistry (3)  ENVR 440    Environmental Regulations (3)  ENVR 450    Environ. Pollution Control (3)  ENVR 460    Analysis of Pollutants (3)  GEOL 270    Structural Geology (4)  GEOL 351    Engineering Geology (2)  GEOL 450    Hydrogeology (3)</p>

**MINNESOTA STATE UNIVERSITY, MANKATO**  
**Proposed CIVIL ENGINEERING PROGRAM (3/2006)**

**Freshman FALL**

CHEM 201, Gen. Chemistry I	5
MATH 121, Calculus I	4
CIVE 101, Intro. To Engineering	2
ENG 101, English Comp	4
	<b>15</b>

**Freshman SPRING**

PHYS 221, General Physics I	5
MATH 122, Calculus II	4
SPEECH 233 <sup>(1)</sup>	3
CIVE 201, Intro. To Prob. Solv. & CIVE design	2
CIVE 145, CAD for Civil Engineering	2
	<b>16</b>

**Sophomore FALL**

PHYS 222, General Physics II	5
MATH 321, Differential Equations	4
ME/CIVE 212, Statics	3
CIVE 271, Civil Engineering Measurements	2
H/SS Elective	3
	<b>17</b>

**Sophomore SPRING**

MATH 223, Calculus III	4
ME/CIVE 214, Dynamics	3
ME/CIVE 223, Mechanics of Materials	3
ME 299, Thermal Analysis <sup>(6)</sup>	2
H/SS Elective	6
	<b>18</b>

**Junior FALL**

ME 206, Material Science	3
ME 291 Engineering Analysis	3
ME/CIVE 321, Fluid Mechanics	3
CIVE 340, Structural Analysis	3
CIVE 370, Transportation Engineering	4
EE-230, Circuit I	3
	<b>16</b>

**Junior SPRING**

CIVE 360, Geotechnical Engineering	4
CIVE 350, Hydraulics & Hydrology	4
Science Elective <sup>(2,4,5)</sup>	4-5
Structural Design Elective (CIVE 446 or CIVE 448)	3
	<b>15-16</b>

**Senior FALL**

<u>CIVE 380 Environmental Engineering</u>	<u>3</u>
CIVE 401, Civil Engineering Design I	2
CIVE 435, Civil Engrg. Experimentation I	2
CIVE Elective <sup>(4)</sup>	3
Technical Elective <sup>(3,4,5)</sup>	2-4
H/SS Elective	4
	<b>16-18</b>

**Senior SPRING**

CIVE 402, Civil Engineering Design II	3
CIVE 436, Civil Engrg. Experimentation II	2
CIVE Elective <sup>(4)</sup>	1-4
CIVE Elective <sup>(4)</sup>	3
H/SS Elective	3
	<b>12-15</b>

**Total Credits = 128**

<sup>(1)</sup> Students may, with permission from their advisor, elect to substitute Technical Communications, ENG 271, or SPEECH 102.  
<sup>(2)</sup> Science elective must be selected from the approved list which would complement the student's area of interest in civil engineering.  
<sup>(3)</sup> Technical elective must be selected from the approved list which would enhance the student's experience in civil engineering.  
<sup>(4)</sup> The sum of Science, Technical, and CIVE electives must be a minimum of 16 credits: science elective (4-5credits), technical electives (2-4 credits), and CIVE electives (7-10 credits).  
<sup>(5)</sup> These courses may be taken earlier in the program in consultation with the student's advisor.  
<sup>(6)</sup> ME 299 may be substituted by ME 241  
H/SS courses must be chosen correctly to meet program and the university cultural diversity requirements. Courses should be chosen in consultation with a CIVE academic advisor.

Department of Mechanical & Civil Engineering  
Minutes of Meeting  
March 9, 2006

The meeting began at 10:00 a.m. Present were: J. Wilde, V. Nikolic, S. Moaveni, T. Hause, V. Browne, J. Park, C. Johnson, A. Budge, K. Chou, P. Tebbe. The meeting covered agenda items from an announcement earlier by S. Moaveni.

0. The minutes of February 2, 2006 were approved for issue.
1. Advising Sheets: The advising schedule sheets were distributed to department faculty by S. Moaveni. They begin March 22.
2. Updates were given on the ASME Student Conference and the ASCE Steel Bridge Competition. J. Park reported that 11 students went to Missouri-Rolla for the ASME Competition. Among other awards, the MSU Student Chapter got the Ingersoll-Rand Award, which covers a number of activities. They placed 3<sup>rd</sup> out of 40 teams in this category. K. Chou reported that 13 students and faculty attended the ASCE Steel Bridge Competition. MSU placed 6<sup>th</sup> overall out of nine schools.
3. Dr. Frey went over the plans for an upper-level above the Structures Lab and existing computer room. He requested feedback on the plan the week after spring break. A committee was formed, including K. Chou, J. Wilde, A. Budge, V. Browne, and C. Johnson to look over the plan and give feedback. J. Wilde will head the committee.
4. Civil Engineering Program Re-design and Composite Materials Course Proposals: K. Chou gave a handout regarding the proposal to drop the EE 230 as a required course and change it to an elective and to add CIVE 380, Environmental Engineering as a required course. The department approved.

J. Park handed out information regarding a proposed ME 422/522, Mechanics of Composite Materials course. This included course content, program outcomes, catalog description, etc. The department approved this course.

5. Faculty Search Update: P. Tebbe reported that he has 38 applications so far for the fixed-term position. The applications will be reviewed starting March 20.
6. Graduate Brochure: P. Tebbe had provided to department members via email the brochure. He asked that each department member double-check the information regarding themselves and, make corrections if needed.
7. Department Chair Nomination Procedure: V. Browne handed out a proposed procedure for the department to follow in electing a new department chair. This procedure included target dates for nominations and election this spring. The department approved the procedure for this election as well as for a standing department procedure.
8. Repeat Course Policy and Academic Advising: K. Chou recommended that the department accept the new university repeat course policy if it is approved. It will go into affect August 2007 and allows three repeats of any course. The department agreed to this.

K. Chou also raised the issue of academic advising for students who have been accepted in to the program, but are then placed on academic probation. S. Moaveni requested K. Chou prepare a statement on this item based on her proposal.

9. Other: There were no other items.

The meeting was adjourned at 10:50 a.m.

Respectfully submitted,

Vance Browne

**Chou, Karen C**

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**From:** Moaveni, Saeed  
**Sent:** Tuesday, March 21, 2006 7:39 AM  
**To:** Chou, Karen C  
**Subject:** FW: EE230

Karen:

For your records.

Thanks,  
Saeed

-----Original Message-----

**From:** Hudson, William B  
**Sent:** Tuesday, March 21, 2006 7:17 AM  
**To:** Moaveni, Saeed  
**Cc:** <ALL> Elec & Comp Engineering & Technology; Frey, John E  
**Subject:** RE: EE230

Saeed,

The ECET department is very supportive of your evolving your departmental programs as your department and your constituents feel is appropriate. In my opinion we need to look at service courses generally in engineering – in many cases I feel that the foundational courses required for department majors are not the best course for individuals outside of the major to take.

Bill

-----Original Message-----

**From:** Moaveni, Saeed  
**Sent:** Friday, March 10, 2006 2:21 PM  
**To:** Hudson, William B  
**Cc:** Chou, Karen C; Moaveni, Saeed  
**Subject:** FW: EE230

Bill:

The Civil Engineering Program is proposing to drop EE 230 from the list of their required courses. Please see the attached Curriculum revision proposal for EE 230 and let Karen or I know if the proposed change meets your approval.

Thank you.  
Saeed

-----Original Message-----

**From:** Chou, Karen C  
**Sent:** Friday, March 10, 2006 7:19 AM  
**To:** Moaveni, Saeed  
**Subject:** EE230

Hi Saeed,

I was asked to remind you to send an email to Bill Hudson regarding CIVE program's proposal to drop EE 230 as required course. The attached file is stated the rationale or the proposed change.

Thanks,  
Karen