FAIRMONT STATE UNIVERSITY™

Office of the Provost
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MEMORANDUM

TO: Faculty Senate

FROM: Susan Ross

DATE: 2/1/2022

SUBJECT: Curriculum Proposal # 21-22-29

This proposal will address several changes to the CIVL ET curriculum as follows: remove PHYS 1, remove capstone experience from CIVL 4400 and reduce by 1-credit to a 3-credit course, Add a senior capstone course- 3-credit- CIVL 4480, change CIVL 4470 from a 3-credit to a 4-credit course to reflect added content, remove 1 credit from CIVL 2210 based on MATH 1510 modification, remove CIVL 2210 from core curriculum, Switch from MATH 1510 to MATH 1410 requirement.

cc: Dianna Phillips
Lori Schoonmaker
Stephanie Gabor
Laura Ransom
James Vassil

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MEMORANDUM

TO: Curriculum Committee (Approved at the 1/25/22 meeting)

FROM: Susan Ross

DATE: 1/18/2022

SUBJECT: Curriculum Proposal #21-22-29

This proposal will address several changes to the CIVL ET curriculum as follows: remove PHYS 1, remove capstone experience from CIVL 4400 and reduce by 1-credit to a 3-credit course, Add a senior capstone course- 3-credit- CIVL 4480, change CIVL 4470 from a 3-credit to a 4-credit course to reflect added content, remove 1 credit from CIVL 2210 based on MATH 1510 modification, remove CIVL 2210 from core curriculum, Switch from MATH 1510 to MATH 1410 requirement.

cc: Dianna Phillips
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CURRICULUM PROPOSAL (Submit one electronic copy to the Executive Director of Academic Programs by the second Tuesday of the month.)

Proposal Number:	**#21-22-29**
School/Department/Program:	**SCI-TECH/ Department of Technology/ Civil Engineering Technology**
Preparer/Contact Person:	**James Vassil**
Title of Degree Program:	**Civil Engineering Technology**
Telephone Extension:	**4794**
Date Originally Submitted:	
Revision (Indicate date and label it Revision #1, #2, etc.):	**12/7/2021**
Implementation Date Requested:	**Fall 2022**

I. **PROPOSAL ABSTRACT**. Write a brief abstract, not exceeding 100 words, which describes the proposed changes.

This proposal will address several changes to the CIVL ET curriculum as follows: remove PHYS 1, remove capstone experience from CIVL 4400 and reduce by 1-credit to a 3-credit course, Add a senior capstone course- 3-credit- CIVL 4480, change CIVL 4470 from a 3-credit to a 4-credit course to reflect added content, remove 1 credit from CIVL 2210 based on MATH 1510 modification, remove CIVL 2210 from core curriculum, Switch from MATH 1510 to MATH 1410 requirement.

II. **DESCRIPTION OF THE PROPOSAL**. Provide a response for each letter, A-G, and for each Roman Numeral II–V. If any section does not apply to your proposal, reply N/A.

A. Deletion of course(s) or credit(s) from program(s) Total hours deleted: ____9_____
MATH 1510- 3hrs
PHYS 1101- 4hrs
CIVL 2210- remove 1 credit
CIVL 4400- remove 1 credit

B. Addition of course(s) or credit(s) from program(s) Total hours added: _____9_____
CIVL 4480- new 3-credit course
CIVL 4470- Add 1 credit
MATH 1410- New 4-credit course
Free elective- add 1 credit

C. Provision for interchangeable use of course(s) with program(s)

D. **Course Description Revision**: Include, as an appendix, a revised course description, written in complete sentences, suitable for use in the university catalog.
See appendix B

E. **Course Changes:** Identify changes to existing courses such as changes to title, course number, learning outcomes, and elective or required status.

F. **Create a New Course**(s) information (if applicable): For each new course complete the following:

1. **Course Catalog Information:**

a. Course prefix (subject area) and number:	CIVL 4480
b. Course title:	Civil Engineering Projects and Applications
c. Course term(s) (e.g., Fall, Summer only):	Spring
d. Credit hours/Variable credit:	3
e. Repeatability (number of repeat credit hours):	3
f. **Prerequisite/Corequisites/Restrictions/Cross-listings:** If none, simply indicate with N/A (Not Applicable):	CIVL 3340, ENGL 1103, CIVL 4410
g. ***Co-requisite*** (include subject prefix and course number):	
h. ***Cross-listings*** (e.g., PSYC 2230 and SOCY 2230):	
i. **Grade Type:** Indicate whether students will be assigned a standard A-F final grade or Credit/No Credit (CR/NCF) grade:	A-F
j. Required Course or Elective Course:	Required
k. Course Fees (Indicate amount):	

2. **New Course Supplemental/Supporting Documentation**:

   a. **Course Catalog Description**: Include, as an appendix, a course catalog description written in complete sentences that will be published in the university catalog. The word length for a catalog description should be less than 80 words. Do not include any prerequisites, corequisites or any other restrictions in the description.

      Appendix C

   b. **Course Learning Outcomes (CLO's):** These should be stated in terms of what new knowledge and/or skills students should be able to demonstrate upon successful completion of the course. Present course learning outcomes as a bulleted list predicated with "Upon successful completion of this course, students should be able to…"

   c. **Course Outline:** Attach a course outline consisting of at least two levels.

d. **Assessments:** Describe generally how student's achievement of the course learning outcomes will be assessed

3. **Shared Course**: If this is a shared course, attach a memo from the Deans of the affected Schools explaining the rationale for course being shared.

G. Attach an itemized summary of the present program(s) affected, if any, and of the proposed change(s).

Describe how this proposal affects the hours needed to complete this program. Specifically, what is the net gain or loss in hours? Use the format for Current and Proposed Programs in Appendix A.

No gain or loss in overall hours for Civil ET Program

III. RATIONALE FOR THE PROPOSAL

A. **Quantitative Assessment**: Indicate the types of assessment data, i.e., surveys, interviews, capstone courses, projects, licensure exams, nationally-normed tests, locally developed measurements, accreditation reports, etc., that were collected and analyzed to determine that curricular changes were warranted. Quantitative data is preferred.

The Civil ET program is ETAC of ABET accredited. Program outcomes are assessed on a two-year cycle. Results of assessment data show a need for more attention in the capstone course where three of the five program outcomes are measured. The curricular change will allow more time and oversight during the capstone experience. The removal of Physics I requirements is based on the advice of the Industrial Advisory committee, which noted Physics is in the junior semester and does not add value to the student experience at that level. The addition of one credit hour to CIVL 4470 was based on assessment data from the course revealing students need more time and attention to obtain the course outcomes. The change in MATH/CIVL 2210 is a result of a lack of opportunity in the MATH sequence that affects all technology majors, there is no MATH with support, this change will add the support to all CIVL majors taking technical mathematics.

B. **Qualitative Assessment**: Based upon the assessment data above, indicate why a curricular change is justified. Indicate the expected results of the change. Be sure to include an estimate of the increased cost, or reduction in cost of implementation. FOR EXAMPLE: Will new faculty, facilities, equipment, or library materials be required?

Assessment data will be collected and analyzed on the two-year cycle adopted by the program. The changes will allow continuous improvement actions to target the needed performances lacking within any outcome. No additional resources are needed for these curricular changes.

IV. APPROVAL

Should this proposal affect any course or program in another school, a memo must be sent to the Dean of each school impacted and a copy of the memo(s) must be included with this proposal. In addition, the Deans of the affected schools must sign below to indicate their notification of this proposal.

By signing here, you are indicating your college's/school's notification of this proposal.

College/School	Dean	Signature

Science and Technology	**Steven Roof**	Steven Roof

V. Should this proposal affect any course to be added or deleted from the general studies requirements, a memo from the chair of the General Studies Committee indicating approval of the change must be included with this proposal.

VI. ADDITIONAL COMMENTS.

APPENDIX A
B.S. Degree in
Current Program

Degree Requirements

Core Curriculum Courses For students in this major, list the courses satisfy both core curriculum and major requirements.		
Course Prefix & Number	**Course Name**	**Credit Hours**
CHEM 1101	GENERAL CHEMESTRY	4
MATH 1510	APPLIED TECH MATH I	3
ENGL 1101	ENGLISH 1	3
SOAR 1100	FIRST YEAR EXPERIANCE	1
MANF 2205	ENGINEERING ECONOMICS	3
COMM 2202	COMMUNICATION WORLD AT WORK	3
ENGL 1103	TECHNICAL REPORT WRITING	3
CIVL 2210	LIGHT CONSTRUCTION	4

Pre-Major Courses (XX Credit Hours)		
Course Prefix & Number	**Course Name**	**Credit Hours**
TECH 1108	ENGINEERING GRAPHICS	3
MATH 1520	TECHNICAL MATH II	3
MECH 1100	STATICS	3
TECH 2290	ENGINEERING ANALYSIS I	4
MECH 2200	STRENGTH OF MATERIALS	4
TECH 3300	ENGINEERING ANALYSIS II	4
PHYS 1101	PHYSICS I	4
CHEM 1102	GENERAL CHEMISTRY II	4
MECH 3320	DYNAMICS	3

Required Major Courses (XX Credit Hours)		
Course Prefix & Number	**Course Name**	**Credit Hours**
CIVL 2200	INTRO TO SURVEYING	3
CIVL 2220	CONSTRUCTION MATERIALS	4
CIVL 2230	CONSTRUCTION ESTIMATING	3
CIVL 2240	LAND & ROUTE SURVEYING	3
CIVL 2275	CIVL ENGR GRAPHICS	3
CIVL 2280	ENVIRONMENTAL ENGR. TECH.	3
CIVL 2290	INTRO TO STRUCTURES	3
CIVL 3305	HYDRAULICS & HYDROLOGY	3
CIVL 3340	SOIL MECHANICS	4
CIVL 4400	HWY DESIGN/TRANSPORTATION	4
CIVL 4410	ADV. STRUCTURAL ANALYSIS	3
CIVL 4420	CONST. PLANNING & ADMIN	3
CIVL 4440	STRUCTURAL DESIGN	3
CIVL 4460	ENVIRONMENTAL ENGR. TECH. II	3

CIVL 4470	ADV. SOILS/FOUNDATIONS	3

Major Elective Courses (XX Credit Hours) – IF APPLICABLE [Electives are selected from a specific major or program]		
Course Prefix & Number	**Course Name**	**Credit Hours**
TECH ELEC	Advisor approved technical elective	3
FREE ELECTIVE		2

Total Core Curriculum Hours	**32 (Minimum 30)**
Total Pre-Major	**32**
Total Required Major Courses	**48**
Total Electives (If applicable)	**3**
Total Free Electives	**2**
TOTAL CREDIT HOURS	**120**

APPENDIX A
B.S. Degree in Civil Engineering Technology
Proposed Program

Degree Requirements

Core Curriculum Courses For students in this major, list the courses satisfy both core curriculum and major requirements.		
Course Prefix & Number	**Course Name**	**Credit Hours**
CHEM 1101	GENERAL CHEMESTRY	4
MATH 1410	APPLIED TECHNICAL MATH I	4
ENGL 1101	ENGLISH 1	3
SOAR 1100	FIRST YEAR EXPERIENCE	1
MANF 2205	ENGINEERING ECONOMICS	3
COMM 2202	COMMUNICATION WORLD AT WORK	3
ENGL 1103	TECHNICAL REPORT WRITING	3
Core Curr: Humanities		3
Core Curr: Fine Art		3
Core Curr: Citizenship		3
Core Curr: Global/tech/fitness		2-3

Pre-Major Courses (XX Credit Hours)		
Course Prefix & Number	**Course Name**	**Credit Hours**
TECH 1108	ENGINEERING GRAPHICS	3
MATH 1520	APPLIED TECHNICAL MATH II	3
MECH 1100	STATICS	3
TECH 2290	ENGINEERING ANALYSIS I	4
MECH 2200	STRENGTH OF MATERIALS	4
TECH 3300	ENGINEERING ANALYSIS II	4
CHEM 1102	GENERAL CHEMISTRY II	4
MECH 3320	DYNAMICS	3

Required Major Courses (XX Credit Hours)		
Course Prefix & Number	**Course Name**	**Credit Hours**
CIVL 2200	INTRO TO SURVEYING	3
CIVL 2210	LIGHT CONSTRUCTION	3
CIVL 2220	CONSTRUCTION MATERIALS	4
CIVL 2230	CONSTRUCTION ESTIMATING	3
CIVL 2240	LAND & ROUTE SURVEYING	3
CIVL 2275	CIVL ENGR GRAPHICS	3
CIVL 2280	ENVIRONMENTAL ENGR. TECH.	3
CIVL 2290	INTRO TO STRUCTURES	3
CIVL 3305	HYDRAULICS & HYDROLOGY	3

CIVL 3340	SOIL MECHANICS	4
CIVL 4400	HWY DESIGN/TRANSPORTATION	3
CIVL 4410	ADV. STRUCTURAL ANALYSIS	3
CIVL 4420	CONST. PLANNING & ADMIN	3
CIVL 4440	STRUCTURAL DESIGN	3
CIVL 4460	ENVIRONMENTAL ENGR. TECH. II	3
CIVL 4470	ADV. SOILS/FOUNDATIONS	4
CIVL 4480	CIVL ENG PROJECTS AND APPLICATIONS	3

Major Elective Courses (XX Credit Hours) – IF APPLICABLE
[Electives are selected from a specific major or program]

Course Prefix & Number	**Course Name**	**Credit Hours**
Technical Elective	Advisor approved technical elective	3
Free elective		3

Total Core Curriculum Hours	**32-33 (Minimum 30)**
Total Pre-Major	**28**
Total Required Major Courses	**54**
Total Electives (If applicable)	**3**
Total Free Electives	**2-3**
TOTAL CREDIT HOURS	**120**

APPENDIX B
Course Description revision

CIVL 2210 Light Construction, Credit Hours 3
Students will be instructed in practices utilized in the erection of residential and industrial buildings, with technical information involving problems from the ground to roof. PR: None

CIVL 4400 Highway Design and Transportation, Credit hours 3
This course addresses basic transportation theory and design, traffic flow, capacity analysis, level of service, flexible and rigid pavement design, geometric design, and transportation planning models. Restrictions: Baccalaureate majors only. PR: CIVL 3340

CIVL 4470 Advanced Soil Mechanics and Foundation Design..... 4 hrs.
This course is a continuation of CIVL 3340. It includes shear strength analyses, laboratory and field test methods and their use in design, an introduction to shallow and deep foundations, bearing capacity and settlement. The study of earth pressures for use in design of retaining walls, sheet piles, excavating and bracing is presented. An introduction to slope stability analysis is reinforced with parametric studies and forensic analyses are pursued with case histories. PR: CIVL 3340. Baccalaureate majors only.

New course

CIVL 4480 – CIVIL ENGINEERING PROJECTS & APPLICATIONS

Course Description

This course is designed to serve as a capstone course for Civil Engineering Technology majors. Students are required to successfully complete an approved senior project in the field of Civil Engineering Technology. This course requires successful student participation in presentations and professional written communications along with teamwork and project management.
(PR: ENG 1103, CIVL 4470, CIVL 4410 Baccalaureate majors only)

Course Outline

1. Project Background
   a. Practical ethics
      i. Deciding morality
      ii. Responsibilities in engineering
   b. Risk and liability in engineering
   c. Health, safety, and welfare considerations
2. Project Analysis
   a. General principles and responsibilities
   b. Report submission criteria
   c. Legal aspects of engineering projects
      i. negligence
      ii. Accuracy of solutions and reports
   d. Designing economical solutions

3. Professional Submissions
   a. Professional report submission
   b. Professional presentation submission
   c. Working with a team and practicing teamwork in a business atmosphere

Course Outcomes and Assessment

Outcome	**Direct Assessment**	**Satisfactory Performance Standard**
Demonstrate ability to produce factually correct written content that is supported with evidence.	Project report - Rubric	A class average of 100% or more.
Demonstrate ability to create an effective oral presentation	Project report and presentation - Rubric	A class average of 90% or more on associated questions.
Interprets solutions to a broadly defined problem	Project, Group Work, and Presentation - Rubric	A class average of 80% or more.
Demonstrate the ability to function effectively as a member as well as a leader on a technical team.	Teams participation and evaluations - Rubric	A class average of 90% or more.