ABET

SELF-STUDY REPORT

for the

Bachelor of Science
Civil Engineering Technology

at

Fairmont State University

Fairmont, West Virginia

Spring 2019

CONFIDENTIAL

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Program Self-Study Report
for
ETAC of ABET
Accreditation or Reaccreditation

BACKGROUND INFORMATION

A. Contact Information

List name, mailing address, telephone number, fax number, and e-mail address for the primary pre-visit contact person for the program.

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B. Program History

Include the year implemented and the date of the last general review. Summarize major program changes with an emphasis on changes occurring since the last general review

Historical Perspective

A review of university academic catalogs reveals the current Civil Engineering Technology, Bachelors of Science in Engineering Technology (B.S.E.T) program, evolved into a stand-alone academic program 1984. Prior to that, the then Division of Technology offered a core curriculum with specializations/concentrations in various fields of study. The evolution of this program over the years was in response to perceived needs and trends in local industry and higher education. A chronology of the changes is in *Table 1*. The original program (pre-1984), at 130 credit hours, remained unaltered until 1984 when it was changed from an area of concentration to the Civil Engineering Technology *program.* (see *Table 2*). Other than modifications to general studies, curriculum changes during that time, there was minimal course changes resulting in a fluctuation of credit hour. In 1997, an environmental emphasis was added to the Civil Engineering Technology program as an option. This was initiated to expose interested students to environmental regulations to support their academic focus of civil engineering technology's environmental courses.

Program Changes after Last General Review

ABET's last general review of the Civil Engineering Technology program was October, 2013. Since that visit, there has been one program revision resulting in major curriculum modifications. In 2012-2013 the program proposed and received approval to make changes that met mandates of the Higher Education Policy Commission, the university, and recommendations of the Industrial Advisory Committee (*see Table 3*). The proposal was designed to align the Civil Engineering Technology program with the current 120 hour degree requirement and newly approved general studies curriculum. Other changes were based on results of the program's Continuous Improvement Plan.

Note: The most recent academic catalog is appended for review.

Historical Review of Program Civil Engineering Technology				
Year	Program Title	Degree	Hours Required	Changes
1980-1982	Engineering Technology - Specializing in Civil Technology	BS	130	No Changes
1983	Engineering Technology - Specializing in Civil Technology	BS	130	No changes
1984	Civil Engineering Technology	BS	133	**New Program**
1986	Civil Engineering Technology	BS	133	No Changes
1988	Civil Engineering Technology	BS	133	CIV 460 went from an option to a required course
1990-1992	Civil Engineering Technology	BS	133	ENG 109 added to course requirements
1992-1994	Civil Engineering Technology	BS	133	Changes made to core course titles and numbers. Courses added and deleted from curriculum.
1993-1994	Civil Engineering Technology	BS	135	Prerequisites to multiple Core Courses changed
1995-1996	Civil Engineering Technology	BS	135	Added MEC 220. CIV 220 & 340 both go from 3 hrs. to 4 hrs.
1997	Civil Engineering Technology	BS	132	General Study's requirements drop 2 hrs. Dropped PHYS 101 & 102. Changed CS 101 to CS 100. Added CIV courses and renamed.
1998	Civil Engineering Technology	BS	131	**Program modified to allow for environmental emphasis**
1999-2000	Civil Engineering Technology	BS	131	CIV 280 & 460 course titles change. CS 100 changed to IS 100.
2000-2001	Civil Engineering Technology	BS	129	Required hours for general studies drop.
2003	Civil Engineering Technology	BS	129	All course numbers modified.
2004-2005	Civil Engineering Technology	BS	129	Environmental emphasis course requirements change (increase in credit hours to 6-7 hrs.)
2005-2006	Civil Engineering Technology	BS	128	One hour drop in general Studies requirements
2008-2009	Civil Engineering Technology	BS	128	SPCH 1100 changed to COMM 2200, 2201 or 2202. One "specific elective" changed to "free elective."
2013	Civil Engineering Technology	BS	120	**New Program**
2017	Civil Engineering Tech.	BS	120	English requirements and Math numbering changes

Table 1

1984 Program Curriculum			
Program Title:	Civil Engineering Technology		
Program Degree:	BS		
Program Changes:	Complete Program Modification		
Required Credits:	133 semester Hours		
Required Related Courses:			**Credits**
General Requirements - Civil			
Math	MATH 101	Applied Technical Math I	3
	MATH 102	Applied Technical Math II	3
Science	PHY 101, 102	Physics	8
	CHEM 101, 102	Chemistry	8
EDP	EDP 100	Introduction Electronic Data Processing	3
Technology	IND 250	Personnel Problems and Labor Relations	3
	SAF 201	Occupational Safety	3
	TEC 290	Engineering Analysis I	4
	TEC 300	Engineering Analysis II	4
	MAT 100	Materials and Processes	3
	ELE 100	Circuits Analysis I	3
	MEC 100	Statics	3
	DRF 100	Engineering Graphics	3
Technology (Civil)	CIV 200	Surveying I	4
	CIV 210	Light Construction	4
	CIV 220	Construction Materials and Methods	3
	CIV 240	Surveying II	4
	CIV 260	Fluid Mechanics and Hydraulics	3
	CIV 300	Highway Design and Transportation	3
	CIV 310	Structural Analysis and Design I	3
	CIV320	Construction Planning, Estimating and Contracting	3
	CIV 350	Soils and Foundation Design	3
	CIV 440 or CIV 460	Structural Analysis and Design II or Water and Waste Water Technology	3
	IND 300	Engineering Economy	3
	MEC 200	Strength of Materials	4
	DRF 235	Technical Drafting	3
	Tech Electives	Advisor Approved	6
		Total Course Related Hours	100

Revision Summary:
Modification of course numbers & inclusion of the following courses:
CIV 220: Construction Materials and Methods
CIV 260: Fluid Mechanics and Hydraulics
Advisor Approved Tech Electives
CIV 310 & 440: Structural Analysis and Design I & II
CIV 350: Soils and Foundation Design
CIV 460: Water and Waste Water Technology
Elimination of the following courses:
CIV III: Heavy Construction
CIV VII: Structural Design
CIV VIII: Land Surveying I
CIV IX: Laws and Codes for Engineers

Table 2

1998 Program Curriculum			
Program Title:	Civil Engineering Technology (environmental emphasis now available)		
Program Degree:	BS		
Program Changes:	New Program		
Required Credits:	131 semester hours or 135 semester hours for environmental emphasis		
Required Related Courses:			Credits
General Requirements - Civil			
English	109	Technical Report Writing	3
Math	101	Applied Technical Math I	3
	102	Applied Technical Math II	3
Science	PHYS 101	Physics	4
	CHEM 101	Chemistry	4
	PHYS 102 or CHEM 102	Chemistry or Physics	4
EDP	CS 100	Introduction Electronic Data Processing	3
Technology	DRF 270	Fundamentals of CAD	3
	TEC 290, 300	Engineering Analysis I & II	8
	ECON 200	Materials and Processes	3
	MEC 100, 200, 320	Statics, Strength of Materials & Dynamics	10
Civil	CIV 200	Introduction to Surveying	3
	CIV 210	Light Construction	4
	CIV 220	Construction Materials and Methods	4
	CIV 230	Construction Estimating	3
	CIV 240	Construction, Land and Route Surveying	3
	CIV 275	Civil Engineering Graphics	3
	CIV 280	Environmental Engineering Technology I	3
	CIV 290	Introduction to Structures	3
	CIV 305	Hydraulics and Hydrology	3
	CIV 340	Soil Mechanics and Environmental Geotechnics	4
	CIV 400*	Highway Design and Transportation	3
	CIV 410	Structural Analysis	3
	CIV 420	Construction Planning and Administration	3
	CIV 440	Structural Design	3
	CIV 460	Environmental Engineering Technology II	3
	CIV 470	Advanced Soil Mechanics and Foundation Design	3
Other	ECON 200	Economics	3
	Physical Science 103	Geology	2
		Total Course Related Hours	*101*
Environmental emphasis (*not required for the environmental option)			
Safety	SAF 201 or SAF 325	Safety and Environmental Components of Industry or Environment Hazard Control	3
	SAF 350 or SAF 450	Environmental Engineering Tech: Hazardous Waste or Environmental Engineering technology: Air	4
Revision Summary:			
Modification of course numbers and inclusion of the following courses:			
PHYS 101: Introduction to Physics I			
PHYS 102: Introduction to Physics II (option for CHEM 1102: General Chemistry II)			
CIV 290: Introduction to Structures			
CIV 470 gains one credit hour to become four credits			
ENGL 109: Technical Report Writing			
Elimination of the following courses:			
TEC 270: Computer Graphics			

Table 3

2013 Program Curriculum			
Program Title:	Civil Engineering Technology		
Program Degree:	BS		
Program Changes:	Complete Program Revision		
Required Credits:	120 semester Hours		
Required Related Courses:			Credits
General Requirements - Civil			
English	1104, 1108	Written English I & II	6
Math	1101, 1102	Applied Technical Math I & II	6
Science	PHYS 1101	Physics I	4
	CHEM 1101, 1102	Chemistry I & II	8
Technology	TECH 1108	Engineering Graphics	3
	TECH 2290, 3300	Engineering Analysis I & II	8
	MECH 1100	Statics	3
	MECH 2200	Strength of Materials	4
	MECH 3320	Dynamics	3
Civil	CIVL 1100	Intro to Civil Engineering Technology	1
	CIVL 2200	Introduction to Surveying	3
	CIVL 2210	Light Construction	4
	CIVL 2220	Construction Materials	4
	CIVL 2230	Construction Estimating	3
	CIVL 2240	Land & 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 and Transportation	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
Other	COMM 2200	Communication in the World of Work	3
	ECON 2200	Economics	3
	GEOG 2210	Introduction to Geography	3
	HIST 1107	US History I	3
	Elective	Tech (Advisor Approved), Free & Health Electives	10
Revision Summary:		Total Course Related Hours	92
Removal of the Environmental Option, renaming and adding the following courses:			
CIVL 1100: Intro to Civil Engineering Technology			
Tech 1108: Engineering Graphics			
COMM 2200: Communication in the World of Work			
GEOG 2210: Introduction to Geography			
HIST 1107: US History I			
Health and Well Being Elective			
Elimination of the following courses:			
PHYS 1102: Intro to Physics II			
ENGL 1109: Technical Report Writing			
DRAF 2200: Fundamentals of CAD			
INFO 1100: Computer Concepts and Applications			
General Studies (Culture Exploration Elective and Artistic/Creative/Interdisciplinary Elective)			

Table 4

2017 Program Curriculum			
Program Title:	Civil Engineering Technology		
Program Degree:	BS		
Program Changes:	English requirements and Math numbering		
Required Credits:	120 semester Hours		
Required Related Courses:			Credits
General Requirements - Civil			
English	1101, 1103	Written English I & Tech Report Writing	6
Math	1510, 1520	Applied Technical Math I & II	6
Science	PHYS 1101	Physics I	4
	CHEM 1101, 1102	Chemistry I & II	8
Technology	TECH 1108	Engineering Graphics	3
	TECH 2290, 3300	Engineering Analysis I & II	8
	MECH 1100	Statics	3
	MECH 2200	Strength of Materials	4
	MECH 3320	Dynamics	3
Civil	CIVL 1100	Intro to Civil Engineering Technology	1
	CIVL 2200	Introduction to Surveying	3
	CIVL 2210	Light Construction	4
	CIVL 2220	Construction Materials	4
	CIVL 2230	Construction Estimating	3
	CIVL 2240	Land & 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 and Transportation	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
Other	COMM 2202	Communication in the World of Work	3
	MANF 2205	Engineering Economics	3
	GEOG 2210	Introduction to Geography	3
	HIST 1107	US History I	3
	Elective	Tech (Advisor Approved), Free & Health Electives	5
Revision Summary:		Total Course Related Hours	92
Renaming and adding the following courses:			
ENGL 1104 became ENGL 1101			
ENGL 1103: Added Technical report Writing			
MATH 1101 became MATH 1510			
MATH 1102 became MATH 1520			
Elimination of the following courses:			
ENGL 1102: Written English II			

Table 5

C. Options

List and describe any options, tracks, concentrations, etc. included in the program.

Students majoring in Civil Engineering Technology's B.S. program had the option of earning an "environmental emphasis". This was eliminated in 2013 to streamline the curriculum and meet the new HEPC 120 credit hour policy.

D. Program Delivery Modes

Describe the delivery modes used by this program, e.g., days, evenings, weekends, cooperative education, traditional lecture/laboratory, off-campus, distance education, web-based, etc.

The Civil Engineering Technology program is delivered through day, afternoon, and evening course offerings on the main campus at 1201 Locust Avenue, Fairmont, WV.

The program's course material is delivered via lecture, laboratory, experiential, and Blackboard methodologies. Even though course material development and delivery is at the discretion of the professor, all faculty must post course information (syllabi) and grades to Blackboard.

E. Program Locations

Include all locations where the program or a portion of the program is regularly offered (this would also include dual degrees, international partnerships, etc.).

The Civil Engineering Technology program is located on the main campus of Fairmont State University. Most of the program courses are offered in the Engineering Technology building.

F. Public Disclosure

Provide information concerning all the places where the Program Education Objectives (PEOs), Student Outcomes (SOs), annual student enrollment and graduation data are made accessible to the public. This information should be easily found on either the program or institutional website so please provide the URLs.

All program information can be found at the following program website:

https://www.fairmontstate.edu/collegeofscitech/academics/civil-engineering-technology

G. Deficiencies, Weaknesses or Concerns from Previous Evaluation(s) and the Actions Taken to Address Them

Summarize the Deficiencies, Weaknesses, or Concerns remaining from the most recent ABET Final Statement. Describe the actions taken to address them, including effective dates of actions, if applicable. If this is an initial accreditation, state it is an initial accreditation.

Findings in meeting provisions of the ABET criteria or policies are described below.

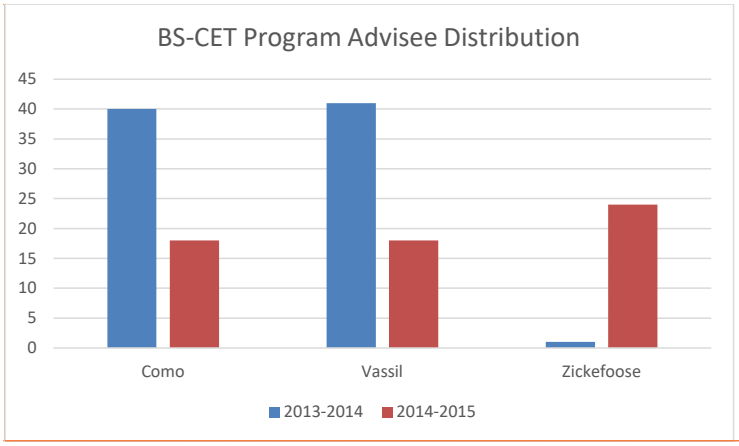
Program Concern

1. Previous Finding and Criteria: Criterion 6. Faculty, states that "The faculty serving the program must be of sufficient number to maintain continuity, stability, oversight, student interaction, and advising." The number of full-time faculty members is currently sufficient to maintain the teaching and related curriculum and program responsibilities required but the student advising load is exceptionally large. While the criterion is currently satisfied, the potential exists for this situation to change. An increase in enrollment would increase the advising load of the program faculty members to unreasonable levels. Any increase in the number of students would have a detrimental effect on the quality of advising and the quality of instruction. This finding remains a Concern until the program maintains sufficient faculty to meet program needs.

Due Process Response: A memorandum from the provost was provided stating that if enrollment continued to increase there would be a possibility of increased faculty allocation.

Status after Due Process: The Concern remains until the program maintains sufficient faculty to meet program needs.

RESPONSE: The advising loads of the Civil Engineering Technology faculty have been reallocated thus reducing the number of advisees for each faculty member. The chart below shows the advising distribution for the 2013-2014 academic year and the new allocation for the 2014-2015 academic year. The Department of Technology will conduct group advising beginning with registration for the Spring 2015 semester. The group effort will reduce the number of advisee's seen on an individual basis by solving the needs of most students in the group allowing the faculty to spend more time with advisee's needing special considerations. The allocation of BS Degree advisees for the Civil Engineering Technology faculty are shown below:



Commented [MK1]: No year indication

2. Previous Findings and Criteria: Criterion 7, Facilities, states, "Classrooms, offices, laboratories, and associated equipment must be adequate to support attainment of the student outcomes and to provide an atmosphere conducive to learning." There is currently an effort to distribute space between Fairmont State University and Pierpont Community College. The final allocation of space could be a rigid proportional distribution that does not take into consideration the needs of the programs at both institutions. The final allocation of space should support attainment of student outcomes and provide an atmosphere conducive to learning. This finding remains a Concern until the program provides adequate classrooms, offices and laboratories to support attainment of the student outcomes.

Due Process Response: A memorandum from the Provost was provided stating that the University expects to reallocate space to the College of Science and Technology upon completion of the Advanced Technology Center in 2015.

Status after Due Process: The Concern remains until adequate space has been allocated to the program to support the attainment of the student outcomes.

RESPONSE: Fairmont State University currently shares space with Pierpont Community & Technical College. Upon completion of Pierpont Community and Technical College new off-site Advanced Technology Center, additional space will become available for the Engineering Technology programs.

Commented [MK2]: See MK4

Most of the space has been reallocated to the Department of Technology

GENERAL CRITERIA

CRITERION 1. STUDENTS

For the sections below, attach in supplemental information any written policies that apply or provide a link to an appropriate page on the institution's website.

A. Student Admissions

Summarize the requirements and process for accepting new students into the program.

Admission Requirements

Students seeking admission to Fairmont State University must be of the age of compulsory attendance in the state of West Virginia and file an application for admission. Application and supporting credentials must be on file at least two weeks prior to the opening of a semester or term. All credentials submitted in support of an application for admission become the property of the University and will not be returned to the student. Any student admitted upon the basis of false credentials will be subject to immediate dismissal from the University.

The application for admission must specify the student's desired degree or program objective. Admission to Fairmont State University does not guarantee admission to specific programs, which may be restricted due to limitations of staff, physical facilities, and space available for experiential training. The standards and procedures for admission to limited-enrollment programs are presented later in this section.

Students who fail to register during the semester or term for which they have been admitted, must file another application in order to gain admission at a later date.

Fairmont State University Admission Requirements

REQUIRED FORMS AND CREDENTIALS

All students applying for admission to Fairmont State University degree programs are required to complete and submit the following forms and credentials:

1) Application for Admission
2) Official high school transcript sent by high school or high school equivalency diploma (not required for transfer students having a 2.0 grade point average and at least 24 hours of completed coursework)
3) Official ACT or SAT scores (not required for students who graduated high school more than 5 years prior to enrollment term or for transfer students having a 2.0 average and at least 24 hours of completed coursework)
4) Transcript of home-schooled students to include classes taken, credit hours and grades earned, graduation date and signature of the home school provider (may be submitted in lieu of a high school equivalency transcript, however the high school equivalency transcript may be required for financial aid and scholarships)

5) Official college transcripts, if applicable
6) Immunization Records including measles, mumps, & rubella (MMR) (if born after January 1, 1957)
7) Permanent Resident Card, if applicable

BACHELOR'S DEGREE PROGRAMS ADMISSION REQUIREMENTS

Admission to bachelor's degree programs is open to graduates of approved high schools who have a 2.0 high school GPA (or received a high school equivalency transcript) and a minimum composite score of 18 on the ACT or 870 on the SAT (combination of Critical Reading and Math scores if test was taken prior to March 2016) or a 950 SAT (total score on tests taken March 2016 and after). Students with at least a 3.0 high school GPA and SAT or ACT composite test scores will be admitted regardless of the test scores. Applicants must also satisfy the following minimum high school unit requirements.

REQUIRED UNITS (Years)

- 4 English (including English 12CR and courses in grammar, composition, and literature)
- 3 Social Studies (including U.S. studies/history)
- 4 Mathematics (three units must be Algebra I and higher or Math I or higher; Transitional Math for Seniors will also be accepted). Courses designed as "support courses", such as Math I Lab or Math I Support, that provide extra instructional time but no additional content shall not be acceptable as meeting the required 4 mathematic course core requirements.
- 3 Science (all courses to be college preparatory laboratory science, preferably including units from biology, chemistry, and physics)
- 1 Arts
- 2 World Language (two units of the same world language; sign language is also acceptable)

Fairmont State University may admit by exception students who do not meet the basic admissions standards.

B. Evaluating Student Performance

Summarize the process by which overall student academic performance is evaluated and student progress towards graduation is monitored. Include information on how the program ensures and documents that students are meeting course prerequisites and how the situation is addressed when a prerequisite has not been met.

ASSESSMENT OF STUDENT ACADEMIC ACHIEVEMENT

Fairmont State University employs a variety of assessment processes to inform students of progress in courses and clinical experience and toward degrees, to analyze programs in order to make appropriate curricular changes, and to determine institutional effectiveness. The university follows policies of the Higher Learning Commission of the North Central Association of Colleges and Schools, the WV Higher Education Policy Commission, policies of specific academic and professional accrediting bodies, and its own governing board.

In addition to regular course examinations and presentations, assessments used include field tests of proficiency in the major; electronic portfolios; capstone projects; internships; clinical practice reviews; and juried performances. Some programs, such as nursing and teacher education, also require nationally normed entrance and exit examinations. All degree programs analyze and review their effectiveness every five years, reporting this information to the WVHEPC and the Fairmont State University Board of Governors. Programs also engage in an annual review process to assess the effectiveness of academic programs and learning experiences. The institution reports its overall progress to the HLC every ten years.

GRADING SYSTEM

The following system of grading is used at FAIRMONT STATE UNIVERSITY:

A - Superior. Given only to students for exceptional performance
B - Good. Given for performance distinctly above average in quality
C - Average. Given for performance of average quality
D - Lowest passing grade, for performance of poor quality
F - Failure. Course must be repeated if credit is to be received
I - Incomplete, a temporary grade given only when students have completed more than 70% of the course but are unable to conclude it because of unavoidable circumstance.
W - W - Withdrew
CR - Credit/grade of "C" or higher. Does not affect quality points (see below)
NC - No Credit. Does not affect quality points
NCX - No Credit, indicating a significant lack of effort. Does not affect quality points.
NR - Not Reported. Given when instructor has not submitted grade
S - Satisfactory. Given for Continuing Education courses only
U - Unsatisfactory. Given for Continuing Education courses only

QUALITY POINTS

The value of a student's work is indicated by quality points. Candidates for graduation must have at least twice as many quality points as GPA hours; that is, a point-average of 2.0 on all college work.

Quality points for grades A, B, C, D, are computed as follows:

A - Four (4) quality points for each semester hour of credit
B - Three (3) quality points for each semester hour of credit
C - Two (2) quality points for each semester hour of credit
D - One (1) quality point for each semester hour of credit

Students' grade averages are determined by dividing the number of quality points by the number of GPA hours. No quality points are attached to grades of F, but the GPA hours for the courses in which these grades are received will be used in computing grade averages. In order to graduate, candidates for degrees must maintain a grade point average of 2.0 or better in all college courses and in all credit earned at Fairmont State University. An average of 2.0 must also be maintained in the major and minor fields of study. Students in the teacher education program must attain a grade point average of 2.75 overall, in each teaching field and in professional education. It is the student's responsibility to remain informed of quality point standing. This information can be obtained at any time from the Registrar's Office.

EXAMPLE FOR COMPUTING GRADE-POINT AVERAGE

Courses Taken	Final Grade	Quality Points	Semester Hours	Quality Points (Total)
ENGL 1101	A	4	3	12
BIOL 1101	D	1	4	4
HIST 2211	B	3	3	9
SOCY 1110	C	2	3	6
POLI 1100	B	3	3	9
MATH 1510	W	-	-	-
		13	16	40

40 Quality Points
16 Semester Hours = 2.5 Grade-Point Average

PRE-ENGINEERING CURRICULUM

Students planning graduate-level work in engineering should complete the following course work with a B average or better. Students are advised to carefully consult the catalog of the engineering school which they plan to attend, as Fairmont State University does not have an articulation agreement with any school of engineering.

- CHEM 1105, 2200 CHEMICAL PRINCIPLES, FOUNDATIONAL BIOCHEMISTRY 9
- ENGL 1101, 1102 WRITTEN ENGLISH I, II 6
- MATH 1540 TRIG. AND ELEMENTARY FUNCTIONS 3
- MATH 2501 CALCULUS I 4
- MECH 1100 STATICS 3
- PHED 1100 FITNESS AND WELLNESS 2
- PHYS 1101, 1102 INTRODUCTION TO PHYSICS I, II 8
- -OR PHYS 1105, 1106 PRINCIPLES OF PHYSICS I, II 8
- SOCIAL SCIENCE ELECTIVE 3
- TECH 1108 ENGINEERING GRAPHICS I 3

C. Transfer Students and Transfer Courses

Summarize the requirements and process for accepting transfer students and transfer credit. Include any state-mandated articulation requirements that impact the program.

TRANSFER STUDENTS

Any applicant for admission to Fairmont State University who has attended another collegiate institution will be classified as a transfer student. Every effort will be made to allow credit earned at other accredited colleges and universities to count towards a degree at Fairmont State University. Transfer students must meet the previously stated admission requirements of Fairmont State University. They must provide evidence of good standing at the institution last attended and must have maintained a minimum 2.0 GPA.

Students transferring fewer than 24 semester hours must provide an official copy of their high school transcript/home school or high school equivalency transcript, official ACT or SAT scores (if the student has graduated from high school less than 5 years prior to the enrollment term) and official college transcript(s).

TRANSFERRING CORE COURSEWORK

According to Series 17, Policy Regarding the Transferability of Credits and Grades at the Undergraduate Level, students who transfer from one state college or university to another may transfer core coursework that will count toward fulfillment of general studies requirements at the receiving institutions.

Under the terms of the agreement, a student may transfer up to thirty-five credit hours of undergraduate coursework in the areas of English composition, communications and literature, fine arts appreciation, mathematics, natural science, and social science as general studies credits. Copies of the agreement are available in the Enrollment Services Center.

The following is a list of General Studies Requirements that may be fulfilled by comparable coursework at another institution. All other General Studies Requirements must be completed at Fairmont State University.

English Composition - 6 hours
ENGL 1101 WRITTEN ENGLISH I 3
ENGL 1102 WRITTEN ENGLISH II..... 3

Communication and Literature - 6 hours
COMM 2200 INTRO. TO HUMAN COMMUNICATION 3
ENGL 2220 LITERATURE OF THE WESTERN WORLD I 3
ENGL 2221 LITERATURE OF THE WESTERN WORLD II 3
ENGL 2230 INTRODUCTION TO LITERATURE I 3
ENGL 2231 INTRODUCTION TO LITERATURE II 3
ENGL 3391 THE SHORT STORY 3

Fine Arts Appreciation - 3 hours
ART 1120 ART APPRECIATION 3
INTR 1120 EXPERIENCING THE ARTS 3
MUSI 1120 MUSIC APPRECIATION 3
THEA 1120 THEATRE APPRECIATION 3

Mathematics - 3-4 hours
MATH 1507 or 1407 FUNDAMENTAL CONCEPTS OF MATHEMATICS ….. 3-4
MATH 1530 or 1430 COLLEGE ALGEBRA 3-4
MATH 1540 TRIGONOMETRY AND ELEMENTARY FUNCTIONS 4
MATH 2501 CALCULUS I 4

Natural Science - 8-10 hours
BIOL 1105 BIOLOGICAL PRINCIPLES I 4
BIOL 1106 BIOLOGICAL PRINCIPLES II..... 4
CHEM 1101 GENERAL CHEMISTRY 4
CHEM 1102 GENERAL CHEMISTRY II 4
CHEM 1105 CHEMICAL PRINCIPLES I..... 5
PHYS 1101 INTRODUCTION TO PHYSICS I 4
PHYS 1102 INTRODUCTION TO PHYSICS II 4
PHYS 1105 PRINCIPLES OF PHYSICS I 4
PHYS 1106 PRINCIPLES OF PHYSICS II 4
GEOL 1101 GENERAL GEOLOGY 4
GEOL 1102 HISTORICAL GEOLOGY 4

Social Science - 9 hours
BSBA 2200 ECONOMICS 3
BSBA 2211 PRINCIPLES OF MACROECONOMICS 3

HIST 1107 U.S. HISTORY I 3
HIST 1108 U.S. HISTORY II 3
HIST 2211 HISTORY OF CIVILIZATION I..... 3
HIST 2212 HISTORY OF CIVILIZATION II 3
HIST 2213 HISTORY OF CIVILIZATION III 3
POLI 1103 AMERICAN GOVERNMENT 3
POLI 2200 INTRODUCTION TO POLITICAL SCIENCE 3
PSYC 1101 INTRODUCTION TO PSYCHOLOGY 3
SOCY 1110 INTRODUCTION TO SOCIOLOGY 3

CREDIT FROM A JUNIOR OR COMMUNITY COLLEGE

The maximum credit accepted from a Junior or Community College accredited by the North Central Association of Colleges and Schools or other regional accrediting association will not exceed 72 semester hours.

D. Advising and Career Guidance

Summarize the process for advising and providing career guidance to students. Include information on how often students are advised, who provides the advising (program faculty, departmental, college or university advisor).

ACADEMIC ADVISING SYSTEM

Students are assigned academic advisors when they first enroll at Fairmont State University. The advisor is a faculty member in the respective major. Those students who are not ready to select a major upon entrance will be assigned to the Office of Exploratory Advising. Students wanting to change their major fields of study must contact the Registrar's Office; students will then be referred to their major departments to have a new advisor assigned.

Students should discuss problems relating to degree requirements, registration, and withdrawals from class or college with their advisors. Students are assigned a PIN number for registration each semester and must meet with their assigned advisor to discuss academic progress and scheduling. Once a schedule is established, students obtain their PIN numbers and may register for courses.

Faculty advising consists of academic and career planning. Students meet with their faculty advisors every semester until graduation. During the advising sessions, students are advised regarding course schedules, internships and career goals. Advisors will encourage elective and special topic courses that may enhance an individual students' goals.

All students in the Civil Engineering Technology program have internship opportunities beginning in the freshmen/sophomore summer. Students are advised to choose opportunities that interest them and vary their experiences each summer with a different company or type of work environment. Beginning in the senior year, students are encouraged to apply for graduation and

begin their career search. Outside of advising, students in the CET program are presented with many employment opportunities- local, regional and national. In the academic year 2018-2019, a variety of employers came to campus and gave students a chance to apply and interview. Students benefit from the opportunity to interview and potentially gain employment.

E. Work in Lieu of Courses

Summarize the requirements and process for awarding credit for work in lieu of courses. This could include such things as life experience, Advanced Placement, dual enrollment, test out, military experience, etc.

ADVANCED PLACEMENT EXAMINATION (AP)

Fairmont State University recognizes certain examinations of the College Board Advanced Placement Program. Students who participate in the AP program and wish to have their scores evaluated for credit should have their scores sent to Fairmont State University. The AP examinations are prepared by the College Board, and the papers are graded by readers of the Educational Testing Service, Princeton, NJ 08540. Students cannot receive credit for a score below 3 on any exam.

Students who do receive credit will be assigned the grade of CR, which is not calculated into the GPA. Students will not be awarded multiple credit, standing or GPA based on duplicated advanced placement scores, tests or transfer work.

COLLEGE LEVEL EXAMINATION PROGRAM (CLEP)

The College Level Examination Program (CLEP) provides students with the opportunity to demonstrate college-level achievement through a program of exams in undergraduate college courses. Students can reduce their costs in time and money by successfully completing CLEP tests for credit. The CLEP exams are prepared by the College Board and administered by Pierpont Community & Technical College. Students must achieve a minimum score of 50 to receive college credit. For additional information, contact the Center for Workforce Education at (304) 368-7254 or (304) 367-4920.

Students will not be awarded multiple credit, standing or GPA based on duplicated advanced placement scores, tests or transfer work.

EQUIVALENT CREDIT

A unique feature of the RBA Degree Program is the possibility of obtaining college-equivalent credit for demonstrated college-level knowledge that has been learned in environments and

agencies outside the classroom. To earn credit, students must demonstrate knowledge of learning objectives and outcomes equivalent to specific courses taught at Fairmont State or within the West Virginia State System of Higher Education. Students who have obtained any professional, state, or national licenses or certifications can request a review of the credentials to determine if they are eligible to receive college credit.

Portfolio evaluations are completed for enrolled students by faculty members who teach the course for which credit is sought. Portfolios should be submitted prior to semester midterm to ensure that sufficient time is available for evaluation. The fee for portfolio evaluation is $300 regardless of whether or not credit is awarded. If credit is recommended, then the faculty members will also recommend the number of credit hours to be awarded along with the appropriate level (upper or lower). An additional $10 per credit hour processing fee is required to transcript the credit.

Credit earned via portfolio or prior learning assessment does not count toward meeting the state or institutional residency requirements for the RBA program. Awarded credit hours will not be posted to a student's academic transcript until after residency requirements have been met.

Academic credit will only be awarded to students who are admitted to and currently enrolled in the RBA Degree Program. Students, however, cannot be awarded college - Equivalent credit during their first or final semesters in the RBA program.

F. Graduation Requirements

Summarize the graduation requirements for the program and the process for ensuring and documenting that each graduate completes all graduation requirements for the program. State the name of the degree awarded (e.g., Bachelor of Science in Electrical Engineering Technology, Associate of Science in Engineering Technology, Associate of Applied Science in Civil Engineering Technology.)

DEGREE REQUIREMENTS

To qualify for graduation, candidates must accumulate a total of 120 semester hours of credit with a minimum quality point average of 2.00. At least 39 hours must be at the upper (3300 or 4400) level. Students must complete 36 semester hours of General Studies courses, including the required semester hours in each of the following areas: Communications (6), Social Sciences (6), Natural Sciences (6), Mathematics or Computer Applications (3), Humanities (6), and 9 additional General Studies hours. At least 24 semester hours must be taken in the West Virginia State System of Higher Education and at least 12 of those credit hours must be completed at Fairmont State.

Students are required to apply for graduation. This process takes place the semester before the anticipated graduation. The students are audited for degree compliance and receive a graduation audit form outlining any remaining degree requirements. The degree audit ensure the student is aware of any remaining requirements and can register for the appropriate courses.

G. Transcripts of Recent Graduates

The program must provide transcripts from recent graduates to the visiting team along with any needed explanation of how the transcripts are to be interpreted. **These transcripts will be requested separately by the Team Chair.** State how the program and any program options are designated on the transcript. (See 2019-2020 APPM, Section I.E.3.a.)

The degree is designated as a Bachelor of Science in Engineering Technology. No options currently exist in the program. Minors, concentrations, and or specializations may be obtained, but are not options in the program. Examples may be a minor in occupational safety or business.

CRITERION 2. PROGRAM EDUCATIONAL OBJECTIVES

A. Mission Statement

Provide the institutional mission statement.

MISSION STATEMENT

The Fairmont State University family educates, enriches, and engages students to achieve personal and professional success.

VISION STATEMENT

Fairmont State University aspires to be nationally recognized as a model for accessible learner centered institutions that promote student success by providing comprehensive education and excellent teaching, flexible learning environments, and superior services. Graduates will have the knowledge, skills, and habits of mind necessary for intellectual growth, full and participatory citizenship, employability, and entrepreneurship in a changing environment.

B. Program Educational Objectives

List the program educational objectives and state where these can be found by the general public. *This is typically an easy to find web page clearly linked to the program's website.*

The Program Educational Objectives have changed during this accreditation cycle. The following were the PEO's until November of 2018:

Program Objectives

The Program Objectives, as determined by the Civil Engineering Technology Program's constituencies, are intended to promote professional competencies and continued professional growth. Students and graduates shall, to varying degrees, be competent in:

1. applying academic competencies and methodologies in addressing and solving problems as a professional.
2. using learned technical and non-technical methodologies to communicate to audiences of varying demographics.
3. ethically and respectfully performing professional responsibilities as part of a team and or multidisciplinary team.
4. recognizing and assessing the societal and global impact of professional decisions and practices.
5. pursuing lifelong learning through professional development.

During the Fall 2018 semester the PEO's were changed to match industry need and also the newly adopted ABET 1-5 Student Outcomes. The current Program Educational Objectives for the Civil Engineering Technology Program are as follows:

1) Relate the concepts of self-directed lifelong learning and the ability to undertake further study and/or examinations specific to the discipline through demonstration of technical skills as a practicing professional, applying knowledge and discipline specific tools.
2) Evaluate results and develop professional documents relevant to the discipline and to communicate such findings to a technical and non-technical audience.
3) Operate effectively in a diverse, multi-disciplinary environment demonstrating skills in leadership, professionalism and teamwork.

https://www.fairmontstate.edu/collegeofsci tech/academics/civil-engineering-technology-outcomes.

C. Consistency of the Program Educational Objectives with the Mission of the Institution

Describe how the program educational objectives are consistent with the mission of the institution. *A table illustrating how educational objectives support the elements of the institutional mission can be used, in addition to a brief explanation.*

The university's mission and the Civil Engineering Technology Program Educational Objectives promote the growth and realization of professional and personal development along with the desire for responsible citizenship of graduates. The mission emphasizes providing opportunities for students to achieve their professional and personal goals. The PEO's align with these goals. Through achieving academic competencies, enhancing communication abilities, a desire to pursue life-long learning opportunities and obtaining skills in working in teams, students are afforded the opportunity to attain a level of professional and personal growth that will increase their marketability and societal awareness thereby enriching their degreed field.

Students' personal goals of achieving a college degree that leads to employment in their degreed field supports the university's mission of providing opportunities for personal growth. Since academic competencies can be both intrinsically and extrinsically rewarding, all PEO's can map to personal goals as well.

Lastly, the Civil Engineering Technology program promotes the exploration of the impact of professional decisions and inherent responsibilities of professionals through promoting ethical practices. This speaks directly to the university's mission of responsible citizenship. The program also promotes students to earn Professional Development Credits in an effort to teach the importance of professional development as well as community outreach.

In summary, Table 2-1 maps the Program Objectives to the university's mission. The mapping is subject to change depending on the students' personal and professional goals.

Program Objectives *"broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve at the time of graduation and during the first few years following graduation." Graduates and students shall be competent in*	The Fairmont State University family educates, enriches, and engages students to achieve personal and professional success.		
	Professional goals	***Personal goals***	***Responsible citizenship***
1. Relate the concepts of self-directed lifelong learning and the ability to undertake further study and/or examinations specific to the discipline through demonstration of technical skills as a practicing professional, applying knowledge and discipline specific tools.	X	X	X
2. Evaluate results and develop professional documents relevant to the discipline and to communicate such findings to a technical and non-technical audience.	X		X
3. Operate effectively in a diverse, multi-disciplinary environment demonstrating skills in leadership, professionalism and teamwork.	X	X	X

Table 2-1

D. Program Constituencies

List the key program constituencies involved in the review of the program educational objectives. Describe how the program educational objectives meet the needs of these constituencies.

Faculty: Faculty are responsible for successfully teaching the material in the courses, developing the curriculum, student advising and institutional committees. The curriculum is designed to meet the student outcomes and Program Educational Objectives (PEO's). Full time faculty are an integral part of the PEO review process. Part time faculty provide input during meetings or through evaluations.

Alumni: As former students, the success of alumni reflects the achievement of the PEO's. Alumni are asked to provide input on the relevance and achievement of PEO's. Alumni are part of our annual meetings and provide feedback during those events.

Employers: Employers may be academic, industry, government or private entities. Employers provide feedback on recent graduates and achievement of PEO's. Their feedback is typically given at annual meetings and career fairs.

Engineering Advisory Board: This group meets annually at minimum. They are comprised of all constituents plus project managers and team leaders from regional and national employers. They share current practice and experience and help shape the PEO's.

Each of the constituents are a part of the educational process in the Civil Engineering Technology program. The faculty have the responsibility for curriculum and education of the students. The program curriculum and program are the main component of accomplishing the

PEO's. The alumni are the results of the program and represent accomplishment of the PEO's. They also have advisory roles in both curriculum and program needs. The employers seek well prepared graduates who can accomplish the PEO's. Employers advise the program to ensure success. The advisory board is comprised of all the constituents and other industry leaders who periodically review the PEO's and modify them to meet the needs of all constituents.

E. Process for Review of the Program Educational Objectives

Describe the process that periodically reviews the program educational objectives including how the program's key constituencies are involved in this process. Describe how this process is systematically utilized to ensure that the program's educational objectives remain consistent with the institutional mission, the program constituents' needs and these criteria.

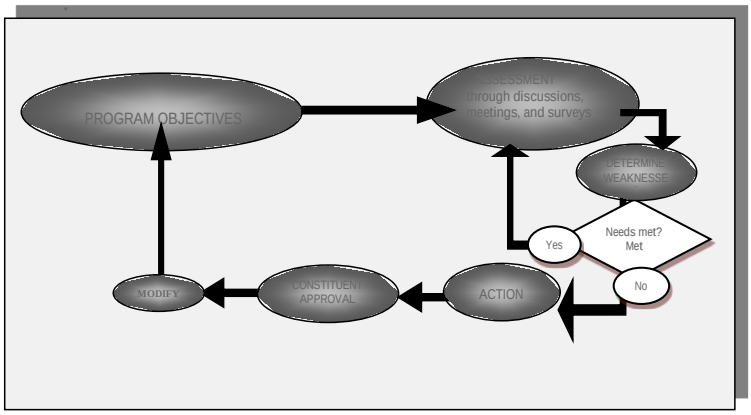
Review of Program Educational Objectives:

Program Educational Objectives are reviewed annually at the Industrial Advisory Committee meeting. The PEO's are displayed annually and reviewed by all constituents. The PEO's were to be updated in the Fall of 2017, however, the impending change to ABET Outcomes caused a delay in the implementation of the new PEO's as faculty wanted to ensure alignment between PEO's and SO's.

The meeting minutes capture any discussion of PEO's. The minutes are reviewed by faculty and program coordinators. The overall continuous improvement (CI) forms document the changes to PEO's. Display materials documenting PEO revision will include:

1) Industrial Advisory Committee (IAC) meeting minutes
2) Continuous Improvement plan form

Program Educational Objectives were approved for change in November of 2018. The PEO's will be reviewed at the next annual IAC meeting. Below is a description of the overall continuous improvement process with relation to PEO's:



CRITERION 3. STUDENT OUTCOMES

A. Process for the Establishment and Revision of the Student Outcomes

Describe the process used for establishing, reviewing, and revising student outcomes.

The Civil Engineering Technology program has adopted ABET outcomes 1-5. The adoption of those outcomes is documented in the Industrial Advisory Committee meeting minutes. The new outcomes were discussed and approved November 2018. The review and revision of outcomes will occur when program educational objectives are reviewed annually. PEO's and SO's are reviewed as part of the annual Industrial Advisory Committee meetings. Prior to November 2018, the program had six outcomes linked to ABET student outcomes. A mapping of the former outcomes will be provided in the following sections.

B. Student Outcomes

List the student outcomes for the program. Indicate where the student outcomes are documented and made accessible to the public. *This is typically an easy to find web page clearly linked to the program's website but could also be in a student handbook.*

The Civil Engineering Technology program adopted ABET outcomes 1-5 as program outcomes. The student outcomes were changed by the program in November 2018. Prior to November 2018 the student outcomes were ABET "a-k" plus the discipline specific outcomes for the program. The student outcomes can be found on the programs web page: https://www.fairmontstate.edu/collegeofscitech/academics/civil-engineering-technology-outcomes.

The current student outcomes are as follows:

1. An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, or technology to solve broadly-defined engineering problems.
2. An ability to design solutions for well-defined technical problems and assist with engineering design of systems, components, or processes appropriate to the discipline.
3. An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.
4. An ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments.
5. An ability to function effectively as a member of a technical team.

For reference purposes, the Student Outcomes prior to November 2018 were as follows:

1. Students will master and apply current knowledge, techniques, skills, and modern tools of their disciplines including mathematics and science.
2. Students will identify, analyze, and improve technical processes including experimental verification.
3. Students will apply creativity in the design of systems, components, or processes appropriate to program objectives including working on teams and communicating effectively.
4. Students will prepare for the ability to engage in lifelong learning, a commitment to quality, timeliness, and continuous improvement.
5. Students will demonstrate an awareness of professional, ethical, and social responsibilities, including a respect for diversity and a knowledge of contemporary professional, societal and global issues.
6. Students will solve complex problems utilizing discipline specific expertise.

Mapping of these outcomes is shown in the following tables. These have been replaced by the new ABET 1-5 SO's adopted by the program.

Program Outcomes as Relating to ABET a-k and Program Specific Criteria
The Civil ET program has recoded the program specific outcomes mandated by ABET. The coding used by the program is shown below.

ABET Code	Outcome	Civil ET Code
a	an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities	a
b	an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies	b
c	an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes	c
d	an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives	d
e	an ability to function effectively as a member or leader on a technical team	e
f	an ability to identify, analyze, and solve broadly-defined engineering technology problems	f
g	an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature	g
h	an understanding of the need for and an ability to engage in self-directed continuing professional development	h
i	an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity	i
j	a knowledge of the impact of engineering technology solutions in a societal and global context	j
k	a commitment to quality, timeliness, and continuous improvement	k
a.	plan and prepare documents appropriate for design and construction	l
b.	perform economic analyses and cost estimates related to design, construction, operations and maintenance of systems associated with civil engineering	m
c.	select appropriate engineering materials and practices,	n
d.	perform standard analysis and design in at least three sub-disciplines related to civil engineering	o

Table 3-1 maps ABET's a-k and the program criteria as required in criterion 3 to the Civil Engineering Technology Program's Student Outcomes.

Program Student Outcomes	General Criteria											Program Specific Criteria			
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
1. Students will master and apply current knowledge, techniques, skills, and modern tools of their disciplines including mathematics and science.	X	X													
2. Students will identify, analyze, and improve technical processes including experimental verification.			X			X									
3. Students will apply creativity in the design of systems, components, or processes appropriate to program objectives including working on teams and communicating effectively.				X	X		X								
4. Students will prepare for the ability to engage in lifelong learning, a commitment to quality, timeliness, and continuous improvement.								X			X				
5. Students will demonstrate an awareness of professional, ethical, and social responsibilities, including a respect for diversity and a knowledge of contemporary professional, societal and global issues.									X	X					
6. Students will solve complex problems utilizing discipline specific expertise.												X	X	X	X

Table 3-1

C. Mapping of Student Outcomes to Criterion 3 Student Outcomes

Describe if the student outcomes used by the program are stated differently than the requirements listed in Criterion 3. If so, provide the mapping of the program's student outcomes to the Criterion 3 requirements one through five.

The Civil Engineering Technology program adopted ABET outcomes 1-5 as the program student outcomes. New performance indicators are used to define program needs within the outcomes. These are newly defined and implemented. Figure 3-1 shows the mapping from the "a-k" outcomes to the new 1-5 outcomes.

Figure 3-1

D. Relationship of Student Outcomes to Program Educational Objectives

Describe how the program's student outcomes prepare graduates to attain the program's educational objectives.

It is helpful if the self-study questionnaire provides a mapping, using the table below, of the Program Educational Objectives, Student Outcomes, the ABET (1) – (5) student outcomes and the program courses that support the program student outcomes (courses where the students learn or develop competencies related to the student outcomes).

Program Educational Objective	*ABET (1)-(5)*	*Program Courses Supporting the Program Outcome*
PEO 1	Outcome 1	2200, 2210, 2220, 2240, 2280, 2290, 3305, 3340, 4400, 4410, 4420, 4440, 4470,
	Outcome 2	2220, 2240, 2280, 2290, 3305, 4400, 4410, 4440, 4460, 4470
PEO 2	Outcome 3	1100, 2210, 2200, 2220, 2230 2240, 2275, 4400, 4420
	Outcome 4	2200, 2220, 2240, 3305, 3340, 4470
PEO 3	Outcome 5	1100, 2200, 2210, 2220, 2230, 2240, 3305, 3340, 4400, 4470

Table 3-2

CRITERION 4. CONTINUOUS IMPROVEMENT

This section of your Self-Study Report should summarize your processes for regularly assessing and evaluating the extent to which the student outcomes are being attained and for using those results for continuous improvement of the program.

Assessment is defined as one or more processes that identify, collect, and prepare the data necessary for evaluation. Evaluation is defined as one or more processes for interpreting the data acquired though the assessment processes in order to determine how well the student outcomes are being attained.

Although the program can report its processes as it chooses, the following is presented as a guide to help you organize your Self-Study Report and present your documentation.

A. Documentation of Processes or Plan

Provide a reference to the plan (documentation of processes in the appendices or in electronic form) used to assess student outcome attainment for the purpose of continuous program improvement. In the sections below, briefly summarize key elements of that process (tabular presentation, where appropriate, is encouraged).

Provide the written plan/graphical representation of the assessment plan clearly identifying who will do what when. If different student outcomes will be assessed in different years, provide an overview of this via a simple table (student outcome versus year of assessment).

ETAC recommends the use of a table (one table per outcome) that captures much of what is requested below (see sample table below). Once data and the other boxes are completed, the table will grow to be several pages.

Overview

The Department of Technology has developed and implemented a Continuous Improvement Plan (CIP) for all ABET accredited programs. The department faculty, in conjunction with the IAC for Civil ET, Electronics ET, Mechanical ET, and Occupational Safety, worked to create a plan that is broad enough to encompass all programs but flexible enough to meet the needs of the individual programs. This collaborative effort has resulted in a diverse initiative. Annual IAC and regular ABET meetings allow for discussion of continuous improvement from differing perspectives. This allows for sharing of ideas and viewpoints that would otherwise not be expressed or shared. This is especially beneficial to academic programs with few faculty members.

The following is a synopsis of the CIP. The CIP is scheduled for review and possible revision the Fall 2019 semester.

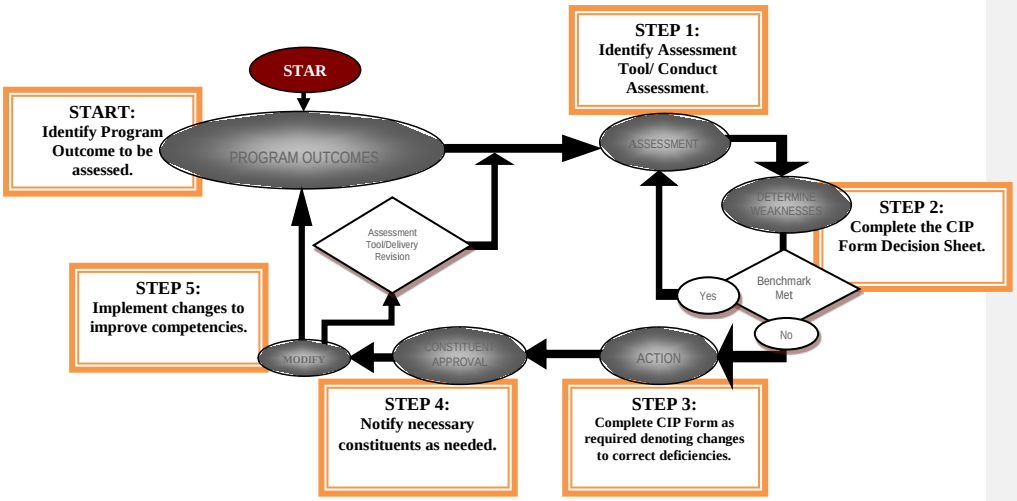
Terminology

The ANSAC and ETAC of ABET accredited programs at FSU use the following terms in its Continuous Improvement Plan and in meetings when discussing continuous improvement:

- **Assessment Points:** The intersection of the course and Student Outcome on the matrix denoted by ABET's legacy "a-k" outcomes. Mapping to the new ABET 1-5 outcomes was shown in Criteria 3.
- **Assessment Tools**: Materials used to gather information for assessment purposes. Assessment tools are specific to the Program Outcomes 1-5. Examples include but are not limited to:
    - Exam questions,
    - Projects,
    - Quizzes,
    - Interviews,
    - Pre and Post exams,
    - Labs,
    - Other.
- **Assessment**: Process of gathering/utilizing assessment tool, and evaluation of assessment tools.
- **Determination of Weakness:** Evaluation of the assessed data in comparison to established benchmark.
- **Actionable Item:** Outcome falling below established benchmark.
- **Action:** Steps proposed for the elimination or control of the weakness.
- **Constituent Approval:** When necessary, the constituencies will be consulted on the intended action.
- **Continuous Improvement Plan:** A comprehensive plan developed and approved by the faculty and IACs used to evaluate outcomes against established benchmarks.
- **Modification:** Change to the Program Outcomes or elements relating to the outcomes.
- **Program Outcomes:** Statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.

CIP Flowchart

Assessment of Program Outcomes is systematically conducted following the procedure specified in the CIP. This flowchart depicts the steps taken to gather and assess materials and modify either delivery or outcomes when established benchmark is not achieved.



Start: Identify Program Outcome to be Assessed

To begin the assessment process, the assessment point must be identified on the program's outcomes matrix. This matrix was developed by the program faculty and approved by the IAC. As seen in the matrix (Figure 4-2), the model schedule maps to Program Outcomes indicating which of ABET's outcomes is to be assessed. The example matrix shown was for the legacy outcomes and was used for continuous improvement planning throughout the six year cycle.

Program Outcomes Civil Engineering Technology							
	Course	1 (a,b)	2 (c,f)	3 (d,e,g)	4 (h)	5 (i)	6 (j, k, l, m)
Freshman First Semester 14 hrs.	CIVIL 1100 CIVIL 2210 ENGL 1101 1510 TECH 1108	 X 	 	 **A(g)** X 	 **A(h)** 	 	
Freshman Second Semester 16 hrs.	CIVL 2220 COMM 2202 ENGL 1103 MATH 1520 MECH 1100	 X 	**A(c)** X	 	 	 	**A(k)**
Sophomore First Semester 15 hrs.	CHEM 1101 CIVL 2200 MECH 2200 TECH 2290	 X X	 X 	 X 	 	 	
Sophomore Second Semester 15 hrs.	CIVL 2230 CIVL 2240 CIVL 2275 CIVL 2280 CIVL 2290	X **A(a)** **A(b)**	 **A(f)** 	 **A(d)** **A(e)** X	 	**A(i)** 	**A(j)** **A(l)** **A(m)**
	Course	1 (a,b)	2 (c,f)	3 (d,e,g)	4 (h,k)	5 (i,j)	6 (l, m, n, o)
Junior First Semester 15 hrs.	CIVL 3305 CIVL 3340 PHYS 1101 TECH 3300	**A(a)** X 	 **A(c)** 	 X X	 	 	**A(o)** X
Junior Second Semester 16 hrs.	CHEM 1102 CIVL 4440 CIVL 4470 MANF 2205 TECHNICAL ELECTIVE	 	 X 	 **A(d)** **A(e)** 	 	 	 **A(n,o)** **A(o)**
Senior First Semester 15 hrs.	CVIL 4410 CIVL 4460 GEOG 2210 MECH 3320 GS: OUTCOME 12	 **A(b)** 	**A(f)** X X 	 X 	 	 	
Senior Second Semester 14 hrs.	CIVL 4400 CIVL 4420 FREE ELECTIVE HIST 1107 / 1108 GS: OUTCOME 10	 X 	 	**A(g)** X 	**A(k)** **A(h)** 	**A(j)** **A(i)** 	**A(l)** **A(m)**
		Assessment Cycle One (2013-2014) (2016-2017)		**Assessment Cycle Two** (2014-2015) (2017-2018)			**Assessment Cycle Three** (2016-2017) (2018-2019)

Figure 4-2

Understanding the Matrix

As explanation to the coding of the matrix, Figure 3 clarifies the meaning of the notations. The left column contains the academic courses. The "x" indicates courses in which students should attain academic competencies related to that Program Outcome. The "A" indicates the course in which that competency is assessed. Lastly, the parenthetical notation specifies which ABET outcome is being assessed.

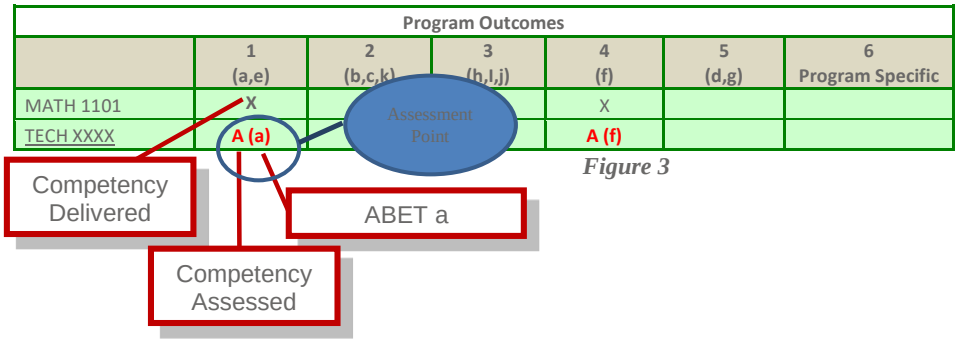


Figure 3

STEP 1: Identify Assessment Tool/ Conduct Assessment

For each assessment point on the matrix, there is an assessment tool developed and managed by the course professor. This tool may be an exam question, project, report, or quiz. The tool used may not be identical each time administered but is similar in content and depth of knowledge.

An example of an assessment tool is:

CIVL 2240

6. **solve complex problems utilizing discipline specific expertise.**

q. employing productivity software to solve technical problems.

Topography Lab: Students will make a topographic map of a select area on campus.
Required for the lab will be:
-Traverse computations
-Topography points
*-AutoCAD drawing of area topography

***Used for assessment (Or similar project)**

Once the assessment is conducted, the work is graded/evaluated by the course professor. This may be as simple as the work being correct or incorrect or it may require the use of a grading rubric developed for the assignment.

STEP 2: Complete the CIP Decision Sheet

Once the student work is evaluated, the professor completes a CIP Decision Sheet. This form (Form 4-1), tracks the success of the assessment point in comparison to the established benchmark. If the benchmark is met or exceeded, this form is filed away, and the assessment point is collected and assessed again when required by the assessment cycle.

CI Form Continuous Improvement	3 Outcome Number	e ABET outcome	2280 Course Number
Program Name:	◉ AS ○ BS Civil ET	○ AS ○ BS Mechanical ET	
	○ AS ○ BS Electronics ET	○ BS Occupational Safety	
Date: 8/14/2015		Form Completed By: Gary Zickefoose	

1. Assessment Tool Example/Description (ie: exam, project description, homework problem)

Comprehensize test covering water pollution parameters, water quality, closed conduit and open chanel, and hydrology.

2. Established Benchmark: 70% of students achieve or exceed 60%

3. Assessment

○ AC 1 ◉ AC 2 ☐ AC 3 Spring 2013	Spring 2014	Spring 2015
Data Summary	Data Summary	Data Summary

Aggrate Data (using the data collected for three years, record the percentage of students achieving or exceeding the established benchmark)

Benchmark Met	○ Yes (action not required)
	◉ No (action required - continue to Section 4)

4. Description of Weakness:

5. Description of Proposed Actions:

6. Implementation Plan:

Implementation Steps:	Implementation Date

Form 4-1

The course professor establishes the benchmark for that assessment point in their course. All assessed materials are measured against the benchmark system established in Figure 4-4. The targeted benchmark indicates that 70% of the students have met or exceeded the desired score or grade established by the assignment. Note that the benchmark has been approved by the IAC.

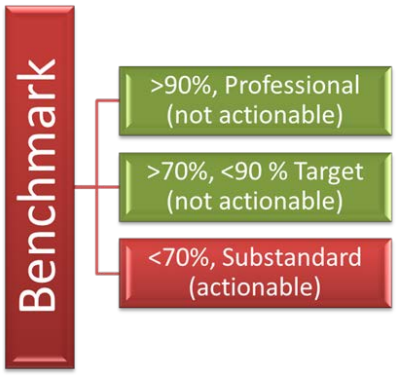


Figure 4-4

Assessment and Benchmarking

Once the assessment tool is completed by the students, the collected work is evaluated by the course professor. All assessed materials are measured against the benchmark system established in Figure 4. The targeted benchmark indicates that 70% of the students have met or exceeded 70% of the desired score or grade established by the assignment. Note that the benchmark has been approved by the IAC.

STEP 3: Complete CIP Form as Required Denoting Changes to Correct Deficiencies

When the benchmark is not met, this is considered substandard and actionable. The professor must complete a CIP Form (shown below, Form 4-2). This form requires the professor to identify and note the weaknesses, offer strategies for modifications (this can be related to material delivery, development, etc…), and share information or seek counsel of constituencies.

CI Form Continuous Improvement	3 Outcome Number	e ABET outcome	2280 Course Number

Program Name:	◉ AS ○ BS Civil ET	○ AS ○ BS Mechanical ET
	○ AS ○ BS Electronics ET	○ BS Occupational Safety
Date: 8/14/2015		Form Completed By: Gary Zickefoose

1. Assessment Tool Example/Description (ie: exam, project description, homework problem)

Comprehensize test covering water pollution parameters, water quality, closed conduit and open chanel, and hydrology.

2. Established Benchmark: 70% of students achieve or exceed 60%

3. Assessment

○ AC 1 ◉ AC 2 ☐ AC 3 Spring 2013	Spring 2014	Spring 2015
Data Summary	Data Summary	Data Summary

Aggrate Data (using the data collected for three years, record the percentage of students achieving or exceeding the established benchmark)

Benchmark Met
○ Yes (action not required)
◉ No (action required - continue to Section 4)

4. Description of Weakness:

5. Description of Proposed Actions:

6. Implementation Plan:

Implementation Steps:	Implementation Date

Form 4-2

STEP 4: Notify Necessary Constituents as Needed

Constituencies may need to be notified of weaknesses as well as proposed changes. The IAC is briefed annually on the weaknesses identified in the collection and processing of Program Outcomes. Students, as constituents, are often notified of substandard performance

when reviewing the material or if the assessment tool is deemed flawed in some way. Other program faculty members may be notified of findings if a change in delivery methodology is proposed or if the course faculty wants to move the assessment point.

The decision to present this information to the IAC is discussed during the Collaborative Report meeting. This is a meeting of program faculty conducted the first week of every semester to discuss the findings from the previous semester. These meetings produce reports that are filed in the ABET room, and reviewed with the IAC at the annual November meetings.

STEP 5: Implement Changes to Improve Competencies

The last step in the CIP is to implement changes by either changing pedagogy, or the outcome itself. At no point has a Program Outcome been changed. However, it is common to change the assessment tool, delivery methodology, or location (course) of the assessment. When weaknesses are identified, it is common for faculty to develop a new or revised assessment tool, attach it to the CIP and administer it during the next applicable cycle.

Assessment Cycle

As cited on the bottom row of the matrix and summarized in Figure 4-5, below, the assessment frequency is a three year cycle.

- Year 1: Assess Outcomes 1 and 2
- Year 2: Assess Outcomes 3, 4, and 5
- Year 3: Assess Outcome 6

Program Outcomes **Civil Engineering Technology**						
Course	1 (a,b)	2 (c,f)	3 (d,e,g)	4 (h,k)	5 (I,j)	6 (l-v)
	ASSESSMENT CYCLE ONE (AC1)		**ASSESSMENT CYCLE TWO (AC2)**			**ASSESSMENT CYCLE THREE (AC3)**

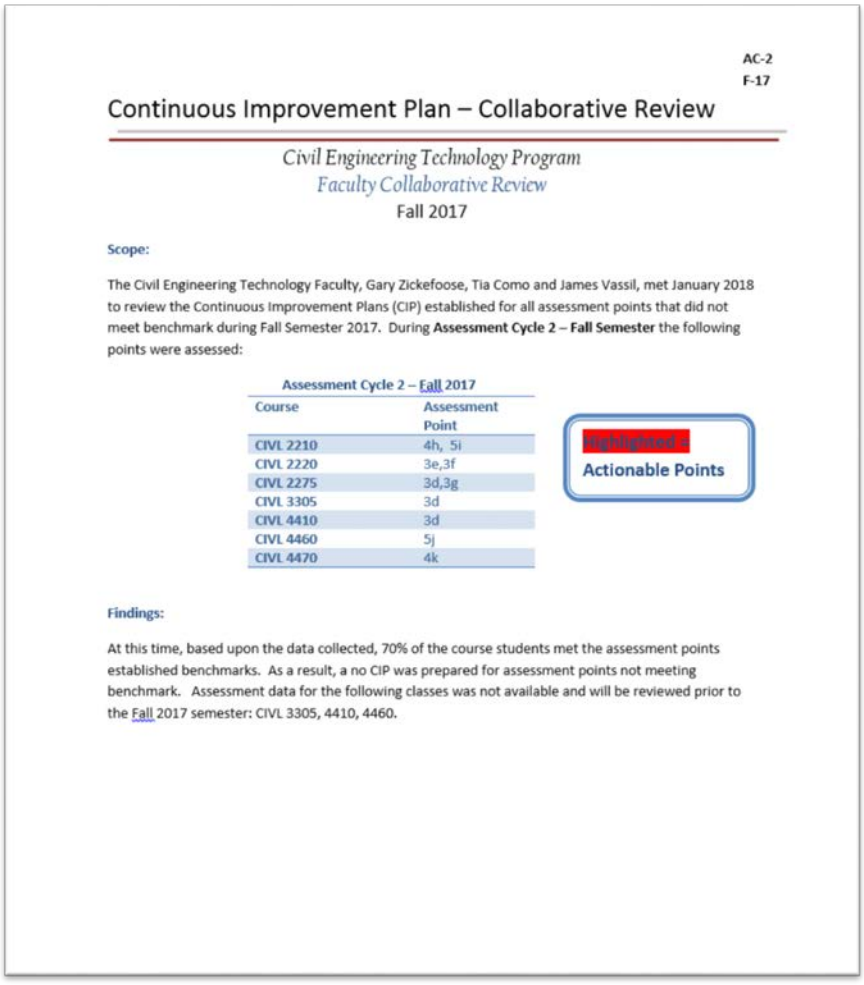
Figure 4-5

Maintenance and Management of Documents

All CIP documentation is maintained in a file system in the ABET room. Faculty are encouraged to utilize TaskStream to electronically file and manage the documents as well. The faculty are responsible for completing and filing all forms in order to track assessment results and required corrective measures.

Collaborative Report

As previously mentioned, program faculty meet during the first week of every semester to discuss actionable items from the previous semester's assessment points. These meetings allow for discussion and collaboration on corrective actions to substandard student performance. The reports are filed with the program coordinator and the ABET coordinator for future reference



AC-2
F-17

Continuous Improvement Plan – Collaborative Review

Civil Engineering Technology Program
Faculty Collaborative Review
Fall 2017

Scope:

The Civil Engineering Technology Faculty, Gary Zickefoose, Tia Como and James Vassil, met January 2018 to review the Continuous Improvement Plans (CIP) established for all assessment points that did not meet benchmark during Fall Semester 2017. During **Assessment Cycle 2 – Fall Semester** the following points were assessed:

Assessment Cycle 2 – Fall 2017

Course	Assessment Point
CIVL 2210	4h, 5i
CIVL 2220	3e,3f
CIVL 2275	3d,3g
CIVL 3305	3d
CIVL 4410	3d
CIVL 4460	5j
CIVL 4470	4k

Highlighted =
Actionable Points

Findings:

At this time, based upon the data collected, 70% of the course students met the assessment points established benchmarks. As a result, a no CIP was prepared for assessment points not meeting benchmark. Assessment data for the following classes was not available and will be reviewed prior to the Fall 2017 semester: CIVL 3305, 4410, 4460.

B. Assessment Metrics and Methods of Student Outcomes

List the metric(s), measure(s) or performance indicator(s) used for each student outcome. Describe the process for collecting data or making assessments for each (tabular format is encouraged). Examples of assessment instruments can be electronically referenced in the self-study report and must be available for review at the time of the visit.

All assessment Metrics and Methods of SO's are shown in tabular format on the following pages.

C. Assessment Schedule and Frequency

Present the schedule and frequency for each type of assessment as well as points of accountability (tabular format is encouraged). Examples of assessments or data collected to date can be referenced electronically in the self-study report and must be available for review at the time of the visit.

All assessment schedule and frequency of SO's are shown in tabular format on the following pages.

D. Evaluation

Present the evaluation schedule, points of accountability, and expected level of attainment for each student outcome. Provide summaries of the results of evaluation analyses over time illustrating current attainment of each student outcome and trends in attainment over time (tabular presentation is encouraged). Describe how results are communicated and preserved and provide one or more examples electronically or in appendices.

Assessment evaluation of SO's are shown in tabular format on the following pages. Descriptions are provided within the tables.

Student Outcome 1: *An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems*

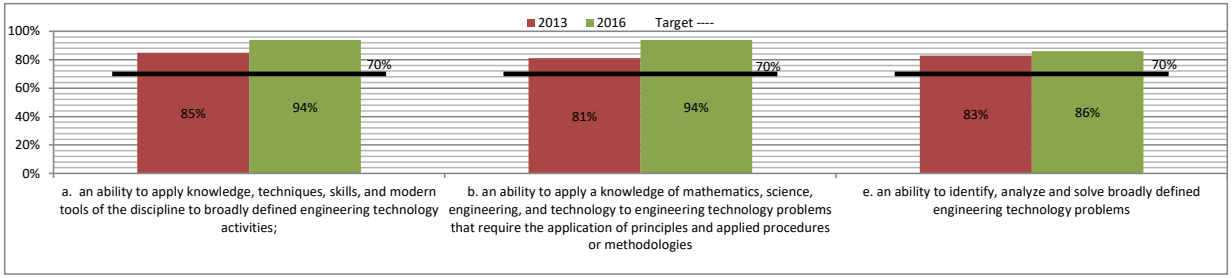
Legacy Outcomes mapped to New ABET SO 1	Courses were outcome exists (CIVL courses)	Specific Method of Assessment (rubric, etc.)	Courses Assessed (where the outcome and related data are collected)	Cycle of When the outcome Assessed (how often)	Year & Semester when Data Were Collected	Performance Target for outcome
a. an ability to apply knowledge, techniques, skills, and modern tools of the discipline to broadly defined engineering technology activities;	2200 2210 2220 2240 2280 2290 3305 3340	Direct: Final exam Indirect: Student survey	CIVL 3305	3 years	Fall 2013 Fall 2016	70%
b. an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies	2200 2210 2220 2240 2280 2290 3305 3340	Direct: Final Exam Indirect: Student Survey	CIVL 4460	3 years	Fall 2013 Fall 2016	70%
f. an ability to identify, analyze and solve broadly defined engineering technology problems	2200 2210 2220 2240 2280 2290 3305 3340	Direct: Final Exam Indirect: Student Survey	CIVL 4410	3 years	SPG 2013 SPG 2016	70%

Summary of Aggregated Assessment Data:
Describe how the assessment data from each outcome is aggregated and provide an overall assessment data set. Use charts or formulas as necessary but include the numbers of students that were assessed.

For summative assessment, the decision was made to focus on the direct assessment for all indicators.

Outcome a: Assessment data was aggregated in 2013 and again in 2016. The 2016 data is based on 3-years of aggregated assessment data (2014, 2015, 2016). All students in the course were assessed. The course enrollment is typically 20.
Outcome b: Assessment data was aggregated in 2013 and again in 2016. The 2016 data is based on 3-years of aggregated assessment data (2014, 2015, 2016). All students in the course were assessed. The course enrollment is typically 20.
Outcome f: Assessment data was aggregated in 2013 and again in 2016. The 2016 data is based on 3-years of aggregated assessment data (2014, 2015, 2016). All students in the course were assessed. The course enrollment is typically 20.

Results of Evaluation of Aggregated Assessment Data:
Based on aggregated assessment data, provide evaluation and analysis to illustrate the extent to which the student outcome is being attained. Use of charts/graphs with an explanation is recommended.



Actions for Continuous Improvement:
Briefly list the actions for program improvement that have resulted from the results of evaluation processes described above. Indicate any significant future program improvement plans based upon recent evaluations. Provide a brief rationale for each of these planned changes. Details can be provided in the following report section.

All targets were met and no improvements were made during this 6-year cycle. However, beginning Fall 2019, Performance Indicators will be implemented for this and all student outcomes.

Results of Actions for Improvement
Briefly describe the results of any changes (whether or not effective) in those cases where re-assessment of the results has been completed. Details can be provided in the following report section.

As shown in the table above, all targets were met.

Assessment Instruments:
How are the assessment and evaluation results documented and maintained? Attach copies of the assessment instruments or materials referenced in your table. Attach samples of student work at various levels (poor, satisfactory, very good). This can be an appendix or separate file.

All assessment and evaluation results are documented on the departments Continuous Improvement (CI) form. The forms are filed in the Assessment file storage and reviewed when the cycle dictates. Annual faculty collaborative reports summarize all assessments and continuous improvement changes. Examples of the assessment instruments and student work can be found in the on-site display.

Student Outcome 2: *An ability to design systems, components, or processes for broadly defined engineering technology problems appropriate to the discipline*

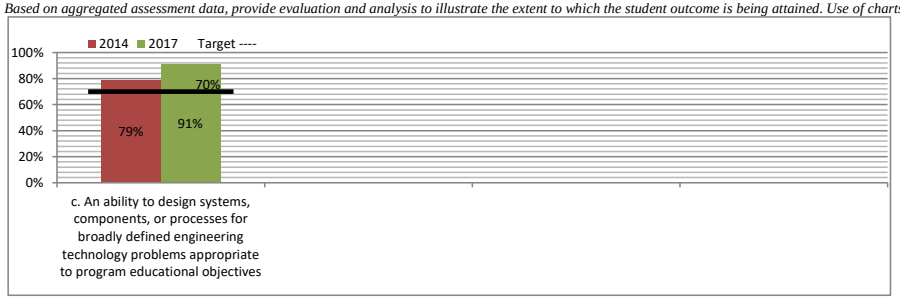
Legacy Outcomes mapped to New ABET SO 2	Courses were PI exists (CIVL courses)	Specific Method of Assessment (rubric, etc.)	Courses Assessed (where the PI and related data are collected)	Cycle of When the PI Assessed (how often)	Year & Semester when Data will be Collected	Performance Target for PI
d. An ability to design systems, components, or processes for broadly defined engineering technology problems appropriate to program educational objectives	2220 2240 2280 2290 3305 4400 4410 4440 4460 4470	Direct: Final exam Indirect: Student survey	CIVL 4440	3 years	SPG 2015 SPG 2018	70%

Summary of Aggregated Assessment Data (across all PIs):
Describe how the assessment data from each PI is aggregated and provide an overall assessment data set. Use charts or formulas as necessary but include the numbers of students that were assessed.

For summative assessment, the decision was made to focus on the direct assessment for all indicators.

Outcome d: Assessment data was aggregated in 2015 and again in 2018. The 2016 data is based on 2-years of aggregated assessment data (2014, 2015) then in 2018 the data is based on 3 year of aggregated data (2016, 2017, 2018). All students in the course were assessed. The course enrollment is typically 20.

Results of Evaluation of Aggregated Assessment Data:
Based on aggregated assessment data, provide evaluation and analysis to illustrate the extent to which the student outcome is being attained. Use of charts/graphs with an explanation is recommended.



Actions for Continuous Improvement:
Briefly list the actions for program improvement that have resulted from the results of evaluation processes described above. Indicate any significant future program improvement plans based upon recent evaluations. Provide a brief rationale for each of these planned changes. Details can be provided in the following report section.

All targets were met and no improvements were made during this 6-year cycle. However, beginning Fall 2019, Performance Indicators will be implemented for this and all student outcomes.

Results of Actions for Improvement
Briefly describe the results of any changes (whether or not effective) in those cases where re-assessment of the results has been completed. Details can be provided in the following report section.

As shown in the table above, all targets were met.

Assessment Instruments:
How are the assessment and evaluation results documented and maintained? Attach copies of the assessment instruments or materials referenced in your table. Attach samples of student work at various levels (poor, satisfactory, very good). This can be an appendix or separate file.

All assessment and evaluation results are documented on the departments Continuous Improvement (CI) form. The forms are filed in the Assessment file storage and reviewed when the cycle dictates. Annual faculty collaborative reports summarize all assessments and continuous improvement changes. Examples of the assessment instruments and student work can be found in the on-site display.

Student Outcome 3: *An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature*

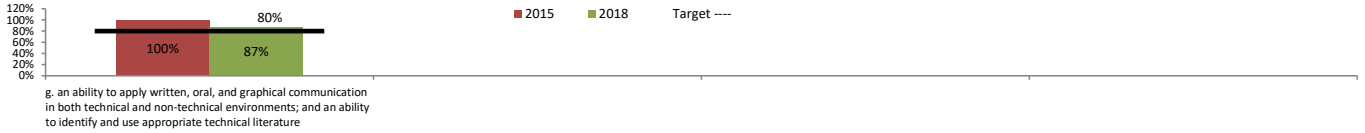
Legacy Outcomes mapped to New ABET SO 3	Courses were PI exists (CIVL courses)	Specific Method of Assessment (rubric, etc.)	Courses Assessed (where the PI and related data are collected)	Cycle of When the PI Assessed (how often)	Year & Semester when Data Were Collected	Performance Target for PI
g. An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature	1100 2210 2200 2220 2230 2240 2275 4400 4420	Direct: Scoring rubric Indirect: Student Survey	CIVL 4400	3 years	SPG 2015 SPG 2018	80%

Summary of Aggregated Assessment Data (across all PIs):
Describe how the assessment data from each PI is aggregated and provide an overall assessment data set. Use charts or formulas as necessary but include the numbers of students that were assessed.

For summative assessment, the decision was made to focus on the direct assessment for all indicators.

Outcome g: Assessment data was aggregated in 2015 and again in 2018. The data is based on multiple-years of aggregated assessment data. All students in the course were assessed. The course enrollment is typically 12

Results of Evaluation of Aggregated Assessment Data:
Based on aggregated assessment data, provide evaluation and analysis to illustrate the extent to which the student outcome is being attained. Use of charts/graphs with an explanation is recommended.



Actions for Continuous Improvement:
Briefly list the actions for program improvement that have resulted from the results of evaluation processes described above. Indicate any significant future program improvement plans based upon recent evaluations. Provide a brief rationale for each of these planned changes. Details can be provided in the following report section.

Fall 2015: The general transportation model was adopted as guide to deliver this capstone experience. This years' project began as "*Transportation Problems between FSU Campus and I-79*", where multiple situational problems were first identified by teams of students, and the most critical problem was selected. Discussions were mediated prior to selecting the final "problem" to address, while considering the safety of the students working in the field. New groups were formed to identify the problem in more detail as follows: surveying, traffic counters, researchers and project managers. The surveying team was then split into design team leaders and different teams were formed to evaluate the designs. This was to ensure no bias would exists. This was the first year this model was tried, and it proved to be a great experience.

One component was the development of an Environmental Impact Evaluation system which considered both positive and negative impacts. Students specifically evaluate each problem and then the solutions in detail, with respect to number of environmental issues. Collectively, the evaluation impact system evolved descriptively leading to a weighed numerical system which was used to equate design against design. The intersection of Locust Avenue and Seventh Street was the specific problem addressed, which gave the class a unique opportunity to compare their solutions to the actual design by the WV DOH. The state employees who participated in this event were very pleased to see how similar the students' ideas paralleled their actual design. This problem has now been rectified by the WV DOH.

Fall 2018: Industry consultants from the WV Division of Highways (DOH) are used throughout the semester to help guide the students to successful completion of their final product. Partnerships with the West Virginia Local Technical Assistance Program (WV LTAP) give the students the opportunity to collect continuous traffic data via radar recorders which provide pertinent data on the number of vehicles, their size and speed. This information provides average daily traffic (ADT) values, peak demands, and the selection of an appropriate design vehicle. Also noteworthy are the alliances with other specialized personnel who cover the WV DOH's requirements for drawing submissions and critiques by various alumnus.

This project is continuously improved since the problem addressed changes each year, so the most recent years are discussed herein. For onsite viewing, all student work is included in one box per year. This includes the final PowerPoint (on a jump drive), the final report (with checkpoints leading to the final report), and drawings. A tape of the actual presentation was also tried a few times but didn't prove to be as effective as envisioned. The students are now charged with taping each other in their groups practice sessions.

Results of Actions for Improvement
Briefly describe the results of any changes (whether or not effective) in those cases where re-assessment of the results has been completed. Details can be provided in the following report section.

Spring 2018: Bringing practical knowledge into the classroom is paramount for the young engineers of our future, and we at Fairmont State University do our best to emphasize this notion with the Civil Engineering Technology (CET) capstone experience. Students are exposed to a semester long project in the Transportation and Highway Design senior capstone course, bringing together topics they learned throughout their tenure at FSU. Given the nature of the selected course, a local transportation issue is studied, in depth, and used to help the students embrace the broad versatility of the CET curriculum.

Assessment Instruments:
How are the assessment and evaluation results documented and maintained? Attach copies of the assessment instruments or materials referenced in your table. Attach samples of student work at various levels (poor, satisfactory, very good). This can be an appendix or separate file.

All assessment and evaluation results are documented on the departments Continuous Improvement (CI) form. The forms are filed in the Assessment file storage and reviewed when the cycle dictates. Annual faculty collaborative reports summarize all assessments and continuous improvement changes. Examples of the assessment instruments and student work can be found in the on-site display.

Student Outcome 4: *An ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiment*

*This outcome is linked to legacy outcome "c". The legacy outcome was used to measure new Student Outcome 4.

Performance Indicators (PI) for this outcome	Courses were PI exists (CIVL courses)	Specific Method of Assessment (rubric, etc.)	Courses Assessed (where the PI and related data are collected)	Cycle of When the PI Assessed (how often)	Year & Semester when Data Were Collected	Performance Target for PI
c. An ability to conduct standard tests and measurements, and to conduct, analyze and interpret experiments	2200 2220 2240 3305 3340 4470	Direct: Compaction Laboratory rubric Indirect: Student survey	CIVL 3340	3 years	SPG 2014 SPG 2017	70%

Summary of Aggregated Assessment Data (across all PIs):

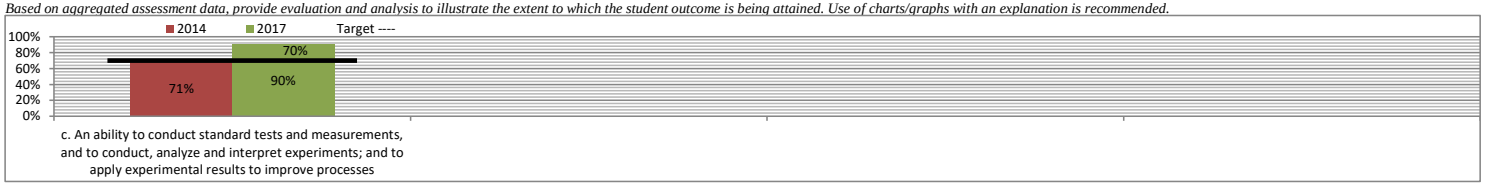
Describe how the assessment data from each PI is aggregated and provide an overall assessment data set. Use charts or formulas as necessary but include the numbers of students that were assessed.

For summative assessment, the decision was made to focus on the direct assessment for this outcome.

Outcome c: Assessment data was aggregated in 2014 and again in 207. The data is based on multiple-years of aggregated assessment data. All students in the course were assessed. The course enrollment is typically 18

Results of Evaluation of Aggregated Assessment Data:

Based on aggregated assessment data, provide evaluation and analysis to illustrate the extent to which the student outcome is being attained. Use of charts/graphs with an explanation is recommended.



Actions for Continuous Improvement:

Briefly list the actions for program improvement that have resulted from the results of evaluation processes described above. Indicate any significant future program improvement plans based upon recent evaluations. Provide a brief rationale for each of these planned changes. Details can be provided in the following report section.

This laboratory experiment and report is evaluated after the instructor's input is given on two introductory laboratories and a final laboratory on soil classifications. Here, typical properties and uses for those soil samples are investigated and studied more in-depth at each juncture. As the semester progresses, students should know how to apply the theory and what is expected of them, making this specialized assessment a lot more meaningful. Furthermore, the lessons learned in CIVL 2220 Materials and Methods are reinforced.

The first part of the classification lab (introduced) is easier than the second one (reinforced), so it is no surprise the grades are better. This trend was noticed in every year evaluated except Fall 2017. One would attribute this to the fact that this group of students were exceptional throughout the semester! However, as evidenced in every other year evaluated, the measured point showed a trend upward, as designed, even though this assignment is graded harder and the rubric more focused on the students' ability to analyze and apply the results to field recommendations.
One should note that each laboratory exercise is done as a group and each member of the group is required to evaluate their peers. Grades are often modified as a result of the students' assessments of each other. As summarized below, threshold values were met, yet the laboratory has been reviewed each semester and modified slightly to achieve better results.

Results of Actions for Improvement

Briefly describe the results of any changes (whether or not effective) in those cases where re-assessment of the results has been completed. Details can be provided in the following report section.

Previously the consolidation laboratory was being used to measure this point which included a recommendation for allowable soil pressure. This scenario was tried more than once, but seemingly too difficult for the students to grasp. Proper assumptions were not being made and so the recommendations did not meet benchmark. Therefore, the rubric and field situation were modified, and the analysis was conducted in increments, with more instructor input. A shorten report is being generated, but the focus is on data analyses and sizing footings based on consolidation settlement.

Another change that helped overall in the curriculum was switching Soils I to Fall. Previously, Advanced Soils was offered in the Fall and the students didn't remember a lot of the concepts learned over summer break. Advanced Soils builds on the first class, and too much time was allocated to reviewing. Switching these offerings permitted the instructor to build more content coverage in the spring semester.

Assessment Instruments:

How are the assessment and evaluation results documented and maintained? Attach copies of the assessment instruments or materials referenced in your table. Attach samples of student work at various levels (poor, satisfactory, very good). This can be an appendix or separate file.

All assessment and evaluation results are documented on the departments Continuous Improvement (CI) form. The forms are filed in the Assessment file storage and reviewed when the cycle dictates. Annual faculty collaborative reports summarize all assessments and continuous improvement changes. Examples of the assessment instruments and student work can be found in the on-site display.

Student Outcome 5: *An ability to function effectively as a member of a technical team*

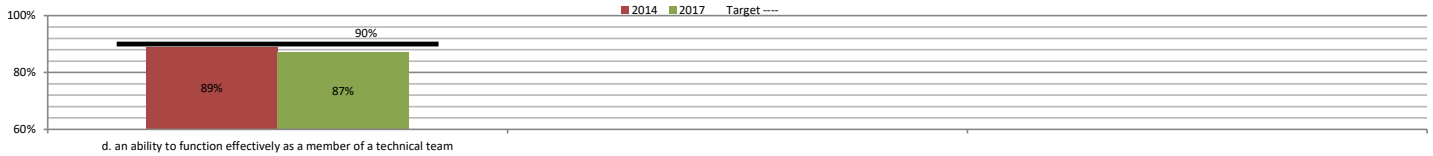
Performance Indicators (PI) for this outcome	Courses were PI exists (CIVL courses)	Specific Method of Assessment (rubric, etc.)	Courses Assessed (where the PI and related data are collected)	Cycle of When the PI Assessed (how often)	Year & Semester when Data Were Collected	Performance Target for PI
e. An ability to function effectively as a member of a technical team	1100 2200 2210 2220 2230 2240 3305 3340 4400 4470	Direct: Scoring rubric Indirect: Student survey	CIVL 4400	3 years	Fall 2015 Fall 2018	90%

Summary of Aggregated Assessment Data (across all PIs):
Describe how the assessment data from each PI is aggregated and provide an overall assessment data set. Use charts or formulas as necessary but include the numbers of students that were assessed.

For summative assessment, the decision was made to focus on the direct assessment for all indicators.

Outcome e: Assessment data was aggregated in 2015 and again in 2018. The data is based on multiple-years of aggregated assessment data. All students in the course were assessed. The course enrollment is typically 15

Results of Evaluation of Aggregated Assessment Data:
Based on aggregated assessment data, provide evaluation and analysis to illustrate the extent to which the student outcome is being attained. Use of charts/graphs with an explanation is recommended.



Actions for Continuous Improvement:
Briefly list the actions for program improvement that have resulted from the results of evaluation processes described above. Indicate any significant future program improvement plans based upon recent evaluations. Provide a brief rationale for each of these planned changes. Details can be provided in the following report section.

Spring 2015: Teams are used throughout the semester leading to an overall class effort. Team members and groups contributions to the overall project are also assessed, at each step along the way at each checkpoint. Grades at any checkpoint may be adjusted based on peer group input. These are not shared with the individuals. Additional points are allocated based on a written assessment of each teams' contribution to that checkpoint and a grade is given. These are confidentially shared and constructively critiqued for inclusion. This writeup is also a component of the writing intensive documentation for the course and gives the teams an additional outlook on their work.

Spring 2018: Teams are used throughout the semester leading to an overall class effort. Team members and groups contributions to the overall project are also assessed, at each step along the way at each checkpoint.
Individual grades at any checkpoint may be adjusted based on peer group input. These are not shared with the individuals. Additional points are allocated based on a written assessment of each teams' contribution to that checkpoint and a grade is given. These are confidentially shared and constructively critiqued for inclusion. This write-up is also a component of the writing intensive documentation for the course and gives the teams an additional outlook on their work.

The final project critiques are done by each student of the work performed, and the audience is asked to provide constructive criticism after the presentations. Again, these are shared with the class afterwards and discussed as lessons learned.

Additionally, a final project assessment is provided to specifically evaluate the advantages and effectiveness of being part of a large class team. The goal of using this tool is to view the students' perception of team activities. The benchmark here was to have an average of 7 or better on a per question and per student basis. Question 8 and 10 had the lowest scores. This is attributed to differences in students' back grounds, talent, and willingness to put the time and effort into the project. Only one student (7% of the class) scored below threshold in all years analyzed, along with one question in 2017 averaging below a 7.

Results of Actions for Improvement
Briefly describe the results of any changes (whether or not effective) in those cases where re-assessment of the results has been completed. Details can be provided in the following report section.

Spring 2020: implemented new teamwork student survey the results of which are yet to be determined as faculty will decide on a new aggregated data which includes the indirect measurement. This aggregation will be determined at a faculty collaboration meeting August 2020.

Assessment Instruments:
How are the assessment and evaluation results documented and maintained? Attach copies of the assessment instruments or materials referenced in your table. Attach samples of student work at various levels (poor, satisfactory, very good). This can be an appendix or separate file.

All assessment and evaluation results are documented on the departments Continuous Improvement (CI) form. The forms are filed in the Assessment file storage and reviewed when the cycle dictates. Annual faculty collaborative reports summarize all assessments and continuous improvement changes. Examples of the assessment instruments and student work can be found in the on-site display.

E. Using Results for Continuous Improvement

Describe how the results of the evaluations (from section D above) and any other available information are systematically used as input in the continuous improvement of the program. Present points of accountability, schedule and frequency. Summarize deliberations, decisions and actions which have been implemented as a result of these evaluations and indicate any significant future program improvement plans including the rationale for each. Provide references in the appendices or electronically as evidence of deliberations and decisions on improvements and input used. Evidence might include evaluation reports, agendas, minutes, memos, etc.

The table above has boxes for this information. The program should describe the use of the results for individual Student Outcomes in the table above and summarize the use for all Student Outcomes in Section E.

Program changes due to assessment findings are explained and documented through the use of the Collaborative Review Reports for the program. The collaborative reports identify all assessed points under that assessment cycle, all actionable items, and offer a summary of modifications for improvement. These collaborative reports are shared with the IAC and feedback is provided by the IAC.

Indirect data is also used for continuous improvement. Each academic year, students are surveyed to provide indirect measurement of outcome success. Faculty review the surveys for points that do not meet benchmark or are repeatedly noted in student comments. This is also documented in the Collaborative review reports.

Major program changes are not implemented until multiple assessment cycles (in a row) demonstrate student performance below benchmark. Instructional and delivery methods are tweaked every semester to meet the needs of the student population. For example, delivery methods that may vary include in-class examples, homework problems, project scenarios, lab exercises, etc. All collaborative reports shall be provided to the evaluator during site visit.

CRITERION 5. CURRICULUM

A. Program Curriculum

The applicable program criteria could include statements that add specificity to the curricular requirements found in Criterion 5 to differentiate the discipline designated by the program's title. These should be included in the program's coursework. Contact ABET at etac@abet.org if you have questions about the program criteria that apply to your program.

1. Complete Table 5-1 that describes the plan of study for students in this program including information on course offerings in the form of a recommended schedule by year and term along with average section enrollments for all courses in the program over the two years immediately preceding the visit. State whether the program is based on a quarter system or a semester system and complete a separate table for each option in the program.

Table 5-1 shows the CET curriculum plan of study. The program is based on a semester system. Fall and spring semesters are 16 weeks each. There are no current options in the CET program.

2. Describe how the curriculum aligns with the program educational objectives.

Curriculum Aligns with Program Objectives

The lower level major and general studies courses in the curriculum are chosen and developed to build a foundation for students regarding math, science, and liberal sciences. These learned competencies are then used in upper level courses to develop professional aptitudes. Table 5-2, below indicates how all courses align with the Program Objectives.

Program Educational Objectives *"broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve at the time of graduation and during the first few years following graduation." Graduates shall be competent in*	***Course Alignment***		
	General Studies	***Major Courses other than Civil Courses***	***Civil Courses***
1. Relate the concepts of self-directed lifelong learning and the ability to undertake further study and/or examinations specific to the discipline through demonstration of technical skills as a practicing professional, applying knowledge and discipline specific tools..	Geography 2210	TECH 2290 MECH 1100 MECH 2200	CIVL 1100 CIVL 2200 CIVL 2210 CIVL 2230 CIVL 2240 CIVL 2275 CIVL 2280 CIVL 2290 CIVL 3305 CIVL 4410 CIVL 4440 CIVL 4460
2. Evaluate results and develop professional documents relevant to the discipline and to communicate such findings to a technical and non-technical audience.	English 1101, 1103 Communications 2202		CIVL 2220 CIVL 2240 CIVL 4400 CIVL 4420 CIVL 4470
3. Operate effectively in a diverse, multi-disciplinary environment demonstrating skills in leadership, professionalism and teamwork.	Communications 2202		CIVL 2200 CIVL 2220 CIVL 2240 CIVL 3340 CIVL 4400 CIVL 4470

Table 5-2

3. Describe how the curriculum and its associated prerequisite structure support the attainment of the student outcomes.

Prerequisite Structure Supports Program Outcomes

Prerequisites are assigned to each course to ensure that the students enter the course with the necessary competencies to successfully meet course outcomes. These prerequisites and course outcomes are clearly defined on the course syllabus. Table *5-3* below summarizes the necessary prerequisites for each course in the program.

For example, in the Civil Engineering Technology program, Math, Technology, and Science skills are essential for many of the upper level Civil Engineering Technology courses. Therefore, these courses are listed as pre-requisites for courses such as Structures and Environmental Engineering Technology.

4. Attach a flowchart or worksheet that illustrates the prerequisite structure of the program's required courses.

Flowchart of Prerequisites

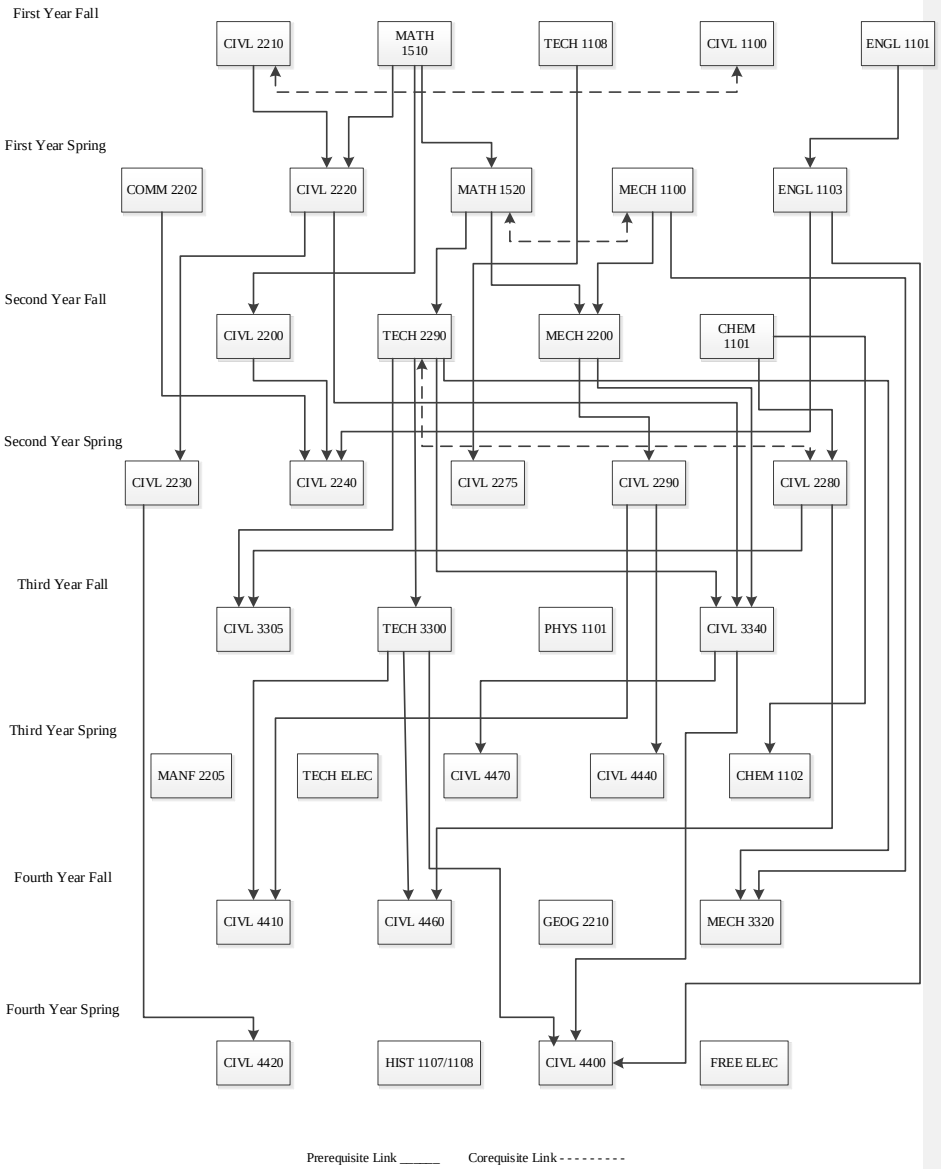


Figure 5-1

B.S.E.T in Civil Engineering Technology			
Current Program			
Required Courses		**Credits**	**Prerequisites**
CIVL 1100	Introduction to Civil Engineering	1	None
CIVL 2200	Intro to Surveying	3	MATH 1510 (CR)
CIVL 2210	Light Construction	4	None
CIVL 2220	Construction Materials	4	CIVL 2210 & MATH 1510
CIVL 2230	Construction Estimating	3	CIVL 2220
CIVL 2240	Land and Route Surveying	3	CIVL 2200, COMM 2202, ENGL 1103
CIVL 2275	Civil Engineering Graphics	3	TECH 1108
CIVL 2280	Environmental Engineering Technology I	3	CHEM 1101 &TECH 2290 (CR)
CIVL 2290	Introduction to Structures	3	MECH 2200
CIVL 3305	Hydraulics and Hydrology	3	CIVL 2280 & TECH 2290
CIVL 3340	Soil Mechanics	4	MECH 2200
CIVL 4400	Highway Design	4	CIVL 3340 & TECH 2290
CIVL 4410	Advanced Structural Analysis	3	CIVL 2290 & TECH 3300
CIVL 4420	Construction Planning and Administration	3	CIVL 2230
CIVL 4440	Structural Design	3	CIVL 2290
CIVL 4460	Environmental Engineering Technology II	3	CIVL 2280 & TECH 3300
CIVL 4470	Advanced Soils and Foundations	3	CIVL 3340
TECH 1108	Engineering Graphics	3	None
MATH 1510	Applied Technical Math I	X	Test Scores
MATH 1520	Applied Technical Math II	3	MATH 1510
TECH 2290	Engineering Analysis I	4	MATH 1520
TECH 3300	Engineering Analysis II	4	TECH 2290
CHEM 1101 or 1105	Chemistry I	X	Test Scores
CHEM 1102 or 2200	Chemistry II	4	CHEM 1101
PHYS 1101	Physics I	4	Test Scores
MECH 1100	Statics	X	MATH 1102
MECH 2200	Strength of Materials	4	MECH 1100
MECH 3320	Dynamics	3	MECH 1100 and Tech 3300

Table 5-3

5. Describe how your program meets the specific requirements for this program area in terms of hours and depth of study for each curricular area (Math and Basic Sciences, Discipline Specific Topics) specifically addressed by either the general criteria or the specific program criteria as shown in Table 5-1. It is helpful to describe how the coverage of algebra and trigonometry (for A.S. programs) or differential and integral calculus or other mathematics above the level of algebra and trigonometry (for B.S. programs) is accomplished. Please describe how the curriculum develops student proficiency in the use of equipment and tools common to the discipline is appropriate to the student outcomes and the discipline.

Curricular areas that have been identified by ABET's general criteria include competencies in college algebra, chemistry, and physics. Table *5-4* below outlines the terms of hours needed and the depth in which those competencies are used in the Civil Engineering Technology Program.

Competency Area	Credit Hours	Contact Hours	Demonstration of Depth of Study: Civil ET Courses in which Competencies are used
Math (Algebra, Trigonometry, Statistics, Calculus)	42	44	CIVL 2200, 2210, 2220, 2230, 2240, 2280, 2290, 3305, 3340, 4400, 4410, 4440, 4460, 4470
Chemistry	14	18	CIVL 2280, 4460
Physics	4	8	CIVL 2200, 2210, 2220, 2230, 2240, 2280, 2290, 3305, 3340, 4400, 4410, 4440, 4460, 4470

Table 5-4

6. Describe how the curriculum accomplishes a capstone or culminating experience (addressed by either the general or program criteria) and describe how this experience helps students attain related student outcomes as appropriate to the discipline and the degree (not degree level). Such description should give, consideration to factors such as engineering standards and codes; public health and safety; and local and global impact of engineering solutions on individuals, organizations and society.

Courses Requiring Cumulative Knowledge

Civil 4400, Highway Design, is the capstone course for the BSET program. The capstone project requires students to reflect on learning experiences in previous classes. The project has many components that challenge the student's depth of knowledge. The design aspects of the project include knowledge of surveying for highway layout (CIVL 2240) , materials competency for pavement designs (CIVL 2220), estimating proficiency (CIVL 2230), environmental awareness (2280 and 4460), and planning and scheduling concepts (CIVL 4420). The cumulative knowledge and skills learned and developed in lower-level courses are used for successful completion of the capstone project.

7. Describe how professional and ethical responsibilities, respect for diversity, and quality and continuous improvement are addressed in the curriculum.

Legacy outcome "i" states: an understanding of and a commitment to address professional and ethical responsibilities, including a respect for diversity. This outcome moved into curriculum beginning in the Spring of 2019. Having been part of the previous outcomes/assessment plan, these topics are covered (and were measured) in CIVL 4420, Construction planning and administration. The course covers topics such as engineering ethics, diversity and inclusion in lecture and class exercises.

Legacy outcome "k" states: a commitment to quality, timeliness, and continuous improvement. This outcome moved into curriculum beginning in the Spring of 2019. Having been part of the previous outcomes/assessment plan, these topics were covered (and were measured) in CIVL 4400, Highway Design/Capstone. The course project set milestones and had multiple submissions for the project. Ideas of timeliness, quality, and improvement were incorporated into the expectations and feedback for the capstone project.

8. If your program allows cooperative education or internships to satisfy curricular requirements specifically addressed by either the general or program criteria, describe the academic component of this experience and how it is evaluated by the faculty.

The Civil Engineering Technology program does not have a formal internship or cooperative education program. These activities are encouraged and are advertised by the faculty members when opportunities arise. Students may take a co-op course for 3 credits, but it is not required in the curriculum.

9. Describe by example how the evaluation team will be able to relate the display materials, i.e. course syllabi, textbooks, sample student work, etc., to each student outcome. (See the 2019-2020 APPM Section I.E.5.b. (2) regarding display materials.)

Display Materials at the Time of the Visit-Evaluators will review samples of displayed course materials including course syllabi, textbooks, example assignments and exams, and examples of student work, typically ranging from excellent through poor for only those courses that:

a) support attainment of the program's student outcomes; and

b) develop subject areas supporting attainment of student outcomes or contained in specific program criteria requirements.

At the program's discretion, other materials that document efforts made to continuously improve curricula, or that illustrate novel, unusual or creative efforts to enrich the curriculum and/or attainment of student outcomes may be provided.

Wherever possible, materials should be provided online or electronically.

For all programs, evidentiary displays during the visit will thoroughly represent the Program Objectives, Course Information, and Program Outcomes. The following displays will be developed and presented to the visiting teams.

1. Program Educational Objectives: Since these are delivered and assessed through the use of various tools, all examples will be compiled and displayed for perusal. This includes the following:
   a. Exit interviews:
      Graduating seniors are interviewed by a third-party prior to graduation. Information garnered is used to make modifications to the program, courses, or delivery of materials.
   b. Meeting minutes from Industrial Advisory Committee, Employers, and Alumni

2. Course Information: For each major course, there will be provided a syllabus, textbook (where applicable), laboratory assignments (where applicable), and other course materials provided by the faculty.

3. Program Student Outcomes: Since this is the most vital component of the CIP, each outcome will be presented with distinct mapping to the courses that support it. Figure 5-2 represents the process that will be used for the visit.

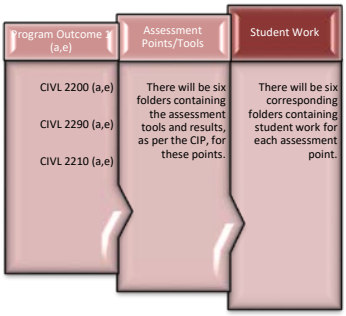


Figure 5-2

Each Program Outcome and the assessment point and tool will be displayed, and explained. Furthermore, the CIP information will be provided with the Program Outcomes indicating actionable items and modifications to correct. Lastly, the student work samples for those outcomes will be available for review.

B. Course Syllabi

In Appendix A of the Self-Study Report, include a syllabus for each course used for the degree.

C. Advisory Committee

Describe the composition of the program's advisory committee and describe how it is representative of organizations being served by the program's graduates. Describe activities of the advisory committee and provide evidence that it periodically reviewing the program's curriculum and advising the program on its program educational objectives and the current and future aspects of the technical fields for which the graduates are being prepared.

The Civil Engineering Technology's industrial advisory committee (IAC) is composed of individuals from local industry. The main industries that our program serves are the DOT, construction, and coal/gas industries. The advisory committee members are employed and have inside knowledge in these industries. Please see the following table of committee members and their employer and expertise.

Name	Employer	Job description
Chad Riley	Thrasher Engineering	Principle Engineer
R.J. Hovatter	Thrasher Engineering	Engineer
Joseph Lowther	Thrasher Engineering	Surveying
Robert McLain	WVDOT	Area Engineer
Samuel Perris	WVDOT	Level 5 Technologist
Travis Long	WVDOT	State Surveyor
Michael Nestor	Ascent Consulting and Engineering	Principle
Zachary Assaro	Ascent Consulting and Engineering	Principle
Steve Cain	Civil and Environmental Consultants	Principle
Lacy Moody	Civil and Environmental Consultants	Technician
Joe Timms	Retired	Former President of NCEES and WV PE Board
John Vincent	Stantec	Engineer
Richard Gaines	Stantec	Principle Engineer
Joshua Diaz	Langan	Engineer
Charles French	Antero Resources	Technician
John Lafferre	Octane Environmental	Technician
John Martin	Retired	Engineer

Table 5-5

The IAC meets annually to discuss trends, offer guidance, and review and support the continuous improvement initiatives of the program.

Table 5-1 Curriculum

Bachelors of Science: Civil Engineering Technology

Course (Department, Number, Title) List all courses in the program by term starting with first term of the first year and ending with the last term of the final year.	Indicate Whether Course is Required, Elective, or a Selective Elective by an R, an E or an SE[2]	*Curricular Area (Credit Hours)*				Last Two Terms the Course was Offered: Year and Semester	Average Section Enrollment for the Last Two Terms the Course was Offered[1]
		Math and Basic Sciences	Discipline Specific Topics	General Education	Other		
CIVL, 1100, Introduction to Civil Engineering Technology	R		1 hour			*F18, F17*	*24*
CIVL, 2210, Light Construction	R		4 hours			*F18, F17*	*25*
TECH, 1108, Engineering Graphics	R		3 hours			*S19, F18*	*24*
ENGL, 1101, Written English 1	R			3 hours		*S19, F18*	*24*
MATH, 1510, Applied Technical Math 1	R	3 hours				*S19, F18*	*24*
CIVL, 2275, Civil Engineering Graphics	R		3 hours			*S19, S18*	*24*
MATH, 1520, Applied Technical Math 2	R	3 hours				*S19, F18*	*24*
ENGL, 1103, Technical Report Writing	R			3 hours		*S19, F18*	*24*
COMM, 2202, Communication in the World of Work	SE			3 hours		*S19, F18*	*24*
MECH, 1100, Statics	R		3 hours			*S19, F18*	*20*
CIVL, 2200, Introduction to Surveying	R		3 hours			*S19, F18*	*15*
MECH, 2200, Strength of Materials	R		4 hours			*S19, F18*	*20*
CHEM, 1101, General Chemistry 1	R	4 hours				*S19, F18*	*20*
TECH , 2290, Engineering Analysis 1	R	4 hours				*S19, F18*	*24*
CIVL, 2220, Construction Materials and Methods	R		4 hours			*S19, S18*	*20*
CIVL, 2230, Construction Estimating	R		3 hours			*S19, S18*	*24*
CIVL, 2240, Construction, Land and Route Surveying	R		3 hours				
CIVL, 2280, Environmental Engineering Technology 1	R		3 hours			*S19, S18*	*20*
CIVL, 2290, Introduction to Structures	R		3 hours			*S19, S18*	*20*
CIVL, 3305, Hydraulics and Hydrology	R		3 hours			*S18, S19*	*20*
TECH, 3300, Engineering Analysis II	R	4 hours				*F18, S19*	*24*
PHYS, 1101, Introduction to Physics I	R	4 hours				*F18, S19*	*24*
CIVL, 3340, Introduction to Soil Mechanics	R		4 hours			*F17, F18*	*24*
CIVL, 4470, Advanced Soils and Foundations	R		3 hours			*S18, S19*	*24*
CIVL, 4440, Structural Design	R		3 hours			*S18, S19*	*24*
CHEM, 1102, Chemistry II	R	4 hours				*S18, S19*	*20*
MANF, 2205, Engineering Economy	SE			3 hours			
TECH, Elective, Technical elective- advisor approved	SE				3 hours	*Varies*	*Varies*
CIVL, 4410, Advanced Structural Analysis	R		3 hours			*F17, F18*	*20*
CIVL, 4460, Environmental Engineering Technology II	R		3 hours			*F17, F18*	*20*
GEOG, 2210, Introduction to Geography	E			3 hours		*F18, S19*	*24*
Fine Arts Elective	E			3 hours		*F18, S19*	*24*
MECH, 3320 Dynamics	R		3 hours			*F17, F18*	*24*
CIVL, 4420 Construction Planning and Administration	R		3 hours			*S18, S19*	*24*
Health and Well Being Elective	E			2 hours		*F18, S19*	*24*
HIST, 1107, US History I	E			3 hours		*F18, S19*	*24*
CIVL, 4400, Highway design/ Capstone	R		4 hours			*S18, S19*	*24*
Free Elective	E				2 hours	*Varies*	*Varies*
OVERALL TOTAL CREDIT HOURS FOR THE DEGREE		22	66	23	5		
PERCENT OF TOTAL		*21.7%*	*55%*	*19.2%*	*4.1%*		

1. For courses that include multiple elements (lecture, laboratory, recitation, etc.), indicate the average enrollment in each element.
2. Required courses are required of all students in the program, elective courses are optional for students, and selected electives are courses where students must take one or more courses from a specified group.

Instructional materials and student work verifying compliance with ABET criteria for the categories indicated above will be required during the campus visit.

CRITERION 6. FACULTY

A. Faculty Qualifications

Describe the qualifications of the faculty and how they are adequate to cover all the curricular areas of the program and also meet any applicable program criteria. This description should include the composition, size, credentials, and experience of the faculty. Complete Table 6-1. Include faculty curriculum vitae in Appendix B.

The Civil Engineering Technology program is supported by three full-time faculty members. Each of the faculty member's qualifications is discussed below offering justification for expertise in given areas.

- **Tia Como, PE** – Tia Como earned her BS and MS degree's from West Virginia University. Her specialization is in geotechnical engineering. Professor Como has diverse work experience along with extensive ongoing research in the geotechnical field. Professor Como is responsible for teaching Construction, Materials and Geotechnical classes.

- **James Vassil, PE** - James Vassil earned his BS degree from Fairmont State University and MS degree from New Jersey Institute of Technology. His specialization is in surveying and construction. Professor Vassil owns and operates a construction and engineering company. Primary responsibilities include surveying, statics, and estimating courses as well as serving as Civil ET program coordinator.

- **Gary Zickefoose, PE** – Gary Zickefoose earned his BS and MS degrees from North Carolina State University. His specialization is in structures and environmental engineering. Professor Zickefoose has worked as an engineer for local companies and also served in the United States Military as a construction project manager in Afghanistan for several years. Professor Zickefoose teaches the structures, environmental, and hydraulics courses.

- **Tabitha Lafferre, EI** – Tabitha Lafferre earned her BS degree from Fairmont State University and MS degree from New Jersey Institute of Technology. Although not allocated to the CET program, she teaches Surveying and other support courses for the program.

Table *6-1* is provided to summarize faculty qualifications.

Table 6-1. Faculty Qualifications

Civil Engineering Technology

Faculty Name	Highest Degree Earned- Field and Year	Rank [1]	Type of Academic Appointment[2] T, TT, NTT	FT or PT[3]	Years of Experience			Professional Registration/ Certification	Level of Activity[4] H, M, or L		
					Govt./Ind. Practice	Teaching	This Institution		Professional Organizations	Professional Development	Consulting/summer work in industry
Gary Zickefoose	MS, Civil Engineering- 1975	ASC	T	FT	10	29	29	PE	L	M	M
Tia Como	MS, Civil Engineering- 1996	P	T	FT	12	20	20	PE	M	H	H
James Vassil	MS, Civil Engineering- 2001	ASC	T	FT	9	18	18	PE	M	H	H
Tabitha Lafferre	MS, Civil Engineering- 2018	AST	TT	FT	3	3	3	EI	H	H	H
Daniel Martinez	BS, Civil Engineering Technology, 2015	A	NTT	PT	4	1	1	EI	H	H	H

Instructions: Complete table for each member of the faculty in the program. Add additional rows or use additional sheets if necessary. Updated information is to be provided at the time of the visit.

1. Code: P = Professor ASC = Associate Professor AST = Assistant Professor I = Instructor A = Adjunct O = Other
2. Code: TT = Tenure Track T = Tenured NTT = Non-Tenure Track
3. At the institution
4. The level of activity, high, medium or low, should reflect an average over the year prior to the visit plus the two previous years.

B. Faculty Workload

Complete Table 6-2, Faculty Workload Summary and describe this information in terms of workload expectations or requirements for the current academic year.

Workload Expectations

For the current academic year faculty workload expectations are in line with previous years and university guidelines.

All three full-time faculty in the Civil Engineering Technology program spend between five and ten percent of their professional initiatives in maintaining professional licensure (all are Professional Engineers in the state of WV). In addition to teaching upwards of 12 credit hours per semester, Ms. Como conducts slope/slide research for the state's Division of Highways.

Professor Zickefoose, instructed his regular 12 hour course load which included structural, environmental, project management, and applied calculus courses for not only civil majors but other Engineering Technology students. He also serves on college and university committees, participates in the Fundamentals of Engineering workshop, and continues to earn professional development hours.

Professor Vassil instructs surveying and estimating for civil majors. He also instructs a statics course that is interdisciplinary; thereby serving four non-civil major programs. In addition to his teaching load, Mr. Vassil serves as program coordinator. This requires participation in curriculum development, accreditation maintenance, student advising, student complaints, budget management, and program report development. Mr. Vassil is responsible for all program oversight matters. In addition, he also completes professional development activities.

C. Faculty Size

Discuss the adequacy of the size of the faculty and describe the extent and quality of faculty involvement in interactions with students, student advising, and oversight of the program.

The Civil Engineering Technology program is served by three full-time faculty members for an average enrollment between 90-100 students per year. The academic advising is evenly divided between the faculty members so that each one is responsible for advising approximately 30-40 students. Faculty also share the responsibilities of other students activities including but not limited to ASCE Student Chapter activities, site tours, internship and employment assistance and curriculum management. With the enrollment trend for the Civil ET program, a minimum of 3 faculty members is needed to maintain a strong viable program.

D. Professional Development

Provide a description of program professional development support for faculty and a general description of how faculty avail themselves of these opportunities (specific recent activities for each faculty member should be noted in their CV in Appendix B).

Table 6-3 below summarizes the professional development activities for the Civil Engineering Technology full-time faculty members.

Full-time Faculty Member	Professional Development Activities for 2018-2019
James Vassil, PE	• Attendance at all department lectures • WV Contractors license • WV DOT Surveying conference • ABET Continuous Improvement Workshop • ABET Symposium • Carlson Software Training
Gary Zickefoose, PE	• 30 hours to meet licensure requirements
Tia Como, PE	• FSU Summer Technical conference • ASHE Meetings/treasurer • WV Expo • ASCE Section meetings

Table 6-3

E. Authority and Responsibility of Faculty

Describe the role played by the faculty with respect to course creation, modification, and evaluation, their role in the definition and revision of program educational objectives and student outcomes, and their role in the attainment of the student outcomes. Describe the roles of others on campus, e.g., dean or provost, with respect to these areas.

Role of Faculty in Curricular Concerns

Faculty members are considered program and content experts in their respective disciplines of study. As such, they maintain full autonomy over their respective programs of study. Faculty is expected to design the best possible programs of study, course and program outcomes, and extra-curricular activities to support student learning. At Fairmont State University, ABET faculty are expected to participate in ABET assessment and meet with their industrial advisory committees on a yearly basis to review the programs of study being offered in the Technology Department at Fairmont State University.

The Department of Technology's ABET accredited programs maintain a Continuous Improvement Plan that assists faculty in assuring that programs and course outcomes are being met and that the programs of study are relevant based on the business and industrial needs of

our constituents. The faculty work directly with their industrial advisory committees to review faculty or student issues associated with meeting program and student outcomes and objectives.

The Role of Administration in Curricular Concerns

Administration relies heavily on faculty to assure that quality program of study are being offered at the institution. However, upper administration does not micromanage course or program outcomes or course development. The Dean of the College of Science and Technology and Provost are charged with monitoring the progress that students are making in program and course outcomes. Every five years, each program of study is reviewed by the institution to assure program quality and a sufficient number of graduates are able to enter the workforce. This data is reported to the West Virginia Higher Education Policy Council and the Board of Governors at Fairmont State University. Procedures are in place to address deficiencies in programs should the need arise.

All curriculum changes must be approved by the Curriculum Committee on the campus of Fairmont State University. Changes in curricula produce reactions that may be far-reaching in their effects. It is, therefore, important that all proposed changes be studied carefully before they are made.

1) An academic unit that wishes to propose a change in its curriculum should begin by communicating the nature of the change to all the faculty of the unit. The opinions of the unit's faculty should be reflected in the report of the proposed change, and proposals for curriculum changes should be forwarded only when they enjoy the support of the faculty of the unit. It is the Dean's role in the College of Science and Technology to assure that all faculty have access to the proposed curriculum, issues are addressed that may result from the curriculum change, and that faculty have an opportunity to vote on the proposed changes.
2) Proposals for change originating in academic units are forwarded to the Provost and Vice President for Academic Affairs [through the Associate Provost], who will be responsible for initial evaluation and recommendation.
3) After evaluating and consulting with the proposal's sponsors and other interested parties, the Provost and Vice President for Academic Affairs will recommend that the proposal be accepted, rejected, or modified; the proposal and recommendation are then submitted to the Curriculum Committee.
4) The Provost and Vice President may initiate proposals for curriculum change. The Provost and Vice President's proposals may be of two types: (a) those affecting existing instructional programs and academic units and (b) those bearing on the creation of new programs. Proposals of the first type should be submitted to the affected unit for its approval. Proposals of the second type should be submitted to the Academic Affairs Council for its approval. The position of the body is then included in the report forwarded to the Curriculum Committee.
5) The Curriculum Committee then reviews the decisions of the Provost and Vice President for Academic Affairs, especially those of major importance to the University and those receiving negative recommendations. The Curriculum

Committee also must hear appeals from any member of the faculty or any School of the University.

6) All actions taken by the Curriculum Committee are to be reported at regular intervals to the Faculty Senate, where final decisions concerning all curriculum matters will be made. In the case of rejected proposals, reversals of the Provost and Vice President's recommendations, or decisions that have been appealed, the Curriculum Committee must supply the Senate with detailed information.

The following deadlines are to be used when determining the "Implementation Date Requested" entry on curriculum proposals:

Any curriculum change that is to become effective at the beginning of a school year must be approved before January 1 of the preceding academic year. Any change that is to become effective at the beginning of a spring semester must be approved before the end of the preceding year. It should be noted that "approved" in this instance means final approval by the Faculty Senate or, if appropriate, by the Higher Education Policy Commission.

All institutional grant proposals, regardless of the source of funding, which propose the creation of new academic programs, must be approved by the Board of Governors prior to submission to the funding agency.

The Higher Education Policy Commission requires the President of the University to inform the Board as soon as the institution begins to plan for the addition or deletion of an academic degree program.

Each institution must submit to the Board formal proposals for new academic programs in conformity with the currently approved Procedures and Format for the Submission of New Academic Program Proposals.

Table 6-1. Faculty Qualifications

Civil Engineering Technology

Faculty Name	Highest Degree Earned- Field and Year	Rank [1]	Type of Academic Appointment[2] T, TT, NTT	FT or PT[3]	Years of Experience			Professional Registration/ Certification	Level of Activity[4] H, M, or L		
					Govt./Ind. Practice	Teaching	This Institution		Professional Organizations	Professional Development	Consulting/summer work in industry
Gary Zickefoose	MS, Civil Engineering-1975	ASC	T	FT	10	29	29	PE	L	M	M
Tia Como	MS, Civil Engineering-1996	P	T	FT	12	20	20	PE	M	H	H
James Vassil	MS, Civil Engineering-2001	ASC	T	FT	9	18	18	PE	M	H	H
Tabitha Lafferre	MS, Civil Engineering-2018	AST	TT	FT	3	3	3	EI	H	H	H
Daniel Martinez	BS, Civil Engineering Technology, 2015	A	NTT	PT	4	1	1	EI	H	H	H

Instructions: Complete table for each member of the faculty in the program. Add additional rows or use additional sheets if necessary. Updated information is to be provided at the time of the visit.

1. Code: P = Professor ASC = Associate Professor AST = Assistant Professor I = Instructor A = Adjunct O = Other
2. Code: TT = Tenure Track T = Tenured NTT = Non-Tenure Track
3. At the institution
4. The level of activity, high, medium or low, should reflect an average over the year prior to the visit plus the two previous years.

Table 6-2. Faculty Workload Summary

Civil Engineering Technology

Faculty Member (name)	PT or FT[1]	Classes Taught (Course No./Credit Hrs.) Term and Year[2]	Program Activity Distribution[3]			% of Time Devoted to the Program[5]
			Teaching	Research or Scholarship	Other[4]	
James Vassil	FT	CIVL 2240, 3hrs- Fall 2018	75	10	15	90
		CIVL 2230, 3hrs- Spring 2019				
Tia Como	FT	CIVL 1100, 1hr- Fall 2018	65	20	15	90
		CIVL 2210, 4hrs- Fall 2018				
		CIVL 2220, 4hrs- Fall 2018 and Spring 2019				
		CIVL 3340, 4hrs- Fall 2018				
		CIVL 4400, 4hrs- Spring 2019				
		CIVL 4470, 3hrs- Spring 2019				
Gary Zickefoose	FT	CIVL 2280, 3hrs- Spring 2019	75	10	15	90
		CIVL 2290, 3hrs- Spring 2019				
		CIVL 3305, 3hrs- Fall 2018				
		CIVL 4410, 3hrs- Fall 2018				
		CIVL 4420, 3hrs- Spring 2019				
		CIVL 4440, 3hrs- Spring 2019				
		CIVL 4460, 3hrs- Fall 2018				
Tabitha Lafferre	FT	CIVL 2200, 3hrs- Fall 2018				
Daniel Martinez	PT	CIVL 2275, 3hrs- Spring 2019				

1. FT = Full Time Faculty or PT = Part Time Faculty, at the institution
2. For the academic year for which the Self-Study Report is being prepared.
3. Program activity distribution should be in percent of effort in the program and should total 100%.
4. Indicate sabbatical leave, etc., under "Other."
5. Out of the total time employed at the institution. *If a faculty member teaches for more than one program or is an administrator, indicate level of effort for only specific program activities (teaching, etc.).*
6. *Do not include faculty in units that teach service courses, e.g., math or science.*

CRITERION 7. FACILITIES[1]

A. Offices, Classrooms and Laboratories

Summarize each of the program's facilities in terms of their ability to support the attainment of the student outcomes and to provide an atmosphere conducive to learning.

1. Offices (such as administrative, faculty, clerical, and teaching assistants) and any associated equipment that is typically available there.

2. Classrooms and associated equipment that are typically available where the program courses are taught.

3. Laboratory facilities including those containing computers (describe available hardware and software) and the associated tools and equipment that support instruction. Include those facilities used by students in the program even if they are not dedicated to the program and state the times they are available to students. Complete Appendix C containing a listing of the major pieces of equipment used by the program in support of instruction.

The Engineering Technology Center on the main campus of Fairmont State University currently houses the Department's administrative, faculty, clerical offices, classrooms and labs. The facilities are equipped with the tools needed for faculty to appropriately guide students in the attainment of the student educational outcomes. The layout and atmosphere are intended to be conducive to learning. Laboratory and Classroom equipment is regularly maintained an upgraded as needed.

The main office is located on the third floor near the main entrance; most faculty offices are of the fourth floor. The office for the Dean of College of Science and Technology is located on the second floor.

Civil Engineering Technology classes on the first and third floor of The Engineering Technology Center. These rooms can seat up to 32 students and are equipped to allow instructors to present using digital projectors. The third and fourth floor have auditoriums that can seat 120 students.

Laboratories are located on the first floor of the Engineering Technology Center. Labs are equipped as seen in Appendix C. Instructors can cover all labs necessary for the Civil Engineering Technology program including, but not limited to surveying, soil mechanics, hydrology, and design.

Commented [FD3]: Need completed Appendix C

[1] Include information concerning facilities at all sites where program courses are delivered.

B. Computing Resources

Describe any computing resources (workstations, servers, storage, networks including software) in addition to those described in the laboratories in Part A, which are used by the students in the program. Include a discussion of the accessibility of university-wide computing resources available to all students via various locations such as student housing, library, student union, off-campus, etc. State the hours the various computing facilities are open to students. Assess the adequacy of these facilities to support the scholarly and professional activities of the students and faculty in the program.

There are approximately 2,400 computers on campus of which approximately 1,200 are available for student use related to instruction and another 325 are in use by full-time faculty.

There are nearly 80 computer labs, mobile computer carts, and classrooms with instructor stations with access to audio/visual resources on campus. There are 9 labs and 5 classrooms dedicated to the Engineering Technology program. Engineering Technology students may also use any of the publicly accessible labs and work stations that are located throughout the Library and in the Student Center.

Network access, as well as access to the open internet, is provided campus-wide. Every office, classroom, lab, and residence hall room are fully networked. Free, fast, reliable, and secure wireless internet connectivity is available from anywhere on campus.

C. Guidance

Describe how students in the program are provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories.

The Civil Engineering Technology program contains courses that offer both textbook examples as well as practical applications. Students in the surveying classes learn textbook techniques and apply those techniques with modern surveying equipment. Similar book/practical lessons are taught in the materials, structures, hydraulics, and soils courses. The students have both a Professor and lab assistant for guidance on the equipment. No student utilizes equipment without prior instruction or training by a university representative.

D. Maintenance and Upgrading of Facilities

Describe the policies and procedures for maintaining and upgrading the tools, equipment, computing resources, and laboratories used by students and faculty in the program.

The College of Science and Technology receives an appropriation each year to provide instruction (i.e., faculty and adjunct pay), purchase and repair existing equipment, and support faculty development. In addition, there is an appropriation based on the number of students enrolling in classes and paying lab fees. These lab fees can be used to support instruction, purchase and repair existing equipment, or support faculty development. Overall, the funding is constrained in the College. However, the College has used its funding efficiently, and has been able to purchase and repair existing equipment on a yearly basis. Every four to five years the College has a major expense in the purchase of new computers.

The Dean of the College attempts to stagger these purchases and roll out new hardware on a planned basis so as not to use all of the resources in one year.

All programs of study have a budget that is allocated at the beginning of the year. These funds can be used to hire teaching assistants, purchase and repair equipment, support student clubs and extra-curricular activities, and for purchasing expendable supplies. Major repairs are paid for by the Dean's budget so as not to adversely impact program budgets. Faculty maintain complete autonomy over the use of their budgets provided they are within state guidelines. Should a program of study run short of funding due to unforeseen circumstances, their budget may be offset by the College of Science and Technology.

E. Library Services

Describe and evaluate the capability of the library (or libraries) to serve the program including the adequacy of the library's technical collection relative to the needs of the program and the faculty, the adequacy of the process by which faculty may request the library to order books or subscriptions, the library's systems for locating and obtaining electronic information, and any other library services relevant to the needs of the program.

Fairmont State University has two libraries that may be used by all students, faculty and staff members. The Ruth Ann Musick Library is located on the main campus, and the Aerospace Library is located at the National Aerospace Education Center (NAEC) in Bridgeport. These libraries actively support the academic programs of the University. Library personnel (currently 15 staff members) work closely with faculty and students to develop research skills and to provide a wide range of support services that are designed to enhance the learning experience. The print and electronic resources support most of the curricular needs of the Occupational Safety program while encouraging intellectual and personal growth.

The Fairmont State University Libraries provide access to over 500,000 books in both print and electronic format, as well as print periodicals, government documents, compact discs, videos, and other multimedia, and to nearly 100 electronic databases. Subscriptions to more than 28,000 unique journals and newspapers, available in either print or online full text, provide the latest information for all disciplines.

The libraries hold over 23,000 print and electronic books, over 500 academic journals, and over 400,000 full text articles relating specifically to engineering and/or engineering technology. All print materials are classified according to the Library of Congress classification system and online resources are accessible via the library website, 24/7

The libraries hold over 700 print and electronic books, over 64 academic journals, and over 36,000 full text articles relating specifically to occupational safety. All print materials are classified according to the Library of Congress classification system and online resources are accessible via the library website, 24/7.

F. Overall Comments on Facilities

Describe how the program ensures the facilities, tools, and equipment used in the program are safe for their intended purposes. (See the 2019-2020 APPM section I.E.5.b.(1).)

The facilities in the College of Science and Technology are maintained well. Equipment that is in disrepair is not used if it is deemed unsafe. The equipment is either repaired or taken out of service. The College does have three laboratory technicians that help to assure that our facilities and equipment are up-to-date and in working order. One technician is assigned to the Technology Department in the Engineering Technology Building, and two are assigned to Hunt Haught Hall (i.e., one in Chemistry and one in Biology and Geoscience). The Physical Plant on campus maintains all of the buildings on campus, and the majority of costs associated with upkeep and repair do not come from College budgets. The same is also true for maintaining our technological infrastructure. However, the College is charged for the repair or updating of all instructional technology devices used in classrooms and laboratories. Over the past five years, this has been a priority (i.e., updating existing teaching technology, investing in SMART Classrooms, and providing adequate computer hardware and software for faculty and students) in the College of Science and Technology.

CRITERION 8. INSTITUTIONAL SUPPORT

A. Leadership

Describe the leadership of the program and discuss its adequacy to ensure the quality and continuity of the program and how the leadership is involved in decisions that affect the program.

The Civil Engineering Technology program is directed by a Program Coordinator who reports directly to the Chair of the Department of Technology who is under the Dean of the College of Science and Technology. The Program Coordinator is instrumental in curriculum revisions, program changes, course development, and all other aspects of the day-to-day operations of the program. Since there are three full-time faculty members in the program (one being the coordinator), any decisions on matters that affect the program are usually made jointly. Excluding general studies requirements, and degree hour limitations, the coordinator has complete control of academic issues. However, consults with the faculty, IAC, and Dean prior to changes to the curriculum. This ensures meeting the needs of the constituencies as well as working within the framework of the university.

B. Program Budget and Financial Support

1. Describe the process used to establish the program's budget and provide evidence of continuity of institutional support for the program. Include the sources of financial support including both permanent (recurring) and temporary (one-time) funds.

   The Dean of the College organized the budgets using historical data (i.e., FTE's, student enrollments, amount of expendable supplies used, etc.). Using the data as a baseline, each program area is provided with a set budget, and faculty were provided complete autonomy over how that budget could be spent. As previously noted the College of Science and Technology receives an appropriation each year to provide instruction (i.e., faculty and adjunct pay), purchase and repair existing equipment, and support faculty development. In addition, there is an appropriation based on the number of students enrolling in classes and paying lab fees. These lab fees can be used to support instruction, purchase and repair existing equipment, or support faculty development.

   The current process used to allocate budgets to program areas appears to be working. However, adjustments are needed every couple of years to reflect student growth or special needs in any particular program. For example, one of the current programs of study in the College has a very low number of students. The budget for this particular program will be reduced to better serve the existing programs of study. At various times a program may expend all of their funding due to unforeseen circumstances. The College has been very fortunate in that it has always been able to meet these expenditures without detriment to students or the program of study.

2. Describe how teaching is supported by the institution in terms of graders, teaching assistants, teaching workshops, etc.

The institution supports faculty in teaching by providing numerous professional development experiences during an academic year. As a teaching institution (and not a Research I Institution), Fairmont State University values teaching above all other criteria. The institution provides hardware and software to assist faculty in the teaching of their courses. This consists of Blackboard as a component for delivery of content, at minimum, for syllabus and course grades. In addition to Blackboard, FSU is also using clicker technology for the purpose of quick assessment and engagement of student learning. Classrooms are equipped with Sympodia. Software that is supported through instructional technology includes Respondus, StudyMate Server, Camtasia, SafeAssign, Wimba Classroom, Wimba Voice Tools, and the Lockdown Browser.

Strategies undertaken to ensure success in the use of Instructional Technology:

- The Teaching and Learning Commons was established to merge services of the Help Desk with Blackboard services and other technology-related needs. The Teaching and Learning Commons was re-located to the Library where expanded hours are available. The wireless network has been expanded to all parts of the campus.
- Computer labs have been updated and will continue on a three-year replacement cycle. FSU is also in the process of implementing an intra-net so that some documents and information will not be available to the public, but so students will receive information they need for their classes and majors.
- Student mobile technologies, i.e. Smartphones and laptop computers, have been integrated into courses for enhanced electronic delivery. Students have Smartphone access to an e-web site for ease of information transfer and can also get their Blackboard courses via their smart phones.
- Fairmont State is in the process of implementing cloud computing so that students might have access to any software they need anywhere on campus. This may be accessed in a regular computer lab, by their laptop through the wireless network, by any other device such as an I Pad that they might bring to campus, or by their Smartphone.
- The College of Science and Technology had also received a Title III Grant from the Department of Education to support student retention, increase graduation rates, provide peer mentors, and to purchase new technology in increase student learning and development. The grant has been completed.

3. To the extent not described above, describe how resources are provided to acquire, maintain, and upgrade the infrastructures, facilities, and equipment used in the program.

The Physical Plant on campus maintains all of the buildings on campus, and the majority of costs associated with upkeep and repair do not come from College budgets. The same is also true for maintaining our technological infrastructure. However, the College is charged for the repair or updating of all instructional technology devices used

in classrooms and laboratories. Over the past five years, this has been a priority (i.e., updating existing teaching technology, investing in SMART Classrooms, and providing adequate computer hardware and software for faculty and students) in the College of Science and Technology.

The Dean of every College or School is able to submit financial plans and needs to the Budget Committee. In the annual budget planning process, one first identifies the mission or strategic plan agenda to be funded and the accompanying rationale. Second, the resources required for accomplishing that mission or plan must be determined and may include additional personnel (i.e. wages and benefit costs) or operating expense dollars for activities such as the purchase of supplies, equipment, or allocation for travel expenses. Budget resources may come from adjustments to tuition and fees, state appropriations, enrollment, and / or a reallocation of existing resources. Lastly, after the mission or plan is established and institutional resources have been allocated for its achievement, it is important that there is some measure of the success of the activities toward the targeted goals. Again, the College has been fortunate to receive funding to support student academic success in meeting program and course outcomes, equipment, and professional development of faculty and staff.

4. Assess the adequacy of the resources described in this section with respect to the students in the program being able to attain the student outcomes.

As with any organizations, increased funding that is budgeted well could result in improved educational efforts. However, the allocation and use of funds in the program provides for adequate emphasis and work toward student outcomes. With the upgrades in facilities, and equipment over the last ten years, students have been exposed to industry-quality experiences. This addresses the outcomes of developing technical competencies, communication skills, and professional awareness. In addition to the state funding, this program works to develop relationships with industry as a way to give the students the opportunity of field experiences through site tours and internships.

C. Staffing

Describe the adequacy of the staff (administrative, instructional, and technical) and institutional services provided to the program. Discuss methods used to retain and train staff.

The University has allowed the College to fill necessary positions based on the existing budget available to the College. There is an adequate number of support staff, and faculty for the College to be successful. The university is currently undergoing a re-alignment of all colleges and programs. The new model, although not finalized as of this SSR, should provide the program with adequate staff.

Fairmont State University regularly provides professional development activities for faculty, staff, and administrators on campus. These professional development activities occur on a regular basis, and some of them call for required attendance. All faculty and staff in the

College have the ability to utilize professional development funds to meet their own educational needs.

Mentorship is key to training new faculty or staff. In the College of Science and Technology each new staff or faculty member is assigned a peer mentor for the first year. This mentor meets regularly with the new staff or faculty member to assist in their career development and to help answer questions related to their job roles, teaching, or service.

D. Faculty Hiring and Retention

1. Describe the process for hiring of new faculty.
2. Describe strategies used to retain current qualified faculty.

In the hiring process of new faculty, the Dean of the College will gain approval for the position from the Provost, President, Office of Finance, and Human Resources. A position description is written with the assistance of faculty from that particular program of study. The position is then advertised in local and regional newspapers and in the Chronicle of Higher Education. Prior to releasing the candidates for review by the department, Human Resources will vet the pool of candidates to assure for diversity among the candidates.

Candidates are then screened by the faculty of the department. This is usually done with telephone or Skype interviews. The top 3-4 candidates are then requested to come to campus and present a 'teaching lesson' to the faculty of the department. Recommendations are then made to the Dean and Provost of the University. In this process, faculty take the lead role in recommending hires. All successful candidates must pass a criminal history background check prior to being hired.

The College uses a mentorship strategy to help retain qualified faculty. At Fairmont State University it usually can take 6 years to receive tenure. The process used by the College is to review faculty each year (i.e., teaching, scholarship, and service) to help keep the candidate on track. During the first year of employment, new faculty does not serve as advisors in a program of study.

E. Support of Faculty Professional Development

Describe the adequacy of support for faculty professional development, how such activities such as sabbaticals, travel, workshops, seminars, etc., are planned and supported.

As previously noted the College of Science and Technology provides professional development funds to support faculty and staff. No one has been turned down for the use of these funds in the past 6 years. Faculty can apply for sabbaticals, travel, workshops, and seminars on a regular basis. Sabbaticals are granted pending funding from existing budgets. Anyone holding faculty rank is eligible for sabbatical leave after the completion of at least six years of full-time employment at Fairmont State University. The award of sabbatical leave is not automatic, but depends on the merits of the request and on conditions prevailing at the University at the time. After completing a sabbatical leave, the individual will not again be eligible until the seventh subsequent year.

Sabbatical leave may be granted for the purpose of research, writing, study, or other activity designed to improve teaching and usefulness to the University. Applicants for sabbatical leave will initiate the procedure by obtaining application forms from their Deans. Applications will include: 1) personal professional data; 2) a typewritten proposal detailing the activity to be pursued; and 3) relevant supporting documents. Completed application forms will be submitted by applicants to their Deans on or before December 1 for a sabbatical leave to begin the fall or spring semester of the following academic year.

PROGRAM CRITERIA

Describe how the program satisfies any applicable program criteria. If already covered elsewhere in the self-study report, provide appropriate references.

[NOTE: It can be useful to list the program criteria requirements and then include a description or reference for how the program satisfies each of those requirements. The applicable program criteria could include statements that add specificity to the requirements for student outcomes found in Criterion 3. These statements differentiate the discipline designated by the program's title and should be included in the mapping to the program's student outcomes. The applicable program criteria could also include statements that add specificity to the curricular requirements found in Criterion 5 to differentiate the discipline implied by the title of the program criteria. These should be included in the program's required coursework.]

This section can consist of the listing of required topics and indicating which courses contain that content. The program should expect to provide examples of student work in each topic area to validate that the students are doing work related to each topic.

Lead Society: American Society of Civil Engineers

These program criteria apply to engineering technology programs that include civil or similar modifiers in their titles. Graduates of civil engineering technology programs will have the technical and managerial skills necessary to enter careers in the planning, design, construction, operation or maintenance of the built environment and global infrastructure.

PROGRAM CRITERIA FOR BACCALAUREATE LEVEL PROGRAMS

Curriculum

Graduates of baccalaureate degree programs typically analyze and design systems, specify project methods and materials, perform cost estimates and analyses, and manage technical activities in support of civil engineering projects. The curriculum must provide instruction in the following curricular areas:

a. utilization of principles, hardware, and software that are appropriate to produce drawings, reports, quantity estimates, and other documents related to civil engineering;

The senior capstone course summarizes and showcases the use of software/hardware and estimating. The project encompasses many aspects of the curriculum. Students must demonstrate the ability to produce technical documents as part of the capstone project. Each year a project is selected in the local area, typically relating to highway/transportation. Industry experts are selected to assist the students and provide real data relevant to the project. The industry advisors also discuss quality, timeliness and overall project expectations. The

final project is presented before industry members and the public who may be affected. The students provide real scenario's and alternatives for the project, of which some may be selected and implemented by the State Division of Highways.

b. performance of standardized field and laboratory tests related to civil engineering;

Both soils courses advance students understanding and practice of laboratory tests. CIVL 3340 and 4470 both have laboratory experiences where students will perform standard tests on soils and provide results for use in design.

c. utilization of surveying methods appropriate for land measurement and/or construction layout;

The senior capstone course requires an extensive survey for the purpose of proposed designs. Students are required to perform a land survey and propose three designs using the surveying data. Although no layout is performed, the design is done using productivity software which would allow layout if necessary.

d. application of fundamental computational methods and elementary analytical techniques in sub-disciplines related to civil engineering;

The following are the courses and material covered in the sub-disciplines related to civil engineering:

CIVL 4410 and 4440: these courses cover the structural component of the curriculum. They cover both the analysis and design of structures.

CIVL 3340 and 4470: These courses cover geotechnical engineering. Soil analysis and classification as well as foundation and retaining structures are covered.

CIVL 4460: This course is focused on environmental engineering. Water and waste water treatment are discussed along with surface water.

e. planning and preparation of documents appropriate for design and construction;

CIVL 4400: During the capstone course, students must prepare design and construction documents. As stated above, their final project requires real construction and contract documents of which industry members provide guidance.

f. performance of economic analyses and cost estimates related to design, construction, operations and maintenance of systems associated with civil engineering;

CIVL 4420: Topics include engineering economy, ethics, project scheduling and planning, and contract documents. The capstone project in CIVL 4400 also captures many aspects of economic analysis and life-cycle considerations when choosing alternatives for the project.

g. selection of appropriate engineering materials and practices; and

CIVL 4440: students will design structural elements and select appropriate materials for the design. The structural design course covers the computation and selection of appropriate structural components and materials as well as constructability practices.

h. performance of standard analysis and design in at least three sub-disciplines related to civil engineering.

CIVL 4410: this courses cover the structural component of the curriculum. It covers the analysis of structures. CIVL 4440 covers design of structures.

CIVL 3340 and 4470: These courses cover geotechnical engineering. Soil analysis and classification as well as foundation and retaining structures are covered. Data is used to design foundation and retaining wall systems.

CIVL 4460: This course is focused on environmental engineering. Water and waste water treatment are discussed along with surface water. Computational knowledge is coupled with chemistry, biology and other environmental considerations. Topics include waste-water treatment concepts and design along with surface water and the environmental considerations with each.

APPENDICES

APPENDIX A – COURSE SYLLABI

Please use the following format for the course syllabi (2 pages maximum in Times New Roman 12 point font)

1. Course number and name
2. Credits and contact hours
3. Instructor's or course coordinator's name
4. Text book, title, author, and year
    a. other supplemental materials
5. Specific course information
    a. brief description of the content of the course (catalog description)
    b. prerequisites or co-requisites
    c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program
6. Specific goals for the course
    a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.
    b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.
7. Brief list of topics to be covered

1) COURSE NAME: INTRODUCTION TO CIVIL ENGINEERING TECHNOLOGY (CET)
COURSE NUMBER: CIVIL 1100

2) Lecture Information: 1 credit hour
Location: 427 Engineering Technology (ET) Building
Meeting day: Wednesday
Meeting time: 11:00 – 11:50 PM

3) Instructor Name: Tia Maria Como, P.E., Professor Email: tia.como@fairmontstate.edu
Office location: 425 ET Building
Office hours: Monday and Wednesday 12:00 – 1:00 PM
Tuesday and Thursday 10:00 – 11:00 PM
Friday 9:00 – 10:00 AM
Phone: (304) 367-4629
Fax: (304) 367-4791

4) Required Textbook(s): *NONE. All materials will be provided in Blackboard
Other Tools/Supplies: Engineering paper, calculator (suggested NCEES appropriate), Pencils,
Full Engineer's Scale (not combinations) – purchase this NOW!
A three-ring binder is also suggested and would serve you best for accumulating handouts.
Software: Word, Excel, PDF Reader, Internet Capability

5) Course description: This course is designed to expose the student to the broad field of Civil Engineering Technology and the various options at their disposal during their academic tenure, and after graduation. It will explore the many tools required, and writing techniques necessary to foster academic success, and provides an introduction to professional societies, internships, and their role as professionals in the work force. It is HIGHLY recommended students take this course the FIRST semester in their freshman year. Transfer students may not need this course – please see me ASAP.
Course Pre-requisite(s): None
Course Co-requisite(s): CIVL 2210 – Light Construction. **If you are not enrolled in this course SEE Me after class, on the FIRST day of class!!!!
Delivery Method: The course will be delivered via traditional face-to-face lecture and will be enhances/managed on-line using Blackboard.

6) Course outcomes: At the end of this course, students will be able to:
1. Select appropriate courses (both technical and non-technical) aligned with individual career goals
2. Understand the role of professional societies and the need for life-long learning
3. Create a resume
4. Prepare a memo and abstract
5. Explore the various branches of Civil Engineering Technology and available career specialties
6. Acknowledge the steps to become a registered professional engineer, and the requirements for qualifying for the fundamentals of engineering exam, along with the resources available for preparing for this exam
7. Compile a technical report outline using a specified numbering system
8. Correctly use the Engineers Scale
9. Address problems based on dimensional analysis, and logical steps which lead to an appropriate solution one can easily follow and critique.

7) Topics covered:
1. Available Courses and course substitutions at FSU
2. CET Student Handbook
3. Professional License, Professional Societies, and Life-long Learning
4. Memo's, Abstract's and Resumes
5. Branches of Civil Engineering Technology
6. Technical Report Outlines
7. Engineers Scale
8. Dimensional Analysis and Problem Solving

1) COURSE NAME:SURVEYING I
COURSE NUMBER:CIVIL 2200

2) Lecture Information: 3 credit hours
Location: 102 Engineering Technology Building
Meeting day(s): Monday-Wednesday
Meeting time(s): 3:00-4:50 PM

3) Instructor Name: James Vassil
Email: James.Vassil@fairmontstate.edu
Office location: 301A ET Building
Office hours: As posted
Phone: (304) 367-4794
Fax:(304) 367-4791

4) Required Textbook(s):
1. Kavanagh, Surveying; Principles and Applications, 8th edition, Prentice Hall Publishing, 2009.
   a. ISBN-10: 0-13-236512-X
   b. ISBN-13: 978-0-13-236512-3

Optional References:
2. National Council of Examiners for Engineering and Surveying, FE Reference Handbook-revised, 2008.
   a. www.ncees.org
   b. ISBN 978-1-932613-37-7
   c. Suggested retail price: free

Other Tools/Supplies:FE specified scientific calculator, Engineering paper, Drafting tools
Software:Word, Excel, internet capability

5) Course description: Topics in this course include theory of linear distance measurement, proper note keeping, transit/tape surveying techniques, leveling procedures, measurement of horizontal and vertical angles, stadia, bearings and azimuths, rectangular coordinates, topography and mapping techniques. Students will learn to use all types of surveying equipment, including levels, transits, theodolites, total stations, and Electronic Distance Measurements (EDM) devices.
Course Pre-requisite(s): NONE
Course Co-requisite(s): MATH1101
Delivery Method:CIVL2200 is a required course for the Civil ET program. The course will be delivered via traditional face-to-face lecture and will be enhanced/managed on-line utilizing Blackboard. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Understand basic surveying principals and terminology
2. Calculate basic distance measurements using tape measure data and corrections.
3. Apply basic distance measurements using tape measures
4. Determine elevations using leveling techniques.
5. Determine elevations by applying leveling techniques with an automatic level
6. Calculate the bearing and azimuth
7. Determine traverse computations including latitude/departure, coordinates, and areas and corrections for each
8. Determine bearing and azimuth and area of a traverse using total stations
9. Communicate as a group to produce quality technical documents.

7) Topics covered:
1. Background and Fundamentals of Surveying
2. Taping (Linear Measurement)
3. Leveling
4. Electronic Surveying Measurement
5. Traverse Surveys
6. Construction Surveys
7. Introduction to GPS

1) COURSE NAME:LIGHT CONSTRUCTION
COURSE NUMBER:CIVIL 2210

2) Lecture Information:3 credit hours
Location: 102 Engineering Technology Building
Meeting day(s): Tuesday and Thursday
Meeting time(s): 11:00 - 12:15

3) Instructor Name: Tia Maria Como, P.E., Professor
Email: tia.como@fairmontstate.edu (campus) or tiacomo@comcast.net (home)
Office location: 425 ET Building
Office hours: Monday and Wednesday 12:00 - 1:00
Tuesday and Thursday 1:30 – 2:30
Friday 10:00 – 11:00
Phone: (304) 367-4629
Fax:(304) 367-4791

4) Required Textbook(s):
1. Fundamentals of Building Construction, Materials and Methods, Fourth Edition, John Wiley and Sons Inc. By: Edward Allen, with drawings by: Joseph Iano
Optional References: NONE
Other Tools/Supplies:NONE
Software:Internet capability, PowerPoint, Word Processor.
An ability to interpret Excel, Word and PDF formats in Blackboard/Vista

5) Course description: This course provides the student with an overview of the practices utilized in the erection of residential and small industrial buildings and technical information involving problems encountered from the ground to the roof.
Course Pre-requisite(s): NONE
Course Co-requisite(s): NONE
Delivery Method:The course will be delivered via traditional face-to-face lecture and will be enhances/managed on-line using Blackboard/Vista. In addition, the laboratory will contain some hands on field trips.

6) Course outcomes: At the end of this course, students will be able to:
1. Have a basic understanding of the practices utilized in the erection of residential and small industrial buildings.
2. Have a basic understanding of the process by which buildings are built.
3. Develop a basic understanding of the process in which materials are combined to form a building system (or component) and the relationship of these systems that form the overall structure.
4. Generally, understand the properties of the following materials and how they are typically used in construction: concrete, wood, steel, light gauge metal, brick, glass, stone and masonry.
5. Be able to access the library and find applicable information and resources.
6. Develop an appreciation for professional societies. Mandatory attendance at student club meetings (ASCE for Civil Engineering Technology Students and AIAS for Architectural Students) will expose the students to the function of and benefits of these groups.
7. Have a basic understanding of their role as a design professional, ethical responsibilities and professionalism.
8. An ability to communicate effectively.

7) Topics covered:
1. Building Systems
2. Foundations
3. Concrete
4. Wood
5. Framing
6. Interior Finishes
7. Glass
8. Roofing

1) COURSE NAME:CONSTRUCTION MATERIALS AND METHODS
COURSE NUMBER:CIVIL 2220

2) Lecture Information:4 credit hours
Location: 303 Engineering Technology Building
Meeting day(s): Tuesday
Meeting time(s): 6:00 PM - 7:50 PM

3) Instructor Name: Tia Maria Como, P.E., Professor
Email: tia.como@fairmontstate.edu (campus) or tiacomo@comcast.net (home)
Office location: 425 ET Building
Office hours: Monday and Wednesday 12:00 – 1:00
Tuesday to Thursday 1:30 – 2:30
Friday 10:00 – 11:00
Phone: (304) 367-4629
Fax:(304) 367-4791

4) Required Textbook(s):
1. Marotta, Theodore W., Basic Construction Materials, Seventh Edition, Pearson Prentice Hall, 2005.
a. ISBN: 0-13-060405-4
Optional References: NONE
Other Tools/Supplies:FE specified scientific calculator, 3-ring binder with dividers, Architect/Engineering scales, Engineering paper, Straight edge.
Software:Word, Excel, internet capability

5) Course description: Identification, properties, and standard test methods for steel, concrete, timber, masonry products, bituminous products, soils and aggregate. Heavy construction methods are also discussed.
Course Pre-requisite(s): CIVL 2210; MATH 1101
Course Co-requisite(s): NONE
Delivery Method:The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Understand the engineering performance characteristics of a variety of construction materials.
2. Conduct lab experiments following prescribed testing procedures.
3. Evaluate the results obtained through performance of exacting testing procedures.
4. Produce well written lab reports.
5. Explain the importance of standardized testing and why it is used within the construction industry.

7) Topics covered:
1. Aggregates
2. Portland Cement Concrete
3. Masonry
4. Asphalt
5. Iron and Steel
6. Wood

1) COURSE NAME:CONSTRUCTION ESTIMATING
COURSE NUMBER:CIVIL 2230

2) Lecture Information:3 credit hours
Location: 113 Engineering Technology Building
Meeting day(s): Monday
Meeting time(s): 4:30 – 7:15 PM

3) Instructor Name: James Vassil
Email: James.Vassil@fairmontstate.edu
Office location: 301A ET Building
Office hours: As posted
Phone: (304) 367-4794
Fax:(304) 367-4791

4) Required Textbook(s):
1. Dagostino & Feigenbaum, Estimating in Building Construction, 6th edition, Prentice Hall Publishing, 2003.
a. ISBN: 0-13-060405-4
Optional References: NONE
Other Tools/Supplies:FE specified scientific calculator
Software:Word, Excel, internet capability

5) Course description: This course covers construction cost-estimating techniques for various types of construction projects. Included are certain related topics such as production, bidding and specifications as they affect the contractor during the cost estimation process.
Course Pre-requisite(s): CIVL 2220; INFO 1100
Course Co-requisite(s): NONE
Delivery Method:The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Identify the basic parts of a construction estimate.
2. List the principle items involved in a contractor's overhead.
3. Develop the connection between estimating and administration of a project.
4. Recognize the importance of working drawings and specifications in the preparation of an estimate.
5. Analyze plans and specifications.
6. Determine quantities of materials for residential and light commercial structures.
7. Determine labor and overhead costs for different phases of construction.
8. Prepare quantity take off sheets using productivity software.

7) Topics covered:
1. Introduction to Estimating
2. Contracts, Bonds, Insurance and Specifications
3. The Estimate
4. Overhead and Contingencies
5. Excavation
6. Concrete
7. Masonry
8. Metals
9. Wood
10. Thermal and Moisture Protection
11. Finishes
12. Plumbing

1) COURSE NAME:Construction, Land and Route Surveying
COURSE NUMBER:CIVL 2240

2) Lecture Information:3 credit hours
Location: 102 Engineering Technology Building
Meeting day(s): Monday-Wednesday
Meeting time(s): 3:00-4:50 PM

3) Instructor Name: James Vassil
Email: James.Vassil@fairmontstate.edu
Office location: 301A ET Building
Office hours: As posted
Phone: (304) 367-4794
Fax:(304) 367-4791

4) Required Textbook(s):
1. Kavanagh, Surveying; Principles and Applications, 8th edition, Prentice Hall Publishing, 2009.
    a. ISBN-10: 0-13-236512-X
    b. ISBN-13: 978-0-13-236512-3

Optional References:
2. National Council of Examiners for Engineering and Surveying, FE Reference Handbook-revised, 2008.
    a. www.ncees.org
    b. ISBN 978-1-932613-37-7
    c. Suggested retail price: free

Other Tools/Supplies:FE specified scientific calculator, Engineering paper, Drafting tools
Software:Word, Excel, internet capability

5) Course description: This course will cover horizontal and vertical control, building location and layout, pipeline layout, construction staking procedures, earth quantity measurements, triangulation, horizontal and vertical curves, plan and profile, area and cross sections, volume calculations, mass diagrams, boundary control and deed descriptions.
Course Pre-requisite(s): CIVL 2200, INFO 1100
Course Co-requisite(s): NONE
Delivery Method:The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Understand basic surveying principals and terminology
2. Determine curve data
3. Determine curve data Determine elevations using leveling techniques.
4. Determine amounts of cut and fill
5. Understand basic legal and deed documents and terminology pertaining to surveying
6. Create engineering documents using surveying/drafting software

7) Topics covered:
1. Topography
2. Highway Surveys and Curves
3. Control Surveys
4. Property Surveys
5. GPS Applications

1) COURSE NAME: CIVIL ENGINEERING GRAPHICS
COURSE NUMBER: CIVIL 2275

2) Lecture Information:3 credit hours
Location: TBA
Meeting day(s): TBA
Meeting time(s): TBA

3) Instructor Name: James Vassil
Email: James.Vassil@fairmontstate.edu
Office location: 402 Engineering Technology Building
Office hours: As posted
Phone: (304) 367-4794
Fax:(304) 367-4791

4) Required Textbook(s): TBA
Optional References: TBA
Other Tools/Supplies: FE specified scientific calculator
Software: Word, Excel, internet capability

5) Course description: This course will provide students with an introduction to computer assisted civil engineering drafting and design. Includes coverage of graphic techniques, drawing organization, dimensioning, orthographic projection, and specific applications of civil engineering drafting and design. Typical applications will include coordinate geometry, contours, and topics, and topics in highway design, concrete, steel, and structural wood framing.
Course Pre-requisite(s): TECH 1108
Course Co-requisite(s): NONE
Delivery Method: The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Be familiar with the various components of a CAD package.
2. Be familiar with techniques for drawing lines, circles, arcs, polygons, fillets, chamfers, and multi-views.
3. Dimension drawings and create sectional drawings.
4. Create special symbols, save them, and use them in a drawing application.
5. Apply CAD in the preparation of drawings for various Civil Engineering Technology disciplines.
6. Demonstrate fundamental file handling techniques and preparing hard copies of drawings.

7) Topics covered:
1. Graphics Techniques
2. Drawing Organization
3. Dimensioning Orthographic Projections
4. Coordinate Geometry
5. Contours
6. Topography

1) COURSE NAME: ENVIRONMENTAL ENGINEERING TECHNOLOGY I
COURSE NUMBER: CIVIL 2280

2) Lecture Information:3 credit hours
Location: 210 Engineering Technology Building
Meeting day(s): Tuesday and Thursday
Meeting time(s): 9:30 – 10:45 PM

3) Instructor Name: Gary Zickefoose
Email: gzickefoose@fairmontstate.edu
Office location: 400 ET Building
Office hours: As posted
Phone: (304) 367-4107
Fax:(304) 367-4791

4) Required Textbook(s):
1. Nathanson, Jerry A., Basic Environmental Technology: Water Supply, Waste Management & Pollution Control, 5th Edition, Prentice Hall, 2008.
   a. ISBN-10: 0131190822
   b. ISBN-13: 9780131190825

Optional References: NONE
Other Tools/Supplies: FE specified scientific calculator
Software: Word, Excel, internet capability

5) Course description: This introductory course will provide an overview of the environmental field, including laws and regulations, water quality, hydraulic and hydrologic fundamentals, water and wastewater treatment, groundwater contamination, and solid waste management.
Course Pre-requisite(s): TECH 2290, CHEM 1101
Course Co-requisite(s): NONE
Delivery Method: The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Demonstrate an understanding of water quality and water pollution and its effects on society.
2. Perform calculations associated with water quality and water pollution.
3. Perform calculation in hydraulics including hydrostatic pressure, closed conduit flow, and open channel flow.
4. Demonstrate an understanding of water and wastewater treatment using physical, chemical and biological process.

7) Topics covered:
1. Water Quality and Pollution
2. Hydraulics
3. Drinking Water Purification
4. Wastewater treatment and Disposal

1) COURSE NAME: INTRODUCTION TO STRUCTURES
COURSE NUMBER: CIVIL 2290

2) Lecture Information:3 credit hours
Location: 102 Engineering Technology Building
Meeting day(s): Tuesday and Thursday
Meeting time(s): 8:00 – 9:00 AM

3) Instructor Name: Gary Zickefoose
Email: gzickefoose@fairmontstate.edu
Office location: 400 ET Building
Office hours: As posted
Phone: (304) 367-4107
Fax:(304) 367-4791

4) Required Textbook(s):
1. Wujek, J.B., Applied Statics, Strength of Materials, and Building Structure Design, Prentice Hall Publishing, 1999.
2. Cheng, Statics and Strength of Materials, 2nd Edition, Glencoe-McGraw-Hill Publishing, 1997.

Optional References: NONE
Other Tools/Supplies:FE specified scientific calculator
Software:Word, Excel, internet capability

5) Course description: This is an introductory course focusing on the analysis and design of structures. It will provide an elementary overview of the analysis, design, and detailing of both steel and wood structures, with primary emphasis on steel. Course coverage will include design of beams, columns and connections.
Course Pre-requisite(s): MECH 2200
Course Co-requisite(s): NONE
Delivery Method:The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Develop shear and moment diagrams for elementary structures.
2. Analyze and design simple structural steel beams.
3. Analyze and design simple structural steel columns.
4. Analyze and design structural steel connections.
5. Estimate material quantities for structural steel projects.

7) Topics covered:
1. Shear and Moment Diagrams
2. Fundamental Beam Design Principles
3. Design of Simple Structural Steel Beams
4. Analysis and Design of Steel Columns
5. Structural Steel Connections

1) COURSE NAME:HYDRAULICS AND HYDROLOGY
COURSE NUMBER:CIVIL 3305

2) Lecture Information:3 credit hours
Location: 102 Engineering Technology Building
Meeting day(s): Tuesday and Thursday
Meeting time(s): 1:30-2:45 PM

3) Instructor Name: Gary Zickefoose
Email: gzickefoose@fairmontstate.edu
Office location: 400 ET Building
Office hours: As posted
Phone: (304) 367-4107
Fax:(304) 367-4791

4) Required Textbook(s):
1. Nathanson, Jerry A., Basic Environmental Technology: Water Supply, Waste Management & Pollution Control, 5th Edition, Prentice Hall, 2008.
2. Haestad, Computer Applications in Hydraulic Engineering, 7th Edition,

Optional References: NONE
Other Tools/Supplies: FE specified scientific calculator
Software: Word, Excel, internet capability

5) Course description: This course will introduce students to hydraulics and hydrology. Topics in hydraulics will include closed conduit flow, networks, reservoirs, hydraulic machinery, pumps in series and parallel and hydraulic structures. Topics in hydrology will include statistics and probability, hydrologic cycle and data, open channel flow, flood control and discharge, and culvert and detention pond design.
Course Pre-requisite(s): CIVL 2280, TECH3300, INFO1100
Course Co-requisite(s): NONE
Delivery Method:The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Demonstrate an understanding of basic fluid mechanics concepts.
2. Analyze and design basic pressurized water systems.
3. Analyze and design basic open channel and partial flow water systems.
4. Demonstrate an understanding of basic hydrology concepts.
5. Analyze and design basic stormwater management systems.
6. Demonstrate an ability to utilize computer software to solve hydraulics and hydrology problems.

7) Topics covered:
1. Basic Hydraulics
2. Water Transportation Systems
3. Hydrology and Stormwater Management

1) COURSE NAME: SOIL MECHANICS
COURSE NUMBER: CIVIL 3340

2) Lecture Information:4 credit hours
Location: 102 Engineering Technology Building
Meeting day(s): Monday and Wednesday
Meeting time(s): 1:00 – 3:00 PM

3) Instructor Name: Tia Maria Como, P.E., Professor
Email: tia.como@fairmontstate.edu (campus) or tiacomo@comcast.net (home)
Office location: 425 ET Building
Office hours: Monday and Wednesday 12:00 – 1:00
Tuesday and Thursday 1:30 – 2:30
Friday 10:00 – 11:00
Phone: (304) 367-4629
Fax:(304) 367-4791

4) Required Textbook(s):
Das, Braja. M., Fundamentals of Geotechnical Engineering
Thompson, Third Edition, ISBN 978-0-495-29572-3
Optional References: NONE
Other Tools/Supplies: Engineering paper, calculator, Pencils, Graphing Paper.
A three ring binder is suggested and would serve you best for accumulating laboratory information along with collaborating supplemental lecture handouts. The handouts will also be used in CIVL 4470 - Advanced Soils. It is your responsibility to keep these for next semester.
Software: Word, Excel, internet capability

5) Course description: This course will introduce the subject of soil mechanics to civil engineering technology students.
Course Pre-requisite(s): NONE
Course Co-requisite(s): MATH1101
Delivery Method:The course will be delivered via traditional face-to-face lecture and will be enhances/managed on-line using Blackboard/Vista. The laboratory experience will also provide hands on activities and real-life applications to further enhance student learning.

6) Course outcomes: At the end of this course, students will be able to:
1. Have a working knowledge of how to evaluate the typical engineering behavior of clays, silts, sands, and gravels relative to permeability, strength, compressibility and settlement.
2. Have a general knowledge of how to approximate the typical engineering behavior of mixed soils relative to permeability, compressibility, strength and settlement.
3. Have a General knowledge of how to approximate the typical engineering behavior of mixed soils relative to permeability, compressibility, strength and settlement.
4. Have a general knowledge of how to approximate the appropriate uses of mixed soils in construction.
5. Use the following laboratory techniques/tools specific to geotechnical engineering technology: Sieve Analysis, Hydrometer Analysis, Liquid and Plastic Limits, Moisture Contents, Proctor and Consolidation.
6. Conduct, analyze and interpret experiments and apply experimental results to improve processes.
7. Understand ethical responsibilities.
8. Function effectively in teams. Each laboratory is a group effort.
9. Communicate effectively by correctly constructing a written laboratory report following specific technical report guidelines.
10. Recognize the commitment to quality, timeliness, and continuous improvement.
11. Apply basic concepts to the solution of civil engineering problems involving geotechnical engineering technology.

7) Topics covered:
1. Soil classification
2. Soil deposits
3. Grain size
4. Liquid and Plastic limits
5. Weight volume relationships
6. Compaction
7. Hydraulic Conductivity
8. Stresses in Soil
9. Consolidation

1) COURSE NAME: Highway Design and Transportation
COURSE NUMBER:CIVIL 4400

2) Lecture Information:3 credit hours
Location: 235 WH
Meeting day(s): Monday-Wednesday
Meeting time(s): 3:00-4:50 PM

3) Instructor Name: Tia Maria Como, P.E., Professor
Email: tia.como@fairmontstate.edu (campus) or tiacomo@comcast.net (home)
Office location: 425 ET Building
Office hours: Monday and Wednesday 12:00 – 1:00
Tuesday and Thursday 1:30 – 2:30
Friday 10:00 – 11:00
Phone: (304) 367-4629
Fax:(304) 367-4791

4) Required Textbook(s):
1. Nicholas J. Garber & Lester A. Hoel, Traffic and Highway Engineering,
Fourth Edition, Cengage Learning
   a. ISBN: 978-0-495-08250-7
Optional References: NONE
Other Tools/Supplies: NONE
Software: PowerPoint, Word, Excel, internet capability, PDF formats and Blackboard/Vista

5) Course description: This course includes basic transportation theory as well as particular highway design aspects such as transportation planning, route surveys, terrain, level of service, capacity, pavement design and geometric design.
Course Pre-requisite(s): CIVL 2240, TECH 2290, CIVL 2220, CIVL 3340
Course Co-requisite(s): Plan and Profiles, Cross sections, Volume Computations, Horzontal Curves, Vertical Curves, Compound Curves, Spiral Curves, Concrete Mix Design, Soil Classification, Flow through Pipes, Hydrology, Soil Shear Strength/Modules.
Delivery Method:The course will be delivered via traditional face-to-face lecture and will be enhanced / managed on-line using Blackboard/Vista. A semester long planning project also serves as a capstone experience.

6) Course outcomes: At the end of this course, students will be able to:
1. Be able to function effectively on teams. This project is a team effort which spans the entire semester.
2. Be able to creativity apply the general transportation planning model to the solution of walking track problem on the Fairmont State Campus.
3. Be able to utilize PowerPoint and a word processor.
4. Be able communicate effectively both orally and in writing, demonstrated by planning and preparing draft and final construction documents and a power point presentation.
5. Perform a relative economic analysis comparing the three proposed walking routes selected for final analysis which considers all the design elements necessary to construct them, earthwork involved, and all other impacts that result.
6. Be able to select the appropriate engineering materials necessary to construct their proposed alternatives, and the construction practices required to do so.
7. Understand professional, ethical and social responsibilities.
8. Develop a respect for diversity and knowledge of contemporary professional, societal and global issues
9. Be able to identify, analyze and solve technical problems related to transportation.
10. Recognize the need for, and engage in lifelong learning
11. Have a commitment to quality, timeliness, and continuous improvement

7) Topics covered:
1. Transportation systems and Organizations
2. Traffic operations and characteristics
3. Highway capacity and level of service
4. Intersections
5. Transportation Planning
6. Highway surveys and Location
7. Geometric Design
8. Soil Engineering for Highways
9. Flexible pavement design
10. Rigid pavement design

1) COURSE NAME:STRUCTURAL ANALYSIS
COURSE NUMBER:CIVIL 4410

2) Lecture Information:3 credit hours
Location: 111 Engineering Technology Building
Meeting day(s): Tuesday and Thursday
Meeting time(s): 8:00 – 9:15 AM

3) Instructor Name: Gary Zickefoose
Email: gzickefoose@fairmontstate.edu
Office location: 400 ET Building
Office hours: As posted
Phone: (304) 367-4107
Fax:(304) 367-4791

4) Required Textbook(s):
1. Hibbler, Russell C., Structural Analysis, 7th Edition, Prentice Hall, 2009.
   a. ISBN-10:0136020305
   b. ISBN-13: 9780136020301
2. National Council of Examiners for Engineering and Surveying, FE Reference Handbook-revised, 2008.
   a. www.ncees.org
   b. ISBN 978-1-932613-37-7

Optional References: NONE
Other Tools/Supplies: FE specified scientific calculator
Software: Word, Excel, internet capability

5) Course description: This course provides an analysis of structures including cables, beams, columns, trusses and frames. Also included is buckling, shear, moment and deflection in statically determinate structures.
Course Pre-requisite(s): CIVL 2290, TECH3300
Course Co-requisite(s): NONE
Delivery Method: The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Analyze statically determinate structures for reactions.
2. Analyze statically determinate trusses for member forces.
3. Develop shear and moment diagrams for beams and frames using hand calculations and software.
4. Calculate deflections for beams and trusses using the double integration, energy methods, and software.
5. Develop influence lines for statically determinate structures.

7) Topics covered:
1. Analysis of Statically Determinate beams, frames and trusses
2. Internal Loadings of Beams and Frames
3. Deflections in Beams, Frames and Trusses
4. Influence Lines
5. Analysis of Cables and Arches

1) COURSE NAME: CONSTRUCTION PLANNING AND ADMINISTRATION
COURSE NUMBER: CIVIL 4420

2) Lecture Information:3 credit hours
Location: 305 Engineering Technology Building
Meeting day(s): Monday
Meeting time(s): 6:00 – 9:00 PM

3) Instructor Name: Gary Zickefoose
Email: gzickefoose@fairmontstate.edu
Office location: 400 ET Building
Office hours: As posted
Phone: (304) 367-4107
Fax:(304) 367-4791

4) Required Textbook(s):
1. Fisk and Reynolds, Construction Project Administration, 8th edition, Prentice Hall Publishing, 2006.
   a. ISBN-10: 0130993050
   b. ISBN-13: 9780130993052
   Suggested retail price: $110.00
2. National Council of Examiners for Engineering and Surveying, FE Reference Handbook-revised, 2008.
   a. www.ncees.org
   b. ISBN 978-1-932613-37-7
   Suggested retail price: free

Optional References:
1. Kerzner, Harold, Project Management, 8th edition, Wiley, 2003.
2. Schexnayder and Mayo, Construction Management Fundamentals, McGraw-Hill, 2004

Other Tools/Supplies: FE specified scientific calculator
Software: Word, Excel, internet capability

5) Course description: Introduction to construction management. Topics include construction planning and scheduling, economics, contracts, administration, health and safety, productivity and performance.
Course Pre-requisite(s): CIVL 2230
Course Co-requisite(s): NONE
Delivery Method: The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Define their own lifelong learning goals based on technical research
2. Evaluate a discipline specific case study and make ethical decisions based on professional, societal and global issues
3. Complete the professional or technical society's code of ethics proficiency exam with a target score of 80-90%
4. Apply theories of Construction Administration, Organization, and Management to discipline specific problems
5. Develop a cost loaded schedule using applicable software
6. Develop a cost loaded schedule using applicable software
7. Define value engineering
8. Apply theories of Value Engineering, Risk Allocation, Construction Estimating, Measurement and Payment to discipline specific problems
9. Perform calculations on the following economic analysis problems: Discounted cash flow; incremental, average, and sunk Costs; breakeven and benefit-cost analyses; and Uncertainty expected values

7) Topics covered:
1. Construction Administration, Organization, and Management
2. Construction Planning and Scheduling
3. Value Engineering and Economic Analysis
4. Contract Documents, Contracts and the Legal Environment

1) COURSE NAME: STRUCTURAL DESIGN
COURSE NUMBER: CIVIL 4440

2) Lecture Information:3 credit hours
Location: 101 Engineering Technology Building
Meeting day(s): Tuesday and Thursday
Meeting time(s): 11:00 – 12:15

3) Instructor Name: Gary Zickefoose
Email: gzickefoose@fairmontstate.edu
Office location: 400 ET Building
Office hours: As posted
Phone: (304) 367-4107
Fax:(304) 367-4791

4) Required Textbook(s):
1. Limbrunner and Aghayere, Reinforced Concrete Design, 6th Edition, Prentice Hall, 2007.
   a. ISBN-10: 0131187678
   b. ISBN-13: 9780131187672
   c. Suggested retail price: $105.20
2. National Council of Examiners for Engineering and Surveying, FE Reference Handbook-revised, 2008.
   a. www.ncees.org
   b. ISBN 978-1-932613-37-7

Optional References: NONE
Other Tools/Supplies: FE specified scientific calculator
Software: Word, Excel, internet capability

5) Course description: A continuation of CIVL 2290, with more in-depth design of reinforced concrete and steel structures.
Course Pre-requisite(s): CIVL 2290
Course Co-requisite(s): NONE
Delivery Method: The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Apply basic steel and concrete concepts to the solution of reinforced concrete problems.
2. Perform basic analysis and design of reinforced concrete beams and slabs.
3. Perform basic analysis and design of reinforced concrete columns.
4. Calculate development lengths, splice overlaps, and simple-span bar cutoffs and bends for reinforced concrete structures.

7) Topics covered:
1. Reinforced Concrete Beams
2. Shear In Beams, Development Length and, Splices
3. Reinforced Concrete Columns
4. Reinforced Concrete Beams: T-Beams and Doubly Reinforced Beams

1) COURSE NAME: ENVIRONMENTAL ENGINEERING TECHNOLOGY II
COURSE NUMBER: CIVIL 4460

2) Lecture Information:3 credit hours
Location: 111 Engineering Technology Building
Meeting day(s): Tuesday and Thursday
Meeting time(s): 9:30 – 10:45 AM

3) Instructor Name: Gary Zickefoose
Email: gzickefoose@fairmontstate.edu
Office location: 400 ET Building
Office hours: As posted
Phone: (304) 367-4107
Fax:(304) 367-4791

4) Required Textbook(s):
1. Droste, Ronald L., "Theory and Practices of Water and Wastewater Treatment", John Wiley Sons, 1997.
2. Nathanson, Jerry A., Basic Environmental Technology: Water Supply, Waste Management & Pollution Control, Prentice Hall

Optional References: NONE
Other Tools/Supplies:FE specified scientific calculator
Software:Word, Excel, internet capability

5) Course description: This course will cover theories and practices in water and wastewater treatment systems including physical, chemical and biological treatment processes. Other topics covered include surface water quality characteristics, modeling, and permitting.
Course Pre-requisite(s): CIVL 2280, TECH 3300
Course Co-requisite(s): NONE
Delivery Method:The course will be delivered via traditional face-to-face (f2f) lecture and will be enhanced/managed on-line utilizing Blackboard/Vista. Students will be required to access the course enhancement tools to obtain the course syllabus, assignments, and grades for the course.

6) Course outcomes: At the end of this course, students will be able to:
1. Demonstrate an understanding of the social and environmental impact of civil engineering projects locally and abroad.
2. Demonstrate an understanding of wastewater and water treatment operations
3. Analyze and design physical treatment processes
4. Analyze and design chemical treatment processes
5. Analyze and design biological treatment processes.

7) Topics covered:
1. Water and Waste water Treatment Operations
2. Treatment Processes

1) COURSE NAME: Advanced Soils and Foundation Design
COURSE NUMBER:CIVIL 4470

2) Lecture Information:3 credit hours
Location: 102 Engineering Technology Building
Meeting day(s): Monday-Wednesday
Meeting time(s): 1:00 – 3:00 PM

3) Instructor Name: Tia Maria Como, P.E., Professor
Email: tia.como@fairmontstate.edu (campus) or tiacomo@comcast.net (home)
Office location: 425 ET Building
Office hours: Monday and Wednesday 3:00 – 4:00
Tuesday and Thursday 1:30 – 2:30.
Friday 9:00 – 10:00
Phone: (304) 367-4629
Fax:(304) 367-4791

4) Required Textbook(s):
1.Das, Braja. M., Fundamentals of Geotechnical Engineering
Thompson, Third Edition, ISBN 978-0-495-29572-3
Optional References: NONE
Other Tools/Supplies:Engineering Paper, Calculator, Pencils, Graphing Paper
Software:Internet capability, PowerPoint, Word, Excel, pdf formats in Blackboard/Vista
[Field]The students will also be asked to use software provided by the instructor to assist in laboratory computations and analyses.

5) Course description: This course is a continuation of CIV 3340 and includes a review of effective stress, permeability and consolidation; shear strength - lab and field test methods and their use in design; subsurface exploration; an introduction to the design of shallow and deep foundations with bearing capacity and settlement considerations; the study of earth pressures for use in designing retaining walls and soil improvement techniques[Field].
Course Pre-requisite(s): CIVL 3340
Course Co-requisite(s): NONE
Delivery Method:The course will be delivered via traditional face-to-face lecture and will be enhances/managed on-line using Blackboard/Vista. One laboratory experience, and if possible, a field experience will also be incorporated.

6) Course outcomes: At the end of this course, students will be able to:
1. Correctly evaluate the typical engineering behavior of clays, silts, sands, and gravels relative to permeability, compressibility, shear strength, consolidation, settlement, and bearing capacity.
2. Approximate the typical engineering behavior of mixed soils relative to permeability, compressibility, shear strength, consolidation, settlement, and bearing capacity.
3. Correctly recommend appropriate uses for clays, silts, sands, and gravels in construction
4. Approximate the appropriate uses of mixed soils in construction
5. Correctly analyze the suitability of a shallow foundation, given the size and depth, based on the loading applied and subsurface conditions
6. Correctly analyze the suitability of a matt foundation, given the size and depth, based on the loading applied and subsurface conditions.
7. Decide if the subsurface conditions and loading conditions are appropriate for the design of a simple shallow foundation and/or a simple matt foundation, or if an alternative system such as a combined footing or a deep foundation warrants additional study.

7) Topics covered:
1. Effective stress and consolidation
2. Subsurface investigation
3. Shear strength in soils
4. Shallow foundation
5. Bearing capacity and settlement
6. Matt foundations
7. Lateral earth pressures
8. Retaining walls
9. Deep foundations

APPENDIX B – FACULTY VITAE

Please use the following format for the faculty vitae (2 pages maximum in Times New Roman 12 point type)

1. Name
2. Education – degree, discipline, institution, year
3. Academic experience – institution, rank, title (chair, coordinator, etc. if appropriate), when (ex. 1990-1995), full time or part time
4. Non-academic experience – company or entity, title, brief description of position, when (ex. 1993-1999), full time or part time
5. Certifications or professional registrations
6. Current membership in professional organizations
7. Honors and awards
8. Service activities (within and outside of the institution)
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
10. Briefly list the most recent professional development activities

1. **Tia Maria Como, P.E., Professor**

2. **Education:**
    - Master of Science, Civil Engineering (GeoEnvironmental Focus), West Virginia University, August 1996
    - Bachelor of Science, Civil Engineering, West Virginia University, May 1984

3. **Academic experience:**
    - Fairmont State University - Civil Engineering Technology & Architecture
    - Professor – 2008 to Present
    - Associate Professor – 2003 to 2008
    - Assistant Professor – 2000 - 2003
    - Instructor – 1998 - 2000
    - Adjunct – 1996 -1998
    - West Virginia University – Department of Civil & Environmental Engineering
    - Assistant Director, WVU Cooperative Agreement – 1995 - 1998
    - Teaching Assistant – 1993 - 1995
    - Research Assistant – 1994 - 1995

4. **Non-academic experience:**
    - Geotechnical Consulting/Expert Witness. Ongoing specialized projects
    - Ackenheil Engineers, Pittsburgh, PA - Project Engineer/Staff Engineer/Administrative Assistant. 1986 to 1993
    - Dick Corporation, Large, PA – Estimator/Project Engineer/Safety Inspector. 1984 to 1986
    - Pennsylvania Turnpike Commission – Summer Engineering Assistant -1983

5. **Certifications or professional registrations:**
    - Registered Professional Engineer, January 2000 – Current, WV #14339
    - WV COA C03136-00

6. **Current membership in professional organizations:**
    - ASCE – WV Section and Northern Branch: 1998 to present
    - ASHE North Central WV: 2006 to present

7. **Honors and awards:**
    - Faculty Advisor of the Year – Zone IV ASCE – 2011
    - Excellence in Academic Advising – FSC – 2004
    - Faculty Advisor Letter of Commendation, ASCE 2001 through 2016
    - Regional Concrete Canoe Champion - 13 consecutive years (2004-2017)

8. **Service activities: (within and outside of the institution)**
    - FSU College of Science and Technology Travel/Faculty Development Committee
    - ASCE – Northern Branch Treasurer: 2000 to present
    - ASCE Student Chapter Faculty Advisor: 2000 to 2017
    - ASHE NCWV Secretary: 2010 – 2017, current board member

9. **Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation.**
    - Long Term Performance Monitoring of Pile Walls Used to Stabilize Landslides, Research Project #210 for the WV DOH. Draft final report competed and submitted to the state (Summer 2012) and presented in September 2012 to the state board. Also presented a shorter version at the WV Expo in March 2013. This was phase III of work comprising 15 years of research data and model validation on a specialized deformation based model for designing pile walls used to stabilize landslides. Two production pile sites in service and one full scale research site were used to collect the validation data. Final report submission after peer review, Summer 2013.
    - Annually publish proceedings document for the ASCE Summer Technical Conference and an ASCE Student Chapter News Letter.

10. **Briefly list the most recent professional development activities**
    - FSU ASCE Summer Technical Conference, June 4, 2018 offering 6 PDH's. Theme – "Engineering the Future Together". This is annual event.
    - Also attend ASHE NCWV meetings regularly and other professional activities annually at the WV Expo and ASCE WV Section.

1. **Gary Zickefoose, P.E.**

2. **Education:**
    - Post Graduate Work, Structural Engineering, WVU, 54Sem. Hrs., 1984-2001
    - Masters of Business Administration, West Virginia University, 1981
    - Masters of Civil Engineering, North Carolina State University, 1971
    - Bachelor of Science, Civil Engineering, North Carolina State University, 1971

3. **Academic experience:**
    - Fairmont State University, Associate Professor, Civil Engineering Technology, Full Time, 1984-Present

4. **Non-academic experience:**
    - Two, one year, military active duty tours, with the US Army Corps of Engineers, Kabul, Afghanistan, 2007-2009, first tour, working first as a Liaison Officer to the 82ndAirborne Division, Bagram Military Air Field; and then as a Resident Engineer, Kabul North Resident Office; and during the second tour, working as the Resident Engineer, Qalat Resident Office, and then, working as Project Roads Manager, USAID, US Embassy, Kabul. As Resident Engineer my responsibilities included contract administration and oversight, and supervision of military and civilian personnel, including local nationals, and remote office facility security and sustainment (communications, water, sewer and power). As Project Roads Manager, I was responsible for project administration and oversight of specific projects, throughout Afghanistan. Project administration and oversight responsibilities included safety, quality assurance and progress payments for road and building projects including water systems, sewer systems, power systems, roads, bridges and airfields.
    - Previous non-academic experience also includes full time employment with engineering firms in West Virginia and North Carolina, and consulting work, designing water systems and sewer systems, and water and wastewater treatment systems.
    - Summer work non-academic experience included working with the US Army Corps of Engineers, Winchester, Va., as a project manager with administrative responsibilities for specific overseas projects. A memorable work responsibility required an oversight trip to Ghana, Africa, to report on building projects.

5. Certifications or professional registrations:
    - Professional Engineer, West Virginia6.Current membership in professional organizations: American Association of Educators

7. Honors and awards:
    - Afghanistan Campaign Medal w/Three Campaign Stars; Meritorious Service Medal, 2nd Award; National Defense Medal, 3rd Award; Global War on Terrorism Service Medal; Army Service Ribbon; Overseas Service Ribbon, 2nd Award; NATO Medal, 2nd Award; Parachutist Badge

8. **Service activities:(within and outside of the institution)**
    - ABET, Civil Engineering Technology

9. **Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation.**
    - FE Exam Review (Fluid Mechanics) Presentation

10. **Briefly list the most recent professional development activities**
    - Completed Construction Site Stormwater Runoff Control Course, December 2012
      Completed Design of Small Water System Course, December 2012

1. **James E. Vassil, PE**

2. **Education:**
   - Master of Science, Civil Engineering, New Jersey Institute of Technology, 2001
   - Bachelor of Science, Civil Engineering Technology, Fairmont State University, 1999

3. **Academic experience:**
   - Fairmont State University, Assistant Professor, Coordinator of Civil Engineering Technology, Full Time, 2006-Present
   - Fairmont State University, Visiting Assistant Professor, Civil Engineering Technology, Full Time, 2001-2006

4. **Non-academic experience:**
   - Owner/operator JNK Construction and Engineering 2011-Present
   - Commercial roofing/siding , 1991-2001

5. **Certifications or professional registrations:**
   - Professional Engineer License, 2010

6. **Current membership in professional organizations:**
   - WV Contractors Association
   - American Society of Engineering Educators

7. **Honors and awards:**
   - None

8. **Service activities: (within and outside of the institution)**
   - Marion County Park Commission

9. **Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation.**
   - West Virginia Department of Transportation Survey Conference Presentation: Surveying Math, 16 hours
     - Done annually with different topics and concepts each year.

10. **Briefly list the most recent professional development activities.**
    - ABET Continuous Improvement Workshop, October 2018
    - ABET Symposium, April 2019
    - Attended WVDOT Surveying Conference
    - Prepared FE review workshop lectures

APPENDIX C – EQUIPMENT

Please list the major pieces of equipment used by the program in support of instruction.

Classroom Instructional Resources

All civil engineering technology classes are held in the engineering technology building and are equipped with whiteboards, projectors and network access. The computer lab located in room 113 of the engineering technology building has software specific to the major and has 30 computers. There are additional computer labs across campus equipped with course specific software.

The civil engineering technology program has various equipment that satisfy to needs of the courses. Table C-1 bellow lists the necessary equipment used across the courses offered at FSU's CET program.

Course	Equipment	Related Outcome (1-5)
CIVL 2200	Automatic Levels, Total Stations, Surveying GPS	1,2,4,5
CIVL 2210	Microsoft Office Word, Excel, PowerPoint	ALL
CIVL 2220	Large and Small Sieves, sieve shaker, Concrete mixer, Slump Cone, Compression Machine	1,4,5
CIVL 2230	Microsoft Office Word, Excel, PowerPoint	ALL
CIVL 2240	Total stations, Surveying GPS, Automatic levels	1,2,4,5
CIVL 2275	Autocad Civil 3D	3
CIVL 3340	Small Sieves, sieve shaker, Limit tools, Proctors, Consolidation	1,4,5
CIVL 4400	Depends on capstone and information available	ALL
CIVL 4470	Direct Shear Machine	1,2,4,5

APPENDIX D – INSTITUTIONAL SUMMARY

Programs are requested to provide the following information.

1. The Institution

a. Name and address of the institution.

Fairmont State University
1201 Locust Ave, Fairmont, WV 26554

b. Name and title of the chief executive officer of the institution.

Dr. Mirta Martin – President

b. Name and title of the person submitting the Self-Study Report.

James Vassil, PE. Program Coordinator, Civil Engineering Technology

c. Name the organizations by which the institution is now accredited, and the dates of the initial and most recent accreditation evaluations.

Fairmont State University is accredited by The Higher Learning Commission and is a member of the North Central Association, 230 S. LaSalle Street, Suite 7-500, Chicago, IL 60604-1411, (800) 621-7440x105, http://www.ncahlc.org.

The Teacher Education program is approved by the West Virginia Board of Education and accredited by the National council for the Accreditation of Teacher Education/Council for the Accreditation of Educator Preparation, 2100 Massachusetts Ave., Suite 500, Washington, DC 20036,(202) 223-0077. In addition, selected teaching specializations are nationally approved by their respective learned society and/or professional organization. The most recent accreditation visit by the higher learning commission occurred in the summer of 2018.

Selected programs in the College of Science and Technology are accredited by the Engineering Technology Accreditation Commission and Applied Natural Sciences Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, (410) 347-7700. The following programs are currently accredited by ETAC of ABET: A.S. and B.S. Civil, A.S. and B.S. Electronics, and A.S. and B.S. Mechanical Engineering Technology. In addition, the B.S. Occupational Safety program is accredited by ANSAC of ABET. The Engineering Technology programs have been accredited by ABET since 1988. The most recent accreditation visit was October 2013 and the programs are accredited until July 2020.

The A.S. Nursing program is accredited by the West Virginia Board of Examiners for Registered Professional Nurses, 90 MacCorkle Avenue, SW, Suite 203, South Charleston,

WV 25303, (304) 744-0900, Fax: (304) 744-0600, http://wwww.rnboard@wv.gov and the Accreditation Commission for Education in Nursing (ACEN), 3343 Peachtree Road NE, Suite 850, Atlanta, GA, 30326, (404)975-5000, http://acenursing.org; the B.S. Nursing program is accredited by the Commission on Collegiate Nursing Education (CCNE), One Dupont Circle, NW Suite 530, Washington, DC, 20036, (202) 887-8476, http://www.aacn.nche.edu.

The School of Business is accredited by the Accreditation Council for Business Schools and Programs (ACBSP) 11520 West 119th Street, Overland Park, KS 66213, (913) 339-9356, www.acbsp.org.

The University is also a member of the American Association of Colleges for Teacher Education, National League for Nursing, American Library Association, and Public Relations Society of America (PRSA) West Virginia Chapter.

2. Type of Control

Description of the type of managerial control of the institution, e.g., private-non-profit, private-other, denominational, state, federal, public-other, etc.

Fairmont State University is a state institution governed by the state legislature and with oversight by the WV Higher Education Policy Commission. According to Chancellor, Paul Hill, PhD, "The West Virginia Higher Education Policy Commission is responsible for developing, establishing, and overseeing the implementation of a public policy agenda for the state's four-year colleges and universities. It is charged with oversight of higher education institutions to ensure they are accomplishing their missions and implementing the provisions set by state statute".

3. Educational Unit

Describe the educational unit in which the program is located including the administrative chain of responsibility from the individual responsible for the program to the chief executive officer of the institution. Include names and titles. An organization chart may be included.

Administrative Structure

The following positions and descriptions of duties represent the top-down hierarchy of the institution. The management of the academic program begins with oversight by the Board of Governors but is managed by the program coordinator and faculty.

Board of Governors

As noted on the Board of Governors' website (http://www.fairmontstate.edu/aboutfsu/board-governors) , the BOG "determines, controls, supervises and manages the financial, business and education policies and affairs" of Fairmont State University. (§18B-2A-4(a)) Its membership, terms of office, responsibilities, powers and electoral procedures are further governed by West Virginia Code, Chapter 18B. The twelve-member board meets bi-monthly on campus. Meetings are open to the public and

anyone with an interest in the governance of the university is welcome to attend. Various campus reports are routinely sent to the Board of Governors. The Board of Governors may also make specific requests for data from the campus. These requests are routed through the President's Office, and from there they are routed to the appropriate office for response. All requested information is collected, and the campus response is then issued by the President's Office.

The President

The President is the chief executive officer on the campus and oversees the operation of the campus, including the academic, financial, student services, and external communication programs in consultation with the vice presidents of each of these areas. The President also serves as the campus representative to the West Virginia Legislature, the WVHEPC, and to the region the campus serves. The President is responsible to the Board of Governors.

Provost /Vice President for Academic Affairs

The Office of the Vice President for Academic Affairs (Provost) maintains the integrity of FSU's academic mission by overseeing academic programs, policies, procedures, calendars, academic appointments, promotion and tenure, and faculty grants and fellowships. Positions that report to Academic Affairs include academic Deans, the Director of the Honors Program, the Coordinator of the Advising Center, and the Director of the Center for Civic Engagement.

Associate Provost/Vice President for Academic Affairs

This administrator assists in the conduct of the academic functions of the University. When necessary, the Associate Provost assumes responsibility for academic matters in the absence of the Provost and Vice President for Academic Affairs.

College/School Deans, Associate Deans, and Department Chairs

The Dean is charged with implementing academic policies. They have authority to supervise the academic functions of faculty members within their academic units.

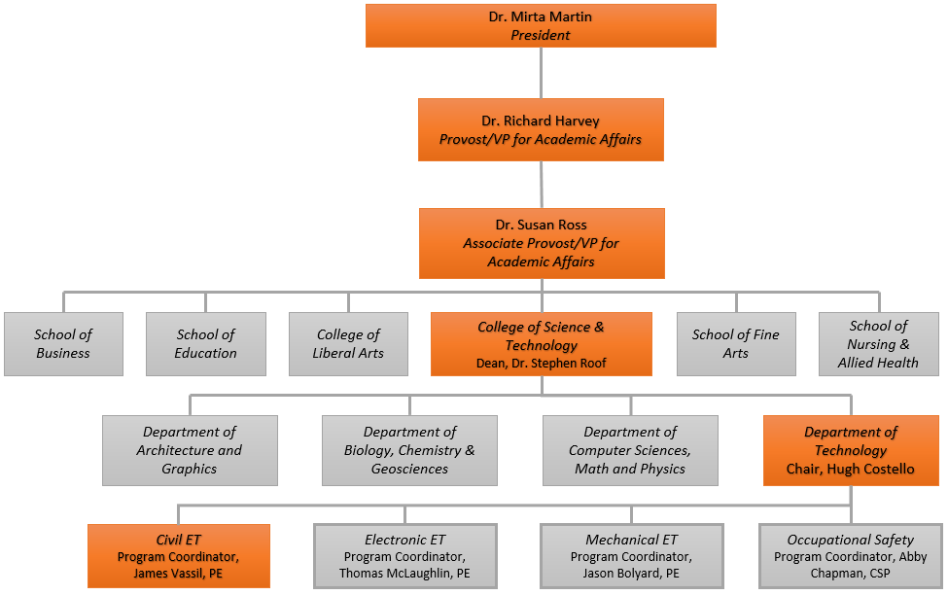
Program Coordinator

The coordinator is charged with assisting College/School Dean with academic functions including;

- Developing curriculum revisions
- Maintaining specialized accreditation
- Securing adjunct faculty
- Generating five-year program review reports
- Directing program faculty
- Reviewing academic transfers
- Contact person for all program matters

Program Faculty

Faculty members are responsible for the development and delivery of materials within the constraints of the established program objectives and outcomes. Faculty members are also responsible for assessment of course outcomes to ensure students are meeting program outcomes and objectives.



4. Academic Support Units

List the names and titles of the individuals responsible for each of the units that teach courses required by the program being evaluated, e.g., mathematics, physics, etc.

Chemistry/Biology:	Dr. Stephen Roof, Interim Dean
English:	Dr. Deanna Shields, Dean
Fine Arts:	Dr. Francine Kirk, Interim Dean
Math/Computer Science/Physics:	Dr. Stephen Roof, Interim Dean
Social Sciences:	Dr. Deanna Shields, Dean
Technology:	Dr. Stephen Roof, Interim Dean

5. Non-academic Support Units

List the names and titles of the individuals responsible for each of the units that provide non-academic support to the program being evaluated, e.g., library, computing facilities, placement, tutoring, etc.

Non-academic Unit	Director
Academic Advising	Jennifer Jones
Career Services	Ashley Tasker
Computing Services	Jonnie Raisovich
Housing	Alicia Kalka
Library	Sharon Mazure
Student Life	Alicia Kalka
Tutoring	James Mathews

6. Credit Unit

It is assumed that one semester or quarter credit normally represents one class hour or three laboratory hours per week. One academic year normally represents at least 28 weeks of classes, exclusive of final examinations. If other standards are used for this program, the differences should be indicated.

The university operates on a 16-week semester for fall and spring providing 32 weeks of instruction and examination during one fiscal year. At Fairmont State University, one credit hour is awarded for each class hour. Laboratory hours, in general, are two contact hours for one credit hour.

7. Tables

Complete the following tables for the program undergoing evaluation.

Table D-1. Program Enrollment and Degree Data

Civil Engineering Technology

	Academic Year		Enrollment Year					Total Undergrad	Total Grad	Degrees Awarded			
			1st	2nd	3rd	4th	5th			Associates	Bachelors	Masters	Doctorates
Current Year	2018	FT	21	18	20	29	1	94	22	4	22		
		PT	0	0	0	0	0						
1	2017	FT	27	25	18	30	0	84	12	5	12		
		PT	0	0	0	0	0						
2	2016	FT	37	22	12	28	1	82	20	3	20		
		PT	0	0	0	0	0						
3	2015	FT	28	12	18	38	0	73	13	3	13		
		PT	0	0	0	0	0						
4	2014	FT	16	17	21	33	0	94	17	1	17		
		PT	0	0	0	0	0						

Give official fall term enrollment figures (head count) for the current and preceding four academic years and undergraduate and graduate degrees conferred during each of those years. The "current" year means the academic year preceding the on-site visit.

FT--full time
PT--part time

Table D-2. Personnel

Bachelor of Science Civil Engineering Technology
Year: 2018

	HEAD COUNT		FTE[2]
	FT	PT	
Administrative[2]	0	1	
Faculty (tenure-track)[3]	3	0	
Other Faculty (excluding student Assistants)	1	1	
Student Teaching Assistants[4]	0	0	
Technicians/Specialists	1	0	
Office/Clerical Employees	0	0	
Others[5]	0	0	

Report data for the program being evaluated.

1. Data on this table should be for the fall term immediately preceding the visit. Updated tables for the fall term when the ABET team is visiting are to be prepared and presented to the team when they arrive.

2. Persons holding joint administrative/faculty positions or other combined assignments should be allocated to each category according to the fraction of the appointment assigned to that category.

3. For faculty members, 1 FTE equals what your institution defines as a full-time load.

4. For student teaching assistants, 1 FTE equals 20 hours per week of work (or service). For undergraduate and graduate students, 1 FTE equals 15 semester credit-hours (or 24 quarter credit-hours) per term of institutional course work, meaning all courses — science, humanities and social sciences, etc.

5. Specify any other category considered appropriate, or leave blank.

SUBMISSION ATTESTING TO COMPLIANCE

Only the Dean or Dean's Delegate can electronically submit the Self-study Report.

ABET considers the on-line submission as equivalent to that of an electronic signature of compliance attesting to the fact that the program conducted an honest assessment of compliance and has provided a complete and accurate disclosure of timely information regarding compliance with ABET's *Criteria for Accrediting Engineering Programs* to include the General Criteria and any applicable Program Criteria, and the ABET *Accreditation Policy and Procedure Manual.*