BS, Mechanical Engineering Technology
Fairmont State University
5 Year Program Review
Submitted Spring 2012

PROGRAM REVIEW
Fairmont State Board of Governors

X Program with Special Accreditation ☐ Program without Special Accreditation

Date Submitted 2/15/2012

Program: Bachelor of Science in Engineering Technology, Mechanical Engineering Technology
Degree and Title

INSTITUTIONAL RECOMMENDATION

The institution is obligated to recommend continuance or discontinuance of a program and to provide a brief rationale for its recommendation:

X 1. Continuation of the program at the current level of activity;

_____2. Continuation of program with corrective action (for example, reducing the range of optional tracks or merging programs);

_____3. Identification of the program for further development (for example, providing additional institutional commitment);

_____4. Development of a cooperative program with another institution, or sharing courses, facilities, faculty, and the like;

_____5. Discontinuation of the Program

Rationale for Recommendation:
The Mechanical Engineering Technology program has maintained appropriate enrollments and graduates during the past five years. Classes offered as part of the program average 21 students per class during this same period. More importantly, this program utilizes the same assessment standards in place for the BSET degree in Mechanical Engineering Technology, and this program is accredited by the Board of Engineering and Technology (ABET). The program maintains a rigorous assessment and continuous improvement plan, and the curriculum is currently being redesigned to reduce the total credit hours required in the major. The Mechanical Engineering Technology program is considered a quality program with excellent faculty, and this program is highly supported by the Dean of the College of Science and Technology at Fairmont State University.

Signature of person preparing report:	**Date** 2/15/2012
Signature of Dean	**Date** 2/15/12
Signature of Provost and Vice President for Academic Affairs:	**Date** 6-6-12
Signature of President:	**Date** 6-6-12
Signature of Chair, Board of Governors:	**Date** 6-6-12

Executive Summary for Program Review

(not to be more than 2-3 pages)

Name and degree level of program

Mechanical Engineering Technology – Bachelor of Science

External reviewer(s)

TAC of ABET 2007-2008

Synopses of significant findings, including findings of external reviewer(s)

TAC of ABET identified several weaknesses and deficiencies in the Mechanical Engineering Technology program during their 2007-2008 visit. The main issue was the lack of an acceptable continuous improvement plan.

Plans for program improvement, including timeline

The Mechanical Engineering Program has implemented an acceptable continuous improvement plan since the spring of 2009. The plan was approved during the fall 2009 TAC of ABET revisit. The program will continue with the existing continuous improvement plan until the next TAC of ABET visit.

Identification of weaknesses or deficiencies from the previous review and the status of improvements implemented or accomplished

The TAC of ABET review during 2007-2008 did identify weaknesses and deficiencies; all have been corrected or resolved in the current program

Five-year trend data on graduates and majors enrolled

Within the past five years, the Mechanical Engineering Technology program has graduated approximately 63 students with a Bachelor's degree. This is an average of approximately 12 graduates per year.

Over the past five years, program enrollment has increased slightly from approximately 50 to over 60 students.

Summary of assessment model and how results are used for program improvement

The Mechanical ET program utilizes a departmental Continuous Improvement Plan to meet institutional assessment needs. The Continuous Improvement Plan involves assessment and continuous improvement on three levels. The purpose of the Continuous Improvement Plan (CIP) is to identify, track, and remediate program weaknesses. The evaluation of competencies and program components leads to modifications of content, delivery, and other factors deemed instrumental in the pursuit of program improvement.

The CIP involves three levels of application. These levels include:

- Assessment of Program Objectives
- Assessment of Program Outcomes
- Program Modifications as determined necessary by the assessment practices.

Program Objectives are evaluated using various tools such as graduate surveys, employer surveys and a graduate competency exam. Benchmarks have been established for each of these assessment tools to determine program effectiveness. If data points within the results do not meet established benchmarks, an improvement plan is developed and implemented. Any modifications to the program objectives are approved by program faculty and the program's Industrial Advisory Committee.

Program Outcomes are evaluated using various tools such as course exams, assignments, quizzes, projects, labs, etc. Assessment points have been established for each course as they relate to the program outcomes. The program has established a benchmark in which 70% of the students in the course demonstrate competency. If less than 70% of the students cannot demonstrate success, a plan of improvement is established for the assessment point. These continuous improvement plans are approved by a collaborative agreement of the program faculty. An assessment matrix has been established to clearly define what assessment points are evaluated in each program course. The Mechanical Engineering Technology program has established an assessment cycle of three years. Each assessment point on the matrix will be assessed at least once every three years. Additional assessments shall be conducted if warranted.

All program modifications such as curriculum changes are established as a result the program objective and outcome assessments. Any significant changes must be approved by program faculty and the program's Industrial Advisory Committee.

Data on student placement (for example, number of students employed in positions related to the field of study or pursuing advanced degrees)

Based on graduate survey result 100% of students that responded to the survey were employed in their field of study.

Final recommendations approved by governing board

PROGRAM REVIEW

FAIRMONT STATE UNIVERSITY OR PIERPONT COMMUNITY AND TECHNICAL COLLEGE	
Program:	Mechanical Engineering Technolgy
School:	College of Science and Technology
Date:	2/23/12

Program Catalog Description:

Mechanical engineering technologists are concerned with the production, transmission and use of mechanical power and thermal energy. They also participate in the general design, maintenance and troubleshooting of mechanical components and assemblies (machines). The Mechanical Engineering Technology program at Fairmont State University prepares graduates for work in industry as an engineering technician or technologist where they may design, build, test, and/or maintain machines and mechanical equipment. The program is designed as a highly flexible 2 + 2 curriculum. Once the two-year degree is earned, the graduate may choose to enter the workforce or continue to study at the baccalaureate level.

The Bachelor of Science degree provides students with a greater emphasis on design and analysis, with advanced courses in dynamics, thermodynamics, heat transfer, heating/ ventilation/air conditioning systems and mechanical measurements. Special emphasis is placed on the practical industrial applications of basic engineering concepts and principles. Graduates with the Bachelor of Science degree are qualified for positions that range from technician up through mechanical engineer. Our graduates have been employed by a broad range of manufacturing companies including aerospace, automotive, chemical, nuclear, and steel, mining, as well as telephone, natural gas, and electric utilities. Baccalaureate graduates are eligible to sit for the Fundamentals of Engineering Exam (FE) in West Virginia, the first step to becoming a professional engineer.

VIABILITY (§ 4.1.3.1)

Enrollment

Applicants, graduates

Applicant Data:

Applicants for BS, Mechanical Engineering Technology

Academic Year	Number of Applicants
2006	39
2007	36
2008	45
2009	59
2010	52
2011	66
2012	63

Graduate Data:

Over the past five (5) academic years, the Mechanical Engineering Technology, BS program has averaged 12.6 graduates per year.

Academic Year	Number of Graduates
2006	8
2007	10
2008	13
2009	9
2010	15
2011	8

Application/ Admission Requirements

Students apply for admission to FSU through modern techniques by completion of an Application for Admission located on FSU's homepage at www.fairmonstate.edu. Once the student fully completes the application process, the student's application is reviewed for determination of admission.

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. Applications 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.

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. Separate applications for residence halls must be submitted to the Office of Residence Life. Any change in local address of any student at Fairmont State University must be reported to the Registrar.

The application for admission must specify the student's desired degree or program objective. Fairmont State University grants bachelor's degrees, and Pierpont Community & Technical College grants associate's degrees and administers certificate programs.
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.

FAIRMONT STATE UNIVERSITY ADMISSION REQUIREMENTS
FIRST-TIME FRESHMEN

1. Application for Admission
2. Official high school transcript or GED (sent by high school or Department of Education) (2.5 GPA or higher)
3. ACT or SAT Scores (17 ACT or 830 Composite SAT[combination of critical reading and math scores])
4. College Transcript (if college credit was earned during high school)
5. Immunization Records (if born after January 1, 1957)
6. Statement of Activities (if out of high school more than six months)

PLEASE NOTE: REQUIREMENTS CHANGED FOR FALL 2008
The Following Units Were Required Beginning Fall 2008:
4 English (including courses in grammar, composition, and literature)
3 Social Studies (including U.S. History)
4 Mathematics (three units must be Algebra 1 and higher)
3 Science (all courses to be college preparatory laboratory science, preferably including units from biology, chemistry and physics)
1 Arts
2 Foreign Language (Two units of the same foreign language)

Program courses	Five year course enrollment for all Mechanical Engineering Technology program courses is provided below:

MECH Course Number	2007	2008	2009	2010	2011	2012
1100	94	67	89	100	80	49
2200	72	46	37	44	49	29
2210	22	17	17	9	15	19
2220	20	14	16	0	18	17
2240	16	23	12	11	10	19
3300	18	16	14	10	12	18
3320	30	30	28	24	21	29
3330	13	15	17	7	11	9
4400	7	17	14	0	10	12
4410	10	15	12	8	11	16
4430	13	12	16	8	11	11

The Mechanical Engineering Technology Program offers the following program courses:

Mechanical Engineering Technology (College of Science and Technology)

MECH 1100 **Statics** (3 hours)
The study of force systems that act on rigid bodies in static equilibrium. Topics of study include the analysis of coplanar and noncoplanar force systems using analytical and graphical methods. PR: MATH 1102, or 1115, or CR: MATH 1102.

MECH 2200 **Strength of Materials** (4 hours)
The analysis of stress and deformation of deformable bodies under the action of forces. Students will examine the design and selection of tension and compression members, shafts and beams, stress and strain, Hook's Law, mechanical properties of engineering materials, torsion, bending and buckling theory. PR: MATH 1102 and MECH 1100 with a C or better in both.

MECH 2210 **Thermodynamics** (3 hours)
An introduction to the thermodynamic laws of conservation of mass and energy. Students will explore applications in the analysis of energy sources, transformations and utilizations. PR: MECH 1100 with a C or better.

MECH 2220 **Fluid Mechanics** (3 hours)
A study of the mechanics of fluid systems. Topics include fluid statics and dynamics, dimensional analysis and similitude, steady flow of incompressible fluids in pipes, ducts, and open channels, steady flow of compressible fluids over surfaces and about immersed bodies and turbomachinery. PR is one of the following: PR: MECH 2200, TECH 2290 or MATH 1185 or MATH 1190.

MECH 2240 **Machine Design** (3 hours)
Application of the principles of mechanics to the design and selection of machine components. Topics of study include beams, columns, shafts, gears, bearings, belts, brakes, and springs. Design projects will be assigned and computer solutions will be utilized. PR: MECH 2200, COMP 1101 and either TECH 2290 or MATH 1185 or MATH 1190.

MECH 3300 **Thermodynamics II** (3 hours)
A continuation of the study of thermodynamics, with special emphasis on equations of state, calorimetry, processes, heat engines and the Second Law of Thermodynamics. Topics include PVT relationships of pure substances, caloric equations of state, properties of multi-phase substances, processes of compressible and incompressible gases, liquids, solids, and multi-phase substances, the Carnot heat engine, entropy, refrigeration and heat pump cycle, the Third Law of Thermodynamics and the analysis of Carnot cycles. PR: MECH 2210.

MECH 3320 **Dynamics** (3 hours)
The study of Newtonian dynamics of particles and rigid bodies in plane motion. Topics include Kinematics, Newton's Laws, work and energy principles and impulse momentum. Baccalaureate majors only. PR: MECH 1100 and TECH 3300 or MATH 1186 or MATH 3315.

Mechanical Engineering Technology
(College of Science and Technology)

MECH3330 **Heat Transfer I** (3 hours)
A study of heat energy interactions in solids, liquids, and gases. Topics include fundamental laws of conduction, convection and radiation heat transfer. Baccalaureate majors only. PR: PHYS 1102, TECH 3300 or MATH 1186 or MATH 3315.

MECH 3340 **Heating, Air Conditioning, and Ventilation** (3 hours)
A study of the principles of fluid mechanics, thermodynamics and heat transfer as applied to HVAC systems. Topics include: heating and cooling load calculations, heating, air conditioning and refrigeration systems; automatic controls; heat pumps for heating and cooling; solar heating and cooling systems. PR: MECH 3300.

MECH 4400 **Mechanical Measurements** (3 hours)
The study of the measurement of motion, force, torque and power with emphasis on strain measurement and strain gage techniques with instrumentation. Topics also include error analysis, and curve fitting. PR: MECH 3320.

MECH 4410 **Thermodynamics III** (3 hours)
A continuation of the study of thermodynamics, with special emphasis upon application to heat, power and refrigeration systems. Topics include energy availability and irreversibility in open and closed thermodynamic systems, mixtures of gases and vapors, reactive systems, internal and external combustion power cycles, reversed cycles and flow through nozzles and diffusers. PR: MECH 3300, 3330.

MECH 4430 **Heat Transfer II** (3 hours)
A continuing study of conduction, convection, and radiation heat transfer, with emphasis on application to residential, commercial and industrial and heat exchanger design. Topics include steadystated transient heat conductions, free and forced heat convection, condensing and boiling heat transfer, radiation, transfer by combined mechanisms, numerical and analog methods. PR: MECH 3330.

Service courses

The Mechanical Engineering Technology program offers three service courses. A brief summary of each service course is provided below.

MECH 1100: *Statics*, required by the following programs

- Civil Engineering Technology, BS and AS majors
- Occupational Safety, BS majors
- Architecture, BS and AS majors

MECH 2200: *Strength of Materials*, required by the following programs

- Civil Engineering Technology, BS and AS majors
- Architecture, BS and AS majors

MECH 3320: *Dynamics*, required by the following programs

- Civil Engineering Technology, BS and AS majors

Five year course enrollment for these courses is provided below:

MECH Course Number	2007	2008	2009	2010	2011	2012
1100	94	67	89	100	80	49
2200	72	46	37	44	49	29
3320	30	30	28	24	21	29

Success rates Serv Crs	The success rate of all service courses is based on the number of students that successfully pass the course with a letter grade of D or better. Below is a table summarizing student success rates for all Mechanical Engineering Technology services courses as specified in the previous section. Each column depicts the number of students that successfully passed and failed the service course per academic year. The last column in the table below provides the overall % success rate for each service course.
ext ed/off campus crses	During the 5 years included in this program review there were no off campus Mechanical Engineering Technology courses offered.

	Number of Students Passed or Failed/Withdrew Per Academic Year										
	2007		**2008**		**2009**		**2010**		**2011**		
MECH Course Number	Passed	Failed/Withdrew	Passed	Failed/Withdrew	Passed	Failed/Withdrew	Passed	Failed/Withdrew	Passed	Failed/Withdrew	% Successfully Passed Over 5 years
1100	72	22	39	28	48	36	75	25	62	18	69.6%
2200	69	3	41	5	22	15	38	6	39	10	84.3%
3320	26	4	27	3	27	1	23	1	16	5	89.5%

cost/student credit hour	The Mechanical Engineering Technology program operates under the organizational budget for the College of Science and Technology. Therefore all students costs represented below for the College of Science and Technology are considered representative for all Mechanical Engineering Technology students.

Academic Year	Total Cost Per Student (FTE) Equivalent	Total Cost per Student Credit Hour
2006-07	Data Unavailable	Data Unavailable
2007-08	$5960.33	$139.13
2008-09	$5334.50	$138.69
2009-10	$5511.00	$142.18
2010-11	$5176.94	$143.65

Liberal Studies Requirements Met

All four year degree programs at FSU are required to complete the institutional general studies requirements. The Mechanical Engineering Technology Program requires students to complete these general studies requirements based on the courses listed below. All academic programs shall meet the following requirements for Liberal Studies.

THE FIRST YEAR EXPERIENCE..... 15-16 HOURS

(To be completed within the first 45 credit hours)

(Students are required to complete all Developmental Skills courses within their first 32 credit hours.)

ENGL 1104 Written English I #.....3Hrs

ENGL 1108 Written English II #..... .3 Hrs

INFO 1100 C omputer Concepts & Applications .3 Hrs (or demonstrated competency)

MATH 1102, 1107, 1112, 1115, 1185, 1190..... 3 - 4. Hours

COMM 2200, 2201, 2202.....3 Hours

SCIENTIFIC DISCOVERY..... 8 HOURS

CULTURAL/CIVILIZATION EXPLORATION..... 9 HOURS

ART ISTIC / CREATIVE EXPRESSION & INTERDISCIPLINARY / ADVANCED

STUDIES OPTION..... 6 HOURS

SOCIETY/HUMAN INTERACTIONS..... 6 HOURS

APPROVED WRITING INTENSIVE COURSE

Total Liberal Studies Credit Hours: 44-45 Hours

Assessment Requirements: The Mechanical Engineering Technology Program has successfully implemented a Continuous Improvement Program that ensures program outcomes and objectives are effectively evaluated and achieved. The complete Continuous Improvement Program is attached as Appendix A. These assessment practices have been thoroughly reviewed and approved by TAC of ABET. In addition, these assessment practices have also been established by the programs Industrial Advisory Committee.

Summary of Continuous Improvement Plan (Assessment Practices)

The ABET Accredited Programs at Fairmont State University use a Continuous Improvement Plan (CIP) designed and approved by selected program constituencies [faculty and the Industrial Advisory Committee (IAC)]. The CIP is a dynamic program used for assessing established objectives and outcomes along with procedures for implementation of necessary modifications to academic programs. The changes are presented to the programs' IACs for comments, recommendations, and approval.

The CIP Assessment Diagram (Figure 1, shown on the following page) illustrates the three assessment levels for the ABET Accredited Programs. The overall program assessment (Level 3) includes the scheduled review of the CIPs from the Program Objectives and the Program Outcomes. Since these two techniques differ slightly, reference to Program Objectives assessment specifications found in Section II of the plan and Program Outcomes assessment specifications found in Section III of the Continuous Improvement Plan are necessary.

Again, the CIP includes three levels of assessment: The Program Objectives (Level 1), the Program Outcomes (Level 2), and the overall assessment procedure (Level 3). The first two levels (Program Objectives and Program Outcomes) include the following components for assessment completion:

1. assessment,
2. determination of weakness(s),
3. action to be taken once the weakness is determined,
4. solicitation of approval/recommendation to correct from the appropriate constituencies,
5. implementation of change/modification to the Program Objectives (Level 1) or the Program Outcomes (Level 2) which can bring about overall change (Level 3) to the ABET Accredited Programs.

The remaining sections of the CIP allow for closing the loop regarding Program Objectives and Program Outcomes.

In Level 3, assessment is achieved by recommending and implementing academic program changes initiated by the constituencies' (Faculty and IAC members) review of the assessed Program Objectives and Program Outcomes.

The CIP is implemented at the freshman level and continues into post-graduation activities.

Appendix A contains a copy of the complete Continuous Improvement Plan for all ABET Accredited programs in the Department of Technology.

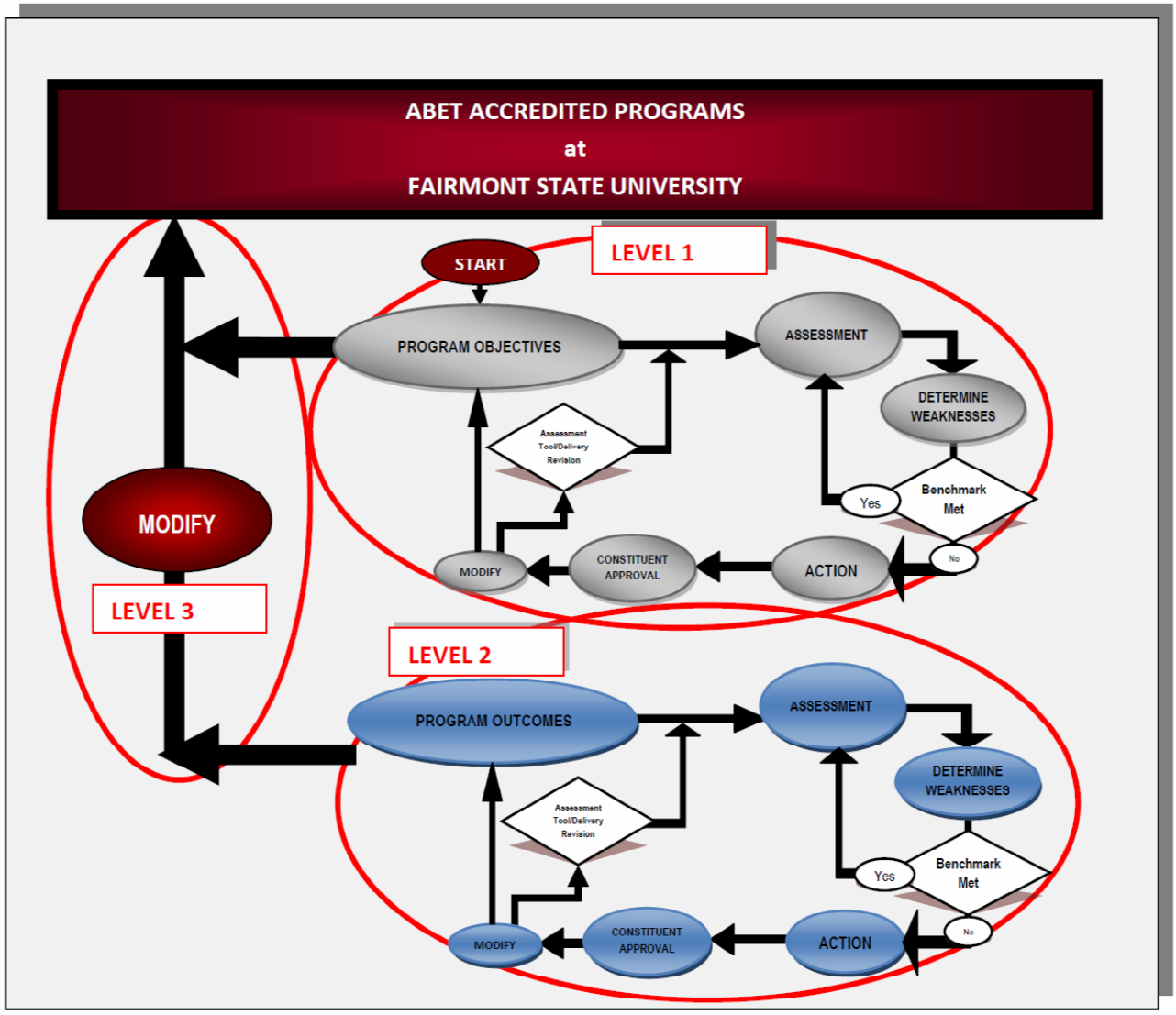

Figure 1: CIP for Mechanical Engineering Technology

Adjunct use

The Mechanical Engineering Technology Program has employed the support of two adjuncts faculty over the last 5 year.

Sidney Absher

Course Number and Title	When Taught	Average Enrollment
MECH 3340: Heating, Air Conditioning, and Ventilation	Spring 2009	6

Judy Dolan

Course Number and Title	When Taught	Average Enrollment
MECH 2220: Fluid Mechanics	Spring 2009	16
MECH 3300: Thermodynamics II	Spring 2009	14
MECH 4400: Mechanical Measurements	Spring 2009	14
MECH 4430: Heat Transfer II	Spring 2009	16

Graduation/Retention Rates

Graduate Data:

Over the past five (5) academic years, the Mechanical Engineering Technology, BS program has averaged 12.6 graduates per.

Academic Year	Number of Graduates
2006	8
2007	10
2008	13
2009	9
2010	15
2011	8

Previous Program Review Results

The previous program review for Mechanical Engineering Technology Program was submitted using the ABET program review self-study report format. The results of this ABET review indicated that all current practices, assessment methodologies and resources were sufficient for the maintenance of a successful Mechanical ET program.

As a result of the TAC of ABET revisit in fall 2009, the Mechanical Engineering Technology program received full accreditation without any program deficiencies or weaknesses.

A copy of the full approval and approval dates on the ABET website is provided as Appendix C for reference purposes

ADEQUACY (§ 4.2.4.2)

Program Requirements:

Liberal Studies	32-42	_44_hrs	ENGL 1104 – 3 hrs ENGL 1108 – 3 hrs COMM 2202 – 3 hrs INFO 1100 – 3 hrs MATH 1102 – 3 hrs CHEM 1101 – 4 hrs (Scientific/Discovery) CHEM 1102 – 4 hrs. (Scientific/Discovery) ECON 2200 – 3 hrs.(Society/Human) Artistic/Creative – 6 hrs. Society/Human – 3 additional hrs. Cultural Civilization - 9 hrs

Major	32-65	__77_hrs	MECH 1100 – 3hrs MECH 2200 – 4hrs MECH 2210 – 3hrs MECH 2220 – 3 hrs MECH 2240 – 3hrs MECH 3300 – 3 hrs MECH 3320 - 3 hrs MECH 3340 – 3 hrs MECH 4400 – 3hrs MECH 4410 – 3 hrs MECH 4430 – 3hrs MATH 1101 – 3hrs DRFT 1100 – 3hrs DRFT 2200 – 3hrs DRFT 2235 – 3hrs MANF 1100 – 3hrs ELEC 1100 – 3hrs ELEC 2250 – 3 hrs PHYS 1101 – 4hrs PHYS 1102 – 4hrs COMP 1101 – 3hrs TECH 2290 – 4hrs TECH 3300 – 4hrs ENGL 1109 – 3hrs
Electives	min 21	___9_hrs	Students are permitted 9 credit hours of approved Technology electives.
TOTAL	max 128	_130_hrs	

Programs not meeting the above requirements must request a continuation of their exception with a justification below:
Due to program mandates by the accreditation criteria (TAC of ABET) the Mechanical Engineering Technology program does not have the flexibility to permit students to complete 21 credit hours of free electives. This exception has been approved within the institution in order to maintain national accreditation approval.

Faculty Data

The Mechanical Engineering Technology Program at Fairmont State University maintains two (2) full-time faculty members.

Full –time Faculty:

Jason D. Bolyard, Assistant Professor, Program Coordinator

Hugh Costello, PE, Assistant Professor

A faculty data sheet has been completed for each faculty member and provided in Appendix B of this document.

Accreditation/national standards

The Mechanical Engineering Technology Program obtained full accreditation under the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology (ABET) after a complete program review in 2007. The recognition of this accreditation allows students to sit for the Fundamentals of Engineering Exam in West Virginia.

A complete copy of the TAC of ABET Criteria is provided as Appendix D of this report.

NECESSITY (§ 4.1.3.3)

Placement and Success of Graduates

Based on Mechanical Engineering Technology graduate surveys 100% of the responding graduate where employed in their degree area.

Below is a summary of graduates and placement.

5. Since graduating, are you or have you been employed in your degreed area or a related field?

	What degree(s) did you receive from Fairmont State University? (check all that apply)		
	BSET, Mechanical Engineering Technology	A.S. Mechanical Engineering Technology	Response Totals
Yes	100.0% (7)	0.0% (0)	100.0% (7)
No	0.0% (0)	0.0% (0)	0.0% (0)
answered question	7	0	7
		skipped question	0

Similar Programs in WV

Several institution in West Virginia offer similar programs. Similar program offerings are listed below:

- West Virginia University, Bachelors of Science, Mechanical Engineering
- West Virginia University institute of Technology, Bachelors of Science, Mechanical Engineering Technology
- Bluefield State College, Bachelors of Science, Mechanical Engineering Technology

CONSISTENCY WITH MISSION (§ 4.1.3.4)

Fairmont State University has established the following mission statements:

MISSION STATEMENT: The Mission of Fairmont State University is to provide opportunities for individuals to achieve their professional and personal goals and discover roles for responsible citizenship that promote the common good.

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.

College of Science and Technology's Mission:

Our mission is to promote effective student learning in science, math and technology and to prepare top-quality graduates for their future endeavors, including graduate study, employment or other personal goals.

Mechanical Engineering Technology Program Objectives:

The Program Objectives, as determined by the Mechanical Engineering Technology Program's constituencies are intended to dynamically promote professional competencies and continued professional growth.
Below are the Program Objectives for the Mechanical Engineering Technology program at Fairmont State University.

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.

University's Mission & Program Objectives

The Program Objectives are designed to address the professional competencies and development of students and graduates as well as emphasize the continued improvement and evolution of the individual after his/her exit from Fairmont State. Fairmont State's mission emphasizes the same desires and standards for students of the University.

In comparing Fairmont State's mission and core values to the Mechanical Engineering Technology Program's Objectives, the consistencies are easily discernible. The mission of the University advocates three goals. These goals are; provide opportunities for individuals to achieve **professional goals**, provide opportunities for individuals to achieve **personal goals**, and provide opportunities for individuals to discover **roles for responsible citizenship** that promote the common good. These goals are further explained through relating the adopted core values.

The first goal of professional development incorporates the core values of scholarship, achievement and responsibility. The Program Objectives 1 through 5 directly link to this goal and these values through the professional development of the students via academic competencies in the field of mechanical engineering technology, emphasis on effective communication skills, advocating team work, recognizing the importance of global and societal impact of the profession, and the importance and benefits of lifelong learning.

The Program Objectives foster professional growth through mandating that students successfully apply academic competencies and methodologies in addressing and solving problems. This is evaluated through an exit exam, and tracking the post-graduate to determine level and competency of work performance.

The second goal of the Mission is the opportunity for attaining personal goals. The Program Objectives indirectly advocate personal development through intrinsic motivators such as communication skills, team work skills, global and societal emphasis and a desire for lifelong learning. Progress in any of the aforementioned areas can assist in achieving personal goals.

Lastly, the Program Objectives can link directly to the goal of providing opportunities for individuals to discover roles for responsible citizenship that promote the common good. This matches the goal of two of the program's objectives which involves the performing of work ethically and respectfully and recognizing the social and global impact of decisions.

Relationship with Other Programs

The Mechanical Engineering Technology program has an excellent relationship with the other technology programs due to the coordination of various ABET activities adopted by all ABET programs. This includes partnerships of guest speakers, and a lecture series.

The Mechanical Engineering Technology program offers several service courses that serve several programs. Students in Civil Engineering Technology, Occupational Safety, and Architecture all complete courses provided by the Mechanical Engineering Program. The program's faculty members also deliver course in other disciplines as needed. These courses include TECH 2290 Engineering Analysis I and TECH 3300 Engineering Analysis II.

Signatures and Recommendations

The required sheet with signatures and recommendation are provided on page 1.

Appendix A

Department of Technology
Continuous Improvement Plan

Appendix B Faculty Data Sheets

Faculty Data

(No more than TWO pages per faculty member)

Name : Jason D. Bolyard Rank: Assistant Professor

Check One: Full-time x Part-time _____ Adjunct _____ Graduate Asst. _____

Highest Degree Earned MS Date Degree Received 2005

Conferred by West Virginia Univeristy
Area of Specialization Mechanical Engineering

Professional registration/licensure _ __ Yrs. of employment at present institution 4.5
Years of employment in higher education 4.5 Yrs. of related experience outside higher education 2
Non-teaching experience 2

To determine compatibility of credentials with assignment:

(a) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

Year/Semester	Course Number & Title	Enrollment
F10	MECH 2210 Thermodynamics I	15
F10	MECH 3330 Heat Transfer I	11
F10	MECH 4400 Mechanical Measurements	10
F10	MECH 4410 Thermodynamics III	11
S11	MECH 2220 Fluid Mechanics	18
S11	MECH 3300 Thermodynamic II	12
S11	MECH 3340 HVAC	13
S11	MECH 4430 Heat Transfer II	11
F11	MECH 2210 Thermodynamics I	19
F11	MECH 3330 Heat Transfer I	9
F11	MECH 4400 Mechanical Measurements	12
F11	MECH 4410 Thermodynamics III	16
S12	MECH 2220 Fluid Mechanics	17
S12	MECH 3300 Thermodynamic II	18
S12	MECH 3340 HVAC	11
S12	MECH 4430 Heat Transfer II	11

(b) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

(c) Identify your professional development activities during the past five years.

- Perusing my PhD in Mechanical Engineering at West Virginia University
- Passed PhD qualifying Exam
- Completed MAE 532 Dynamics of Viscous Fluids at WVU
- Completed MAE 593Q Advanced Internal Combustion Engines at WVU
- Completed MAE 623 Conduction Heat Transfer at WVU
- Completed MAE 534 Fluid Flow Measurements at WVU
- Completed MAE 633 Computational Fluid Dynamics at WVU

(d) List awards/honors (including invitations to speak in your area of expertise) or special recognition In last five years.

(e) Indicate any other activities which have contributed to effective teaching.

- Lab activity development

(f) List professional books/papers published during the last five years. **None**

(g) List externally funded research (grants and contracts) during last five years. **None**

Faculty Data

(No more than TWO pages per faculty member)

Name : Hugh M. Costello Rank: Assistant Professor

Check One: Full-time X Part-time _____ Adjunct _____ Graduate Asst. _____

Highest Degree Earned MS Date Degree Received 1985

Conferred by Massachusetts Institute of Technology
Area of Specialization Mechanical Engineering

Professional registration/licensure X Yrs. of employment at present institution 4
Years of employment in higher education 4 Yrs. of related experience outside higher education 25
Non-teaching experience 25

To determine compatibility of credentials with assignment:

(b) List courses you taught this year and those you taught last year: (If you participated in team-taught course, indicate each of them and what percent of courses you taught.) For each course include year and semester taught, course number, course title and enrollment.

Year/Semester	Course Number & Title	Enrollment
F10	TECH 2290 Engineering Analysis I	24
F10	MECH 1100-01 Statics	26
F10	MECH 2200 Strength of Materials	32
F10	MECH 3320 Dynamics	21
S11	TECH 3300 Engineering Analysis II	12
S11	MECH 1100-01 Statics	27
S11	MECH 1100-02 Statics	22
S11	MECH 2200 Strength of Materials	17
S11	MECH 2240 Machine Design	10
F11	TECH 3300 Engineering Analysis II	18
F11	MECH 1100 Statics	27
F11	MECH 2200 Strength of Materials	29
F11	MECH 3320 Dynamics	29
S12	TECH 2290 Engineering Analysis I	29
S12	MECH 1100-01 Statics	31
S12	MECH 2200 Strength of Materials	23
S12	MECH 2240 Machine Design	19

(h) If degree is not in area of current assignment, explain. **Degree is in area of current assignment**

(i) Identify your professional development activities during the past five years.

- Taskstream Training (2009)
- Blackboard Training (2009)
- Regional Science Fair Judge (2009-2012)
- State Science Fair Judge (2009-2012)
- Engineering Challenge (2009-2012)
- Science Bowl Moderator and Judge (2009-2012)
- FCS Math and Science Day Presenter (2009-2012)
- WV Professional Engineer License (2011)
- FSU Freshmen Resume Development Workshop (2011 and 2012)
- Campus Visitation Day (2011)
- CPR Training (2011)
- Adult Learning Strategies (2011)
- FSU Baja Team Counseling (2011-2012)
- Voluntary Instruction for FE Exam (2009-2012)

(j) List awards/honors (including invitations to speak in your area of expertise) or special recognition In last five years.

(k) Indicate any other activities which have contributed to effective teaching.

- Experiential approach to teaching
- 300 Hours of Preparation for WVPE Exam

(l) List professional books/papers published during the last five years. **None**

(m) List externally funded research (grants and contracts) during last five years. **None**

Appendix C
ABET Verification of Accreditation

Mechanical Engineering Technology, BSET

Accredited, 10/01/1988-Present

Accredited Locations:	**Main Campus**
Date of Next Comprehensive Review:	**2013-2014**
Accredited By:	**Technology Accreditation Commission**
Criteria [?]:	**Mechanical Engineering Technology**
International Mutual Recognition Agreement:	Sydney Accord **

Appendix D TAC of ABET Criteria