FINAL FACULTY SENATE APPROVAL ON MARCH 20, 2018

MEMORANDUM

TO: Faculty Senate

FROM: Jack Kirby

DATE: April 23, 2018

SUBJECT: Curriculum Proposal #17-18-15 REV #1

Civil Engineering Technology - BS

On March 20, 2018, Faculty Senate approved this proposal for both first and second reading with minor revisions requested. Those revisions were submitted on April 20, 2018. This is the final proposal.

Dr. Christina Lavorata
Dr. Don Trisel
Dr. James Vassil
Dr. Deanna Shields
Mr. Michael Waide
Ms. Laura Ransom
Ms. Cheri Gonzalez
Ms. Lori Schoonmaker

FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Faculty Senate

FROM: Jack Kirby

DATE: February 27, 2018

SUBJECT: Curriculum Proposal #17-18-15

Civil Engineering Technology - BS

I recommend approval of the attached Curriculum Proposal 17-18-15. This proposal seeks to change English course requirements, modify curriculum map, replace a general studies course, and add pre-requisites.

Dr. Christina Lavorata
Dr. Don Trisel
Dr. James Vassil
Dr. Deanna Shields
Mr. Brian Floyd
Ms. Laura Ransom
Ms. Cheri Gonzalez

FAIRMONT STATE UNIVERSITY

MEMORANDUM

TO: Curriculum Committee

FROM: Jack Kirby JRK

DATE: November 10, 2017

SUBJECT: Curriculum Proposal #17-18-15

Civil Engineering Technology - BS

I recommend approval of the attached Curriculum Proposal 17-18-15. This proposal seeks to change English course requirements, modify curriculum map, replace a general studies course, and add pre-requisites.

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PREPARING CURRICULUM PROPOSALS

INSTRUCTIONS

Draft your proposal in accordance with the guidelines below and the format shown on the following pages. Should any item under the several headings not pertain to your proposal, write N/A. **Number the second and subsequent pages of your proposal.**

Supply the preliminary information about the proposal as indicated below:

PROPOSAL NUMBER: Leave this space blank. A number will be assigned to the proposal by the Associate Provost.

SCHOOL: Enter the name of the College or School (e.g., *Liberal Arts*), Department (e.g., Language and Literature), and Program (e.g., English).

PREPARER/CONTACT PERSON: Enter the name of the person who prepared the proposal and his/her telephone extension number.

COPIES OF MEMOS SENT TO AFFECTED DEPARTMENTS: Attach these to the back of your proposal.

LETTERS OF SUPPORT FROM DEANS OF AFFECTED DEPARTMENTS: If the Curriculum Committee requests these letters, attach them to the back of your proposal.

DATE SUBMITTED: The Curriculum Committee meets on the fourth Tuesday of each month. **Proposals are due in the Office of the Associate Provost on or before the second Tuesday of the month.**

REVISION SUBMISSION DATE: If changes are required to the original proposal, enter the date the proposal was resubmitted.

IMPLEMENTATION DATE REQUESTED: Enter the first day of the semester (or summer term) and year in which the proposed curriculum change(s) would take effect.

CURRICULUM PROPOSAL (Submit one hard copy and an electronic copy to the Associate Provost by the second Tuesday of the month.)

Proposal Number:	17-18-15 REV #1
School/Department/Program:	College of Science and Technology, School of Technology, Civil Engineering Technology
Preparer/Contact Person:	James Vassil
Telephone Extension:	4794
Date Originally Submitted:	
Revision (Indicate date and label it Revision #1, #2, etc.):	
Implementation Date Requested:	August 2018

I. **PROPOSAL**. Write a brief abstract, not exceeding 100 words, which describes the overall content of the proposal.

Change English course requirements, modify curriculum map, replace general studies course, and add pre-requisites.

II. **DESCRIPTION OF THE PROPOSAL**. Provide a response for each letter, A-H, 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)
ENGL 1102
BSBA 2200

Total hours deleted. 6

B. Addition of course(s) or credit(s) from program(s)

ENGL 1103
MANF 2205

Total hours added. 6

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

N/A

D. Revision of course content. Include, as an appendix, a revised course description, written in complete sentences, suitable for use in the university catalog.

E. Other changes to existing courses such as changes to title, course number, and elective or required status.

F. Creation of new course(s). For each new course

1. Designate the course number, title, units of credit, prerequisites (if any), ownership (FSU or shared) and specify its status as an elective or required course. If you are creating a shared course, attach a memo from the Deans of the affected Schools explaining the rationale for the course being shared.

2. Include, as an appendix, a course description, written in complete sentences, suitable for use in the college catalog.

3. Include, as an appendix, a detailed course outline consisting of at least two levels.

4. In order to meet the requirements as outlined in Goal One of the Strategic Plan, please include Outcome Competencies and Methods of Assessment as an appendix. Examples are available upon request from the Chair of the Curriculum Committee.

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.

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 accredited by ETAC of ABET. The requirements of ABET assessment, as determined by faculty and program constituents, warrant minor changes to the curriculum, most notably revised curriculum mapping. Other changes were a result of course deletion from university general studies.

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?

The rationale for switching ENGL 1102 to ENGL 1103 is to better prepare CET students for technical course work, continuing education, and requirements of Professional Engineers. ENGL 1103 provides technical writing skills needed by Technology majors while also satisfying University English course requirements.

BSBA, Economics, was removed from Fairmont State University course offerings. The Civil ET program, with the approval from constituencies, suggests students take MANF 2205, Engineering Economy, or any course in attribute 14. This provides students with a suggested course, but does not ultimately limit the choice.

The change in curriculum structure can be found in the Appendix. COMM 2202 was placed in the second semester so students can gain knowledge, it can be reinforced in the third semester and beyond for assessment measurement. Other changes include modifying the pre-requisites desired to increase students success in the course assignments and projects. ENGL 1103 will be added as a pre-requisite for CIVL 2240 and CIVL4400.

IV. 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**

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.

New model schedule provided as Appendix B shows all changes highlighted, including prerequisite changes.

APPENDIX A

B.S. Degree in Civil Engineering Technology
Current Program

Required Major Courses		HRS
CIVL 1100	Introduction to Civil Engineering Technology	1
CIVL 2200	Intro to Surveying	3
CIVL 2210	Light Construction	4
CIVL 2220	Construction Materials	4
CIVL 2230	Construction Estimating	3
CIVL 2240	Land and Route Surveying	3
CIVL 2275	Civil Engineering Graphics	3
CIVL 2280	Environmental Engineering Technology I	3
CIVL 2290	Introduction to Structures	3
CIVL 3305	Hydraulics and Hydrology	3
CIVL 3340	Soil Mechanics	4
CIVL 4400	Highway Design	4
CIVL 4410	Advanced Structural Analysis	3
CIVL 4420	Construction Planning and Administration	3
CIVL 4440	Structural Design	3
CIVL 4460	Environmental Engineering Technology II	3
CIVL 4470	Advanced Soils and Foundations	3
TECH 1108	Engineering Graphics	3
MATH 1101	Applied Technical Math I	X
MATH 1102	Applied Technical Math II	3
TECH 2290	Engineering Analysis I	4
TECH 3300	Engineering Analysis II	4
CHEM 1101 or 1105	Chemistry I	X
CHEM 1102 or 2200	Chemistry II	4
PHYS 1101	Physics I	4
MECH 1100	Statics	X
MECH 2200	Strength of Materials	4
MECH 3320	Dynamics	3

TOTAL HOURS FOR MAJOR **(X= GS course) 82**

Required General Studies Courses	
Attribute IA – Critical Analysis	3
MECH 1100	
Attribute IB – Quantitative Literacy	3
MATH 1101	
Attribute IC – Written Communication	3
ENGL 1104	
Attribute ID - Teamwork	X
CIVL 2200	
Attribute IE – Information Literacy	3
ENGL 1108	
Attribute IF – Technology Literacy	X
CIVL 2210	
Attribute IG – Oral Communication	3
COMM 2202	
Attribute III - Citizenship	3
HIST 1107 *or any course in Attribute III	
Attribute IV - Ethics	X
CIVL 4420	
Attribute V - Health	2
Any course in V	
Attribute VI - Interdisciplinary	3
GEOG 2210 *or any course in Attribute VI	
Attribute VIIA - Arts	3
Any course in VIIA	
Attribute VIIB - Humanities	III
HIST 1107 *or any course in Attribute VIIB	
Attribute VIIC – Social Sciences	3
ECON 2200	
Attribute VIID - Natural Science	4-5
CHEM 1101 or 1105	
Attribute VIII – Cultural Awareness	VI
GEOG 2210 *or any course in Attribute VIII	
Additional General Studies hours	X
TOTAL GENERAL STUDIES HOURS	**33-34**
TOTAL **TECHNICAL ELECTIVES	**3**
TOTAL FREE ELECTIVES	**1-2**
TOTAL HOURS	**120**

*These are recommended courses. Choosing a different course may result in more than 120 hours for graduation.

**Technical electives are listed in the appendix. These courses were chosen by the Civil ET Industrial Advisory Committee as classes that may help a graduate in the profession of Civil Engineering Technology

B.S. Degree in Civil Engineering Technology
Proposed Program

Required Major Courses		HRS
CIVL 1100	Introduction to Civil Engineering Technology	1
CIVL 2200	Intro to Surveying	3
CIVL 2210	Light Construction	4
CIVL 2220	Construction Materials	4
CIVL 2230	Construction Estimating	3
CIVL 2240	Land and Route Surveying	3
CIVL 2275	Civil Engineering Graphics	3
CIVL 2280	Environmental Engineering Technology I	3
CIVL 2290	Introduction to Structures	3
CIVL 3305	Hydraulics and Hydrology	3
CIVL 3340	Soil Mechanics	4
CIVL 4400	Highway Design	4
CIVL 4410	Advanced Structural Analysis	3
CIVL 4420	Construction Planning and Administration	3
CIVL 4440	Structural Design	3
CIVL 4460	Environmental Engineering Technology II	3
CIVL 4470	Advanced Soils and Foundations	3
TECH 1108	Engineering Graphics	3
MATH 1510	Applied Technical Math I	X
MATH 1520	Applied Technical Math II	3
TECH 2290	Engineering Analysis I	4
TECH 3300	Engineering Analysis II	4
CHEM 1101 or 1105	Chemistry I	X
CHEM 1102 or 2200	Chemistry II	4
PHYS 1101	Physics I	4
MECH 1100	Statics	X
MECH 2200	Strength of Materials	4
MECH 3320	Dynamics	3

TOTAL HOURS FOR MAJOR **(X= GS course) 82**

Required General Studies Courses	
Attribute 1 – Critical Analysis	3
MECH 1100	
Attribute 2 – Quantitative Literacy	3
MATH 1510	
Attribute 3 – Written Communication	3
ENGL 1101	
Attribute 4 - Teamwork	X
CIVL 2200	
Attribute 5 – Information Literacy	3
ENGL 1103	
Attribute 6 – Technology Literacy	X
CIVL 2210	
Attribute 7 – Oral Communication	3
COMM 2202	
Attribute 8 - Citizenship	3
HIST 1107 *or any course in Attribute 8	
Attribute 9 - Ethics	X
CIVL 4420	
Attribute 10 - Health	2
Any course in attribute 10	
Attribute 11 - Interdisciplinary	3
GEOG 2210 *or any course in Attribute 11	
Attribute 12 - Arts	3
Any course in VIIA	
Attribute 13 - Humanities	III
HIST 1107 *or any course in Attribute 13	
Attribute 14 – Social Sciences	3
MANF 2205 *or any course in Attribute 14	
Attribute 15 - Natural Science	4-5
CHEM 1101 or 1105	
Attribute 16 – Cultural Awareness	VI
GEOG 2210 *or any course in Attribute 16	
Additional General Studies hours	X
TOTAL GENERAL STUDIES HOURS	**33-34**
TOTAL **TECHNICAL ELECTIVES	**3**
TOTAL FREE ELECTIVES	**1-2**
TOTAL HOURS	**120**

*These are recommended courses. Choosing a different course may result in more than 120 hours for graduation.

**Technical electives are listed in the appendix. These courses were chosen by the Civil ET Industrial Advisory Committee as classes that may help a graduate in the profession of Civil Engineering Technology

Civil Engineering Technology

Model Schedule for Associate and Baccalaureate of Science Degree Programs

FRESHMAN

Semester 1		***Semester 2***	
CIVL 2210: Light Construction	**4**	**COMM 2202: Comm- World of Work**	**3**
(PR: NONE, CR: CIVL 1100)		*(Recommended – OR any course from Outcome 7)*	
****MATH 1510: (1101) Applied Tech. Math I**	**3**	****MATH 1520: (1102) Applied Tech. Math II**	**3**
*(**See Notes on back for PR and Math EQ)*		*(PR: MATH 1510 with a "C" or better, or Math EQ)*	
TECH 1108: Engineering Graphics	**3**	**ENGL 1103: Technical Report Writing**	**3**
(PR: NONE)		*(PR: ENGL 1101 with a "C" or better)*	
CIVL 1100: Intro to CET	**1**	**CIVL 2220: Construction Materials & Methods**	**4**
(PR: NONE, CR: CIVL 2210)		*(PR: CIVL 2210, MATH 1510 or Math EQ)*	
ENGL 1101: Written English I	**3**	**MECH 1100: Statics**	**3**
(See Notes on back for PR)		*(CR: MATH 1520 or Math EQ)*	
Total	***14***	***Total***	***16***

SOPHOMORE

Semester 3		***Semester 4***	
		CIVL 2230: Construction Estimating	**3**
		(PR: CIVL 2220)	
CIVL 2200: Introduction to Surveying	**3**	**CIVL 2280: Environ. Eng. Tech I**	**3**
(PR: MATH 1510 or Math EQ)		*(PR: CHEM 1101, CR: TECH 2290 or Math EQ)*	
MECH 2200: Strength of Materials	**4**	**CIVL 2290: Intro. to Structures**	**3**
(PR: MATH 1102 & MECH 1100 with a "C" or better in both)		*(PR: MECH 2200)*	
CHEM 1101: General Chemistry	**4**	**CIVL 2275: Civil Eng. Graphics**	**3**
(See Notes on back for PR)		*(PR: TECH1108)*	
****TECH 2290: Engineering Analysis I**	**4**	**CIVL 2240: Const., Land & Route Surveying**	**3**
(Math 1520 with a "C" or better, or Math EQ)		*(PR: CIVL 2200, COMM 2202, ENGL 1103)*	
Total	***15***	***Total***	***15***

Total =60 credits for the Associate of Science in Civil Engineering Technology Degree

JUNIOR

Semester 5		***Semester 6***	
CIVL 3305: Hydraulics & Hydrology	**3**	**CIVL 4470: Advanced Soils / Foundations**	**3**
(PR: TECH 2290 or Math EQ, CIVL 2280)		*(PR: CIVL 3340, BM Majors only)*	
****TECH 3300: Eng. Analysis II**	**4**	**CIVL 4440: Structural Design**	**3**
(PR: TECH 2290 with a "C" or better, or Math EQ)		*(PR: CIVL 2290)*	
PHYS 1101: Intro. to Physics	**4**	**CHEM 1102: Chemistry II**	**4**
(PR: See Notes on back)		*(PR: CHEM 1101)*	
CIVL 3340: Soil Mechanics	**4**	**MANF 2205 Engineering Economy**	**3**
(PR: CIVL 2220, MECH 2200, TECH 2290 or Math EQ)		*(Recommended- OR anything in Outcome 14)*	
		TECHNICAL ELECTIVE	**3**
		(See approved list)	
Total	***15***	***Total***	***16***

SENIOR

Semester 7		***Semester 8***	
CIVL 4410: Adv. Structural Analysis	**3**	**CIVL 4420: Const. Planning & Admin.**	**3**
(PR: TECH 3300 or Math EQ, CIVL 2290, Majors only)		*(PR: CIVL 2230)*	
CIVL 4460: Environ. Eng. Tech II	**3**	**Outcome 10 (V) Health & Well Being Elec**	**2**
(PR: CIVL 2280, TECH 3300 or Math EQ, Majors only)			
GEOG 2210: Intro to Geography	**3**	**HIST 1107 or 1108 US History I or II**	**3**
(OR any course that satisfies Outcomes 11 and 16)		*(OR any course that satisfies outcomes 8 & 13)*	
Outcome 12 (VIIA) Fine Arts Elective	**3**	**CIVL 4400: Highway Design/Capstone**	**4**
		(PR: TECH 3300 or Math EQ, CIVL 3340, ENGL 1103)	
MECH 3320: Dynamics	**3**	*Majors only, Writing Intensive Course*	
(PR: MECH 1100, TECH 2290 or Math EQ)			
		FREE ELECTIVE	**2**
Total	***15***	***Total***	***14***

Total = 120 credits for the Bachelor of Science in Civil Engineering Technology Degree – RF17

****NOTE 1:** To begin in Math 1510, you must have: 1) MATH scores of ACT 19, or SAT 460, or Compass 36, or, 2) Completed MATH 0095, 0088, 1001 with a C or better or MATH 1400.

PLEASE check your ACT/Compass scores. <u>You may NOT need to start with MATH 1510</u>! **Start in the highest math you qualify for!** Consult the catalog for MATH requirements.

Advancing through the first three levels of Math require a "C" or better.

The Professional Track of Math Equivalents is suggested for those who want to go to graduate school and/or to better prepare themselves for the Fundamentals of Engineering Exam.

Math Equivalents (EQ) and other Professional Options		
CET Required Course	**Professional Track / Math EQ**	**Other options / Math EQ**
Math 1510 (old 1101)		Math 1530 (1112): ACT 21/ SAT 500/ Compass 49
Math 1520 (old 1102)		Math 1540 (1115): ACT 23/ SAT 540 / Compass 63
Tech 2290 – ACT 25 or SAT 560 or Compass 67, or Math 1520 or Math 1540 with a "C" or better	Math 2501 (old 1190) – Calculus I: ACT 25 or SAT 570 or Compass 73	Math 1585 (1185): Applied Calculus I ACT 24 or SAT 560 or Compass 67 Or Math 1115, or Math 1102 with a B or better
Tech 3300	Math 2502 (old 3315) – Calculus II	Math 1586 (1186): Applied Calculus II
	Math 3503 (old 3316) – Calculus III	
	Math 3504 (old 4401) – Differential Equations	
Chem 1101	Chem 1105 – See Catalog	
Chem 1102	Chem 2200 – See Catalog	
Physics 1101	Physics 1105 – See Catalog	

Note 2 - Pre-requisite for ENGL 1101: 1) A score of 18 on the ACT English Test, or 2) SAT-1 Critical Reading – 450, or 3) 71 on the Compass Test. Students not meeting these requirements must take one additional credit of supplemental instruction.
ALSO - A "C" in ENGL 1101 and 1103 is a graduation requirement for all BS degrees.

Note 3 – Pre-requisite for CHEM 1101: 1) Math scores of ACT 19 or SAT 460, or Algebra Compass 36, or 2) Successful completion of Math 1106, 1107, 1530.

Note 4 – Pre-requisite for PHYS 1101: 1) Math scores of ACT 24 or SAT 560, or Compass 67, or 2) Successful completion of Math 1520 or Math EQ with a "C" or better.

<u>APPROVED TECHNICAL ELECTIVES</u>: ELEC 1101 Circuit Analysis I, SFTY 1100 Safety and Environmental Component of Industry, MANF 2205 Engineering Economy, MECH 2210 Thermodynamics I, MECH 2220 Fluid Mechanics, BSBA 3306 Business Law, PHIL 3325 Ethics, MATH 3503 Calculus III, MATH 3550 Probability and Statistics, MATH 3504 Differential Equations, BSBA 2201 Principals of Accounting I

- Other by advisors consent only
- You may also use Technical Electives to satisfy the required credits if you start in a higher math.

<u>OTHER</u>
1. It is the responsibility of the student to meet with the academic advisor to schedule all courses for the completion of these degrees.
2. To schedule hours above 18 per semester, the student must be graduating, or have at least a 3.0 average. Approval by the advisor and dean is required. To schedule hours above 21 per semester, approval from the provost is needed. Hours may not exceed 25 in any semester.
3. The semester before graduation, the student should schedule a Senior Evaluation through the Registrar's Office. The student must also apply for graduation at the Registrar's Office by the deadline specified on the registrar's calendar for that semester.
4. Exit interviews must be scheduled in your last semester with the Technology Office Assistant.

**Electives that satisfy general studies outcomes: ONE course may satisfy a maximum of 2 outcomes. Select these wisely! Recommendations have been made to complement the program curriculum.

*****A GPA in your major and overall of 2.0 is a graduation requirement!**