Automotive Engineering Technology

APRC 2006-2007

section 1 of 3

Matthew J McNulty/FSU
10/23/2006 11:18 AM

To Douglas Haneline/FSU@FERRIS
cc Gregory W Key/FSU@Ferris, William D Wagner/FSU@Ferris
bcc
Subject AET APRC

Doug,

During our meeting with the APRC, the AET team exhibited a degree of uncertainty with the issues raised in question c. Further discussion and investigation demonstrated that the answer to question c is indeed accurate. Should either of these two PCs experience a fatal malfunction, the PC and the software utilized will have to be upgraded to Windows XP compatibility. This would completely disable the AUTO 320 Dynamometer class, a situation we hope to avoid. We would appreciate the support of the APRC in updating this hardware and software.

c. Discuss the criticalness of the need for computer software for Desktop Dynamometer, Desktop Dragstrip, the engine management software, and other lab equipment.

While the dyno cell is relatively new, the engine management software, which controls the engine and monitors engine conditions, is DOS based. Hence, the PC controlling the dyno cell utilizes the Windows 98 operating system. Lack of support has evaporated for this operating system and the dyno software. Engine test results are printed for analysis by the student. When the current printer fails, we will no longer be able to print the many pages of data produced by each test. Should the PC experience a catastrophic failure, the entire dyno cell will be inoperable. This would fatally affect the AUTO 320 class.

Thank you,

Matthew J. McNulty
Assistant Professor
Automotive Service Technology
Automotive Engineering Technology

Ferris State University
101 Automotive Center
708 N Campus Drive
Big Rapids, Michigan 49307

mcnultm1@ferris.edu
(231)591-2

If money is your hope for independence you will never have it. The only real security that a man will have in this world is a reserve of knowledge, experience, and ability.

FERRIS STATE UNIVERSITY

DATE: October 4, 2006

TO: Doug Haneline, Chair, Academic Program Review Council

FROM: Tom Oldfield, Dean, College of Technology

SUBJ: Analysis of Auto Engineering Technology Program

Upon review of the AET Self-Study document, I make the following observations:

1. The applied nature of the AET program is central to the mission of Ferris State University. The four-year bachelor program shares many courses with AAS-Auto Service and consequently the first two years of the BS-AHEM program. This results in more efficient use of resources and additional transfer options for students.
2. The AET program is seeking TAC-ABET accreditation this year. This will distinguish the FSU AET program as only one of two nationwide TAC-ABET accredited AET programs.
3. AET has shown good growth and has been successful at recruiting out-of-state transfer. The advanced academics rigor of the program provides an attractive automotive degree option for students with greater academic motivations and desire for a hands-on program. Continued growth, however, will be dependent on several factors including:
   - Faculty's ability to recruit;
   - Development of industrial partners willing to contribute to program initiatives and resources;
   - Development of faculty and course materials that reflect current and future automotive technologies; and
   - Development of courses, laboratory resources, and initiatives that will elevate this AET program to a recognized leadership position in automotive engineering technology.
4. Employability and success of graduates appears to be very good. Graduate opportunities are anticipated to increase as more industrial partners are identified.
5. Program faculty are actively engaged with students and their employers. Greater visibility and participation in discipline-related professional organizations and activities are encouraged.

In summary, I believe that the self-study is an accurate reflection of the health and viability of the AET program. I will work with the chair and program faculty to address the recommendations.

COLLEGE OF TECHNOLOGY
1009 Campus Drive, Johnson 200, Big Rapids, MI 49307-2280
Phone 231 591-2890 Fax 231 591-2946
www.ferris.edu/technolo

FERRIS STATE UNIVERSITY

October 3, 2006

2/0
Summer
Camps

«First_Name» «Last_Name»
«School»
«Address»
«City», «State» «Zip»

Dear «First_Name»,

We would like to invite you and your students to attend a personalized Automotive Career Day. To better accommodate everyone's schedules and needs, we will be offering a choice of personalized Automotive Career Days. This will allow our faculty the opportunity to spend more time with you and your students and gives you the opportunity to ask detailed questions. To ensure that each student visiting from your school has the best experience possible in the short time available we ask that you limit the size of the tour group to no more than 20. Pre-screening to allow only those students to attend that are interested in a career in the Automotive Industry would be a plus.

Your personalized Career Day will begin with a faculty guided tour of our modern facility. You will be able to see several of our labs and classrooms while they are in session. Following your tour of the Automotive Center, you will be treated to lunch at one of Ferris' Dining Units.

If you wish to tour the Heavy Equipment Center, please feel free to contact Keith Cripe at (231) 591-2811 or Jean Bennett at (231) 591-2810. If you want to coordinate your trip in order to be able to visit both facilities, we will do our best to assist with these accommodations.

Automotive Career Day offerings are as follows:

Tuesday, October 3, 2006	Thursday, October 5, 2006
Tuesday, October 10, 2006	Thursday, October 12, 2006
Tuesday, October 17, 2006	Thursday, October 19, 2006
Tuesday, October 24, 2006	Thursday, October 26, 2006
Tuesday, October 31, 2006	Thursday, November 2, 2006
Tuesday, November 7, 2006	Thursday, November 9, 2006
Tuesday, November 14, 2006	Thursday, November 16, 2006

If none of the dates listed above fit your calendar, please call and we will make every effort to accommodate you and your students.

Please respond as soon as possible on the enclosed sheet to arrange for your personalized Career Day tour which can be faxed, mailed, or called in. Our contact information is provided below. If you have any additional questions or concerns, please feel free to call: (231) 591-2655.

Sincerely,

Greg Key
Department Chair

AUTOMOTIVE CENTER
708 Campus Drive, Big Rapids, MI 49307-2281
Phone: (231) 591-2655 Fax: (231) 591-5982

October 2006
Automotive Career Day

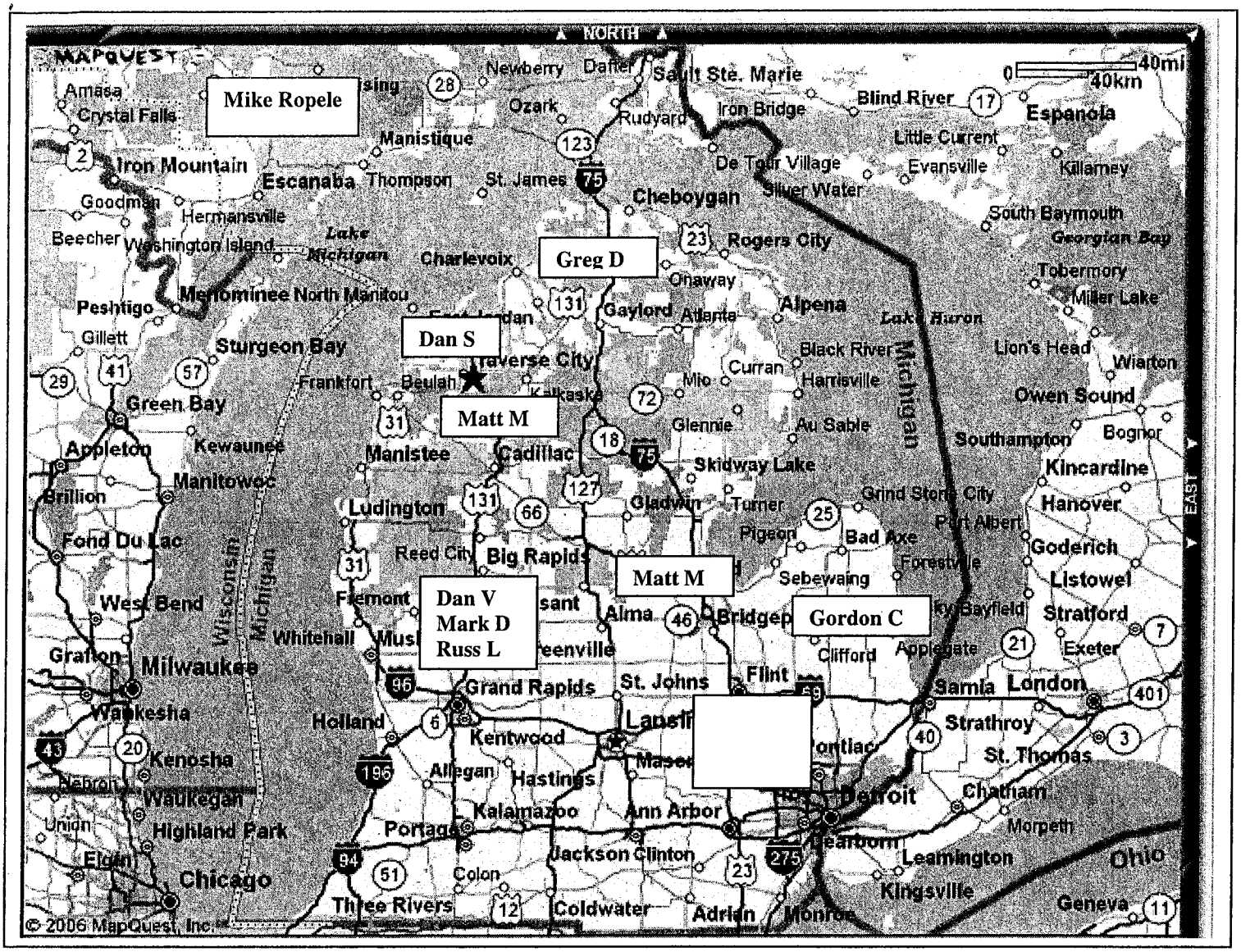
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	*2*	*3*	*4*	*5*	*6*	*7*
8	*9*	*10*	*11*	*12* *Coleman HS* *9:45-2:15* *23 Students 2-3 cps* *Huron Area Tech* *Ctr 12:30pm 20 stu*	*13*	*14*
15	*16*	*17* *Branch Area Career* *Auto 10:00am* *HEC 11:30* *3 students 1 cps*	*18*	*19*	*20*	*21*
22	*23*	*24* *Mason Lake ISD Tech* *11:00am Auto* *12:00 lunch* *1:00pm HEC* *55 students 5 cps*	*25*	*26* *Cheboygan HS* *10:30* *20 students* *Wexford/Miss 10:00* *20 students 2 cps*	*27*	*28*
29	*30*	*31* *Bay Arenac ISD* *9:30—1:30* *67 students* *4 chaperones*				

November 2006
Automotive Career Day

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2 Davison High School 11:15am-2:00pm 19 students East Jordan 20 stud 10:00am-1:00pm	3	4
5	6	7 Montcalm Career Ctr Auto/HEC 8:45 30 students Auto/HEC 11:00 30 students	8	9 Freeland HS 20 Students 2 Chaperones	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Automotive Center Recruiting Schedule

Date of contact	Career Center/ School Name	Contact Name	Date of visit	Faculty
9-20-06	Montcalm Area Career Center 9:15 – 10:30 and 1:00pm – 2:15pm	Mike Miller	9-26-06	Gary Gage, Rex Billings
	Kent		Mid-October	
	Newaygo Career Center, Career Day, 8:00am – 2:45pm	Dan Ward 231-924-8833	10/18/06	Greg Key
	Capital Career Center	Bill	10/24, 11/28, 1/16, 2/20 3/20	
	Petoskey High School	Adam Heisler		
10/4/06	Careerline Tech Center 7:30am – 2:00pm	Steve Butts sbutts@oaisd.org	11/9/06	



Alpena – Greg Denny
Traverse -Dan Skurski
Petoski– Dan Skurski
Gaylord – Matt McNulty
Houghton – Matt McNulty
Lake – Matt McNulty
Mid Michigan Community College – Matt McNulty
Cadillac High School – Matt McNulty
Ludington – Matt McNulty
Kirtland Community College – Rex Billings
Montcalm High School and Career Cntr – Rex Billings
Fremont – Greg Key
Newaygo – Greg Key
Mecosta Career Center – Greg Key

Grand Rapids	Dan VanderWoude
Muskegon	Mark Dekoster
Holland	Russ Leonard
Kalamazoo	

Flint – Gordon Crandell
Genesee Valley – Gordon Crandell

Academic Program Review Council
Questions for the AET Program
6 pm, Tuesday, October 10, 2006—ASC 2082

1. **Please supply a check sheet for the program.**

   Check sheets are attached for AET prior to F06, AET F06, and AST F06.

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

AUTOMOTIVE ENGINEERING TECHNOLOGY (0+4)
BACHELOR OF SCIENCE DEGREE
Curriculum Guide Sheet

NAME_____ **CWID:**_____

BS Degree Minimum General Education Requirements

(See the General Education webpage at www.ferris.edu/HTML/academics/gened/gened.html for details and acceptable courses in each program)

Communications Competence: 12 semester hours

Quantitative Skills: MATH 115 or ACT score

Scientific Understanding: 7/8 semester hours including at least one lab course

Cultural Enrichment: 9 semester hours, including at least one course 200 level or higher.

Social Awareness: 9 semester hours including at least one Foundation course and at least one course 200 level or higher.

At least one Global Consciousness (G) course and one Race/Ethnicity/Gender (REG) course (within Cultural Enrichment or Social Awareness)

Meeting all requirements for graduation is the student's responsibility. Your advisor is available to assist you.

Total semester hours needed for graduation: 126-128

NOTE: Meeting requirements for graduation indicated on this sheet is the responsibility of the student. The student is also responsible for meeting all FSU General Education requirements as outlined in the university catalog. Your academic advisor is available to assist you.

FIRST YEAR - FALL SEMESTER		**CREDIT/GRADE**
AUTO 111	Manual Transmission & Drivelines	4 _____
AUTO 112	Automotive Brake Systems	4 _____
AUTO 113	Automotive Electricity & Electronics	4 _____
ENGL 150	English 1	3 _____
FIRST YEAR - WINTER SEMESTER		
AUTO 114	Automotive Engines	4 _____
AUTO 115	Suspension, Steering, Alignment Services	4 _____
AUTO 117	Electronic Fuel Management Systems (AUTO 113)	4 _____
MATH 116	Intermediate Algebra & Numerical Trigonometry	4 _____
SECOND YEAR - FALL SEMESTER		
AUTO 211	Automotive Automatic Transmissions **OR**	
AUTO 214	Automotive HVAC	4 _____
AUTO 213	Chassis Electrical/Electronics (AUTO 113)	4 _____
MATL 240	Introduction to Material Science	4 _____
ENGL 250	English 2 (ENGL 150)	3 _____
SECOND YEAR - WINTER SEMESTER		
AUTO 200	Service Area (C- in all AUTO classes)	6 _____
PHYS 211	Introductory Physics 1 (C- in MATH 116)	4 _____
ELECTIVE	Cultural Enrichment Elective	3 _____
ELECTIVE	Social Awareness Elective	3 _____

It is highly recommended that you take the ASE tests prior to graduating from your baccalaureate degree program and while the information is still fresh in your mind. Taking and passing ASE tests leads to certification and reflects achievements, grants professional credentials, and provides for greater potential earnings. Most employers require ASE certification as a condition of employment.

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

CURRICULUM REQUIREMENTS
AUTOMOTIVE ENGINEERING TECHNOLOGY
BACHELOR OF SCIENCE DEGREE

ENTRY CRITERIA:

1. **2.75 GPA in major course work.**
2. **Overall 2.5 GPA**

THIRD YEAR - FALL SEMESTER		**CREDIT/GRAD**
AUTO 310	Engine Air Flow Analysis (AUTO 114)	3
MATL 341	Material Selection Metals	3
ENGL 311	Advanced Technical Writing (ENGL 211 or 250)	3
MATH 126	Algebra & Analytical Trigonometry (C- in MATH 116) **OR**	4
MATH 130	Advanced Algebra & Analytical Trigonometry (C- or better in MATH 120)	4
ELECTIVE	Emphasis Area	3
THIRD YEAR - WINTER SEMESTER		
AUTO 320	Dynamometer Analysis (AUTO 114)	3
COMM 221	Small Group Decision Making	3
MATH 216	Applied Calculus (C- in MATH 126 or MATH 130)	4
ELECTIVE	Cultural Enrichment	3
ELECTIVE	Emphasis Area	3
FOURTH YEAR - FALL SEMESTER		
AUTO 450	Automotive Fuels and Lubes	3
PHYS 212	Introductory Physics II (C- in PHYS 211)	4
ELECTIVE	Social Awareness	3
ELECTIVE	Emphasis Area	3
FOURTH YEAR - WINTER SEMESTER		
AUTO 460	Emission Systems (Senior Status)	3
AUTO 480	Alternate Fuel and Vehicle System (Senior Status)	3
ELECTIVE	Cultural Enrichment (200 level or higher)	3
ELECTIVE	Social Awareness (200 level or higher)	3
ELECTIVE	Emphasis Area	3
FOURTH YEAR - SUMMER SEMESTER		
AUTO 493	Internship	4

EMPHASIS AREAS

Management Option	Diesel Option	Manufacturing Option (Choose any 4 courses)
AHEM 301 Auto Market/Distrib 1	HSET 300 Applied Failure Analysis	MFGE 341 Quality Science Statistics
AHEM 360 Automotive Culture	HSET 302 Fleet Management	MFGE 342 Statistical Process
AHEM 460 Auto Internet Marketing	HSET 403 Testing Systems/Analysis	MFGE 442 Design of Experiments 1
AHEM 404 Warrenty Procedure and Customer Relations		MFGE 443 Continuous Improvement
		MFGE 313 Comp. Appl for MFGE
		MFGE 352 Dsg for Manufacturing
		MFGE 445 Reliability Engineering
		PDET 412 Statistics/Ergonomics
		PDET 413 Fluids/Thermodynamic

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

AUTOMOTIVE ENGINEERING TECHNOLOGY
BACHELOR OF SCIENCE DEGREE
Curriculum Guide Sheet

BS Degree Minimum General Education Requirements

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Quantitative Skills: MATH 115 or ACT score

Scientific Understanding: 7/8 semester hours including at least one lab course

Cultural Enrichment: 9 semester hours, including at least one course 200 level or higher.

Social Awareness: 9 semester hours including at least one Foundation course and at least one course 200 level or higher.

At least one Global Consciousness (G) course and one Race/Ethnicity/Gender (REG) course (within Cultural Enrichment or Social Awareness)

Meeting all requirements for graduation is the student's responsibility. Your advisor is available to assist you.

Total semester hours needed for graduation: 66 in addition to AAS degree.

				CREDIT/GRADE
THIRD YEAR - FALL SEMESTER				
AUTO	310	Engine Air Flow Analysis (Sophomore Status, AUTO 114, MATH 116)		3
MATL	240	Introduction to Materials Science		4
ENGL	311	Advanced Technical Writing (ENGL 211 or 250)		3
MATH	126	Algebra & Analytic Trigonometry (C- in MATH 116)	**OR**	4
MATH	130	Advanced Algebra & Analytic Trigonometry (C- in MATH 120)		4
ELECTIVE		Emphasis Area		2 min.
THIRD YEAR - WINTER SEMESTER				
AUTO	320	Dynamometer Analysis (Sophomore Status, AUTO 114)		3
COMM	221	Small Group Decision Making		3
PHYS	212	Introductory Physics 2 (C- in PHYS 211)		4
ELECTIVE		Cultural Enrichment		3
ELECTIVE		Emphasis Area		2 min.
FOURTH YEAR - FALL SEMESTER				
PSYC	326	Industrial Organizational Psychology (PSYC 150)		3
AHEM	450	Automotive Fuels and Lubes (Junior Status)		4
HSET	300	Applied Failure Analysis (MATL 240)		4
ELECTIVE		Cultural Enrichment (200 or higher)		3
ELECTIVE		Emphasis Area		2 min.
FOURTH YEAR - WINTER SEMESTER				
EHSM	330	OSHA Law and Regulation (EHSM 101)		2
AUTO	460	Emission Systems (Senior Status)		4
AUTO	480	Alternate Fuel and Vehicle Systems (Senior Status)		4
ELECTIVE		Social Awareness		3
ELECTIVE		Emphasis Area		2 min.
SECOND YEAR - SUMMER SEMESTER				
AUTO	493	Internship (Senior Status)		4

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

CURRICULUM REQUIREMENTS
AUTOMOTIVE ENGINEERING TECHNOLOGY
BACHELOR OF SCIENCE DEGREE

ENTRY CRITERIA:

1. Associate degree in Automotive Service.
2. 2.7 gpa in major coursework.
3. Overall 2.5 gpa

TECHNICAL			CREDIT HOURS
AHEM	450	Automotive Fuels & Lubes	4
AUTO	310	Engine Air Flow Analysis	3
AUTO	320	Dynamometer Analysis	3
AUTO	460	Emission Systems	4
AUTO	480	Alternate Fuel/Vehicles Systems	4
AUTO	493	Internship	4
Technical Related			
EHSM	330	OSHA Law and Regulation	2
HSET	300	Applied Failure Analysis	4
MATL	240	Intro to Materials Science	4
Emphasis Area			8 min

GENERAL EDUCATION			CREDIT HOURS
Communication Competence			
ENGL	311	Advanced Technical Writing	3
COMM	221	Small Group Decision Making	3
Scientific Understanding			
PHYS	212	Introductory Physics 2	4
Quantitative Skills			
MATH	126	Algebra & Analytic Trigonometry **OR**	4
MATH	130	Adv. Algebra & Analytic Trigonometry	4
Cultural Enrichment			
Elective			3
Elective (200 or higher)			3
Social Awareness			
PSYC	326	Industrial/Organizational Psychology	3
Elective			3

Management Option

AHEM	301	Auto. Mktg/Distrib. I
AHEM	302	Auto. Mktg/Distrib. II
AHEM	303	Dealership Accounting
AHEM	404	Warranty Procedure and Customer Relations

Diesel Option

HEQT	160	Fluid Power Fund.
HEQT	230	Diesel Fuel System Tech.
HSET	302	Fleet Management
HSET	403	Test System & Analysis

Manufacturing Option (choose any 4 courses)

MFGE	341	Qual Science
MFGE	342	Stat. Process
MFGE	442	Dsg. of Exper.
MFGE	443	Contin. Improvement
MFGE	313	Comp. Appl for MFGE
MFGE	352	Dsg. for Manufacturing
MFGE	445	Reliability Engineering
PDET	412	Statistics/Ergonomics
PDET	413	Fluids/Thermodynamic

It is highly recommended that you take the ASE tests prior to graduating from your baccalaureate degree program and while the information is still fresh in your mind. Taking and passing ASE tests leads to certification and reflects achievements, grants professional credentials, and provides for greater potential earnings. Most employers require ASE certification as a condition of employment.

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

AUTOMOTIVE SERVICE TECHNOLOGY
ASSOCIATE IN APPLIED SCIENCE DEGREE
FALL SEMESTER
Curriculum Guide Sheet

NAME OF STUDENT: _____ STUDENT I.D. _____

Total semester hours required for graduation: 64

NOTE: Meeting requirements for graduation indicated on this sheet is the responsibility of the student. The student is also responsible for meeting all FSU General Education requirements as outlined in the university catalog. Your advisor is available to assist you.

			CREDIT	COMMENT/GRADE
FIRST YEAR - FALL SEMESTER				
AUTO	111	Manual Transmission & Drivelines	4	
AUTO	112	Automotive Brake Systems	4	
AUTO	113	Automotive Electricity & Electronics	4	
PHYS	130	Concepts in Physics (C- in MATH 110) **OR**	4	
PHYS	211	Introductory Physics 1 (C- in MATH 116)	4	
FIRST YEAR - WINTER SEMESTER				
AUTO	114	Automotive Engines	4	
AUTO	115	Suspension, Steering, Alignment Services	4	
AUTO	117	Electronic Fuel Management Systems (AUTO 113)	4	
ENGL	150	English 1	3	
SECOND YEAR - FALL SEMESTER				
AUTO	200	Service Area* (C- in all 1st year AUTO classes)	6	
AUTO	211	Automotive Automatic Transmissions	4	
AUTO	213	Chassis Electrical/Electronics (AUTO 113)	4	
____	___	Social Awareness Elective	3	
SECOND YEAR - WINTER SEMESTER				
AUTO	250	Service Area* (AUTO 200)	6	
AUTO	214	Automotive HVAC	4	
ENGL	250	English 2 (ENGL 150)	3	
____	___	Cultural Enrichment Elective	3	

It is highly recommended that you take the ASE tests while you are enrolled in your associate degree program and while the information is still fresh in your mind. Taking and passing ASE tests leads to certification and reflects achievement, grants professional credentials, and provides for greater potential earnings. Most employers require ASE certification as a condition of employment.

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

CURRICULUM REQUIREMENTS
AUTOMOTIVE SERVICE TECHNOLOGY
ASSOCIATE IN APPLIED SCIENCE DEGREE
FALL SEMESTER

TECHNICAL			CREDIT HOURS
AUTO	111	Manual Transmission & Drivelines	4
AUTO	112	Automotive Brake Systems	4
AUTO	113	Auto. Electiricity & Electronics	4
AUTO	114	Automotive Engines	4
AUTO	115	Suspension, Steering & Align. Svs.	4
AUTO	117	Electronic Fuel Management Sys.	4
AUTO	200	Service Area	6
AUTO	211	Auto. Automatic Transmissions	4
AUTO	213	Chassis Electrical/Electronics	4
AUTO	214	Automotive HVAC	4
AUTO	250	Service Area	6

GENERAL EDUCATION			CREDIT HOURS
Communication Competence			
ENGL	150	English 1	3
ENGL	250	English 2	3
Scientific Understanding			
PHYS	130	Concepts in Physics	4
	OR		
PHYS	211	Introductory Physics 1	4
Quantitative Skills			
MATH	110	Fund. of Algebra (Proficiency)	4
Cultural Enrichment			
Elective			3
Social Awareness			
Elective			3

A.A.S. Degree Minimum General Educational Requirements in Semester Hours:

Cultural Enrichment Credits - 3
Communication Credits - 6
Social Awareness Credits - 3
Scientific Understanding Credits - 3/4

Academic Program Review Council
Questions for the AET Program
6 pm, Tuesday, October 10, 2006—ASC 2082

2. **Questions:**
   a. **Discuss the status of the ABET accreditation effort.**

The ABET accreditation process is at least a two year endeavor. The first step was to apply to ABET requesting accreditation.

The second step was to perform a self study of the AET program and to submit our report to ABET. The self study report was submitted in July 2006. A copy of the self study report has been submitted to APRC for your examination.

The third step is the assessment team visit. The panel of three is coming for a three day review of the AET program, October 18 – 20.

Following their visit and examination of our documentation, the assessment team will hold an exit review with Vice President Harris and President Eisler.

Next the visiting team will formulate their report and summit it to the ABET board next summer. The board will evaluate their report and vote on accreditation and the length of time that the accreditation is good for. There is quite often an interim report required of the applicant as well.

   b. **Discuss the criticalness of the program's need for a new Chassis Dynamometer.**

Dynamometers (dynos) have long been an integral part of automotive testing in both the design/engineering and the maintenance realms. There are two types of dyno used in the automotive industry: engine and chassis.

Engine dynos are typically installed within a room designed to contain any components which may become ballistic, should catastrophic engine failure occur. This installation is commonly referred to as a cell. The cell also provides engine support in the form of: electrical power, fuel, cooling, exhaust and engine controls. Engine dynos are most often used to test for maximum torque and horsepower output as well as engine durability. A lone engine is mounted on a test stand and connected to the above mentioned support systems. The "brake" is attached to the engines crankshaft and used to apply a variable load to the engine. Through the application of Newton's third law, the force the engine applies to the brake, in response to the load, can be measured through a torque arm attached to engine which exerts an equal force, counter-rotational to the crankshaft. As these units are used to test the limits of the engine, catastrophic failure is not uncommon.

Chassis dynos are typically not installed in cells, but are mostly found in a laboratory setting. Chassis dynos are used to simulate road conditions on the entire vehicle. The chassis dyno, like the engine dyno, can also be used to measure horsepower and torque. The difference being that the chassis dyno measures the effects of the entire drive line indicating "brake horsepower", the horsepower produced at the wheel. Typically chassis dynos are used to test

vehicles under real world conditions, up to design specifications, and catastrophic failures are very uncommon.

With a chassis dyno, the drive wheels rest on one or two large rollers and the dyno brake is used to simulate road load. Specialized emissions dynos actually adjust the weight of the roller driven by the automobile to match the weigh of the vehicle. Thus, acceleration of the roller mirrors the load on the engine as it accelerates the vehicle. The vehicle is held in place with safety chains.

The current chassis dynamometer was installed when the building was built in 1954. The manufacturer is no longer in business and repair parts are no longer available. The unit was designed for 1954 maintenance tuning and testing and has a maximum horsepower capability of about 75 horsepower. This, of course, falls far short of modern needs.

There are three classes within the AET curriculum which are currently hindered by the obsolescence of the chassis dynamometer: AUTO 320 Dynamometer Testing, AUTO 460 Emissions Systems, and AUTO 480 Alternative Fuels and Vehicle Systems.

AUTO 320 is designed to introduce the student to the use of the dyno as a piece of laboratory test equipment. Focus is on the evaluation of the condition of an engine or vehicle and the effects of any modifications. With the age and capacity limitations of the current chassis dyno, the course has been forced to concentrate on the dyno cell. This forces the emphasis of the class to the engine and negates the opportunity to study the remainder of the driveline.

AUTO 460 is an in depth study of vehicle emissions including the vehicle systems utilized to reduce tailpipe emissions, the onboard control of these systems, and current practices regarding the testing and enforcement of vehicle emissions. Federal law currently mandates vehicle emission levels must conform to established limits and that the vehicle must be able to self-test key systems and report any malfunctions. The study of these self-tests, or monitors, is a key component of AUTO 460.

Manufacturers use chassis dynos for the design and testing of the vehicle emission systems. Federal government test facilities use chassis dynos to verify compliance of new models. Approximately 32 states are using installations, equipped with chassis dynos for compliance testing prior to renewing license plates. The EPA is currently pressuring Michigan to join the others.

The chassis dyno is used to load the vehicle to an equivalence of the forces required to propel the vehicle. The test profile then simulates driving in urban, suburban and even expressway conditions, at differing speeds for various durations. Exhaust analysis equipment attached to the vehicle record the level of emissions. While we attempt to simulate these tests on the road, it is very removed from industry practices. Simulated learning experiences produce a level of expertise which is indirectly proportional to the extent of the simulation. Not having a useable chassis dyno greatly handicaps the ability of the student to

master a crucial area of automotive testing. Many AET graduates are hired to work with this equipment and are currently hindered by the lack of a useable dyno.

AUTO 480 Alternative fuels and Vehicle Systems is a study of the use of alternative fuels and the impact the use of these fuels has on the fuel economy, emissions and performance of the vehicle. The class also includes the study of alternative power systems such as hybrid, fuel cells, and battery power.

From a purely engineering viewpoint, the viability of alternative fuels is determined by the power producing energy potential of the fuel. A fuel may be half the cost of gasoline, but if it only produces one fourth of the energy, it may not be a feasible alternative. Chassis dyno study of the effects of alternative fuels on the automobile is a crucial component of this class which is currently on hold due to the limitations of the current installation. Likewise, the study of electric vehicle performance and durability studies of battery propulsion is unattainable until a modern unit is available.

c. Discuss the criticalness of the need for computer software for Desktop Dynamometer, Desktop Dragstrip, the engine management software, and other lab equipment.

not a big ticket item

While the dyno cell is relatively new, the engine management software, which controls the engine and monitors engine conditions, is DOS based. Hence, the PC controlling the dyno cell utilizes the Windows 98 operating system. Lack of support has evaporated for this operating system and the dyno software. Engine test results are printed for analysis by the student. When the current printer fails, we will no longer be able to print the many pages of data produced by each test. Should the PC experience a catastrophic failure, the entire dyno cell will be inoperable. This would fatally affect the AUTO 320 class.

Desktop Dyno and Desktop Dragstrip are also in need of updating. AET currently has four sections of AUTO 320 students, one dyno cell, and one chassis dyno which is minimally functional. The use of these two programs allows students to gain additional dyno experience while participating in simulated exercises. The student is able to design solutions to problems such as increasing horsepower or torque, test their proposals with the Desktop Dyno and Dragstrip software, and then verify using the dyno cell. The time demand on the dyno cell is already so great that these experiences would not be possible without the software. Use of this software is crucial to AUTO 320.

Attainment of ABET accreditation will propel Ferris State University's AET program to national, and perhaps worldwide prominence. Further increases in enrollment will necessitate additional dynamometer installations. The acquisition of a contemporary chassis dyno and modernization of the management PC and software will satisfy current program needs.

d. Discuss the program's plans to encourage equipment donation from corporate friends and partners.

The first step in the procurement of donations is to develop a relationship with the corporations. The AET program has three years of graduates and interns in the work force. The reception of these students has been extremely positive. The program has gained widespread acceptance across the spectrum of employers. We have a substantial foundation for a reputation of excellence. The next step is to invite further corporate participation in the program. Expanded use of corporate representatives on our Advisory committee and possibly as guest lecturers in courses will help to promote our relationship with industry. Our third step will be to produce a promotional brochure/video highlighting the quality of our curriculum, students, faculty and the accomplishments of our alumni. With enrollment, curriculum, accreditation, and reputation excelling, the acquisition of donations will be hampered only by one other factor.

Prior to making a fiscal commitment in the form of a donation, prospective corporations are going to insist on visiting the program. The current state of the Automotive Center is not one that would readily invite contributions. The practice of the College of Technology, over the past 10 to 15 years has been to distribute S & E funding at a set level to all departments regardless of changes in enrollment. Hence, departments with declining enrollment received an inflated level of funding while programs with growth experienced a budgetary freeze which hindered the acquisition of resources to equip for the added load. This has severely and negatively affected the ability of the automotive program to: 1) keep equipment current and 2) increase the quantity of equipment to maintain availability with increasing enrollment. Governmental programs, offering grants for equipment have always utilized the matching funds approach: make a local, fiscal commitment and we will make a matching contribution. In order to receive corporate donations, the University is going to have to demonstrate a fiscal commitment to the Automotive Engineering Technology program. Our next step will be to enlist the help of the APRC in convincing the University to fiscally support and promote the AET program through the acquisition of needed equipment.

Matt McNulty recently met with Richard DuFresne from Toyota Motor Corporation. Toyota has been a long term employer of Automotive and Heavy Equipment Management graduates. This past summer, three AET students joined thirteen other students from around the country to serve internships with Toyota. Mr. DuFresne related Toyota's complete satisfaction with our students and their future intention to hire AET graduates for vacancies at Toyota. He cited the declining technical ability of the AHM student and the excellent skills of our AET students. Toyota recently broke ground on a new Technology Center in Ypsilanti. This will create 600 new jobs in automotive engineering in Michigan and Mr. DuFresne expressed Toyota's desire to develop a very close relationship with the FSU AET program. This is the beginning of a relationship which will result in donations.

We will also be concentrating on identifying corporations who would benefit the greatest through contributions. For example, should Michigan implement emissions testing, manufacturers of chassis dynos and emissions analysis equipment could benefit by supplying equipment to the Automotive Department. This would enable the University to provide training for future techs and engineers, on brand specific equipment. The corporation may also be able to utilize our facility to train Michigan based customers.

With the rich history of the Automotive Program, we should be able to identify "friends in high places" who can assist in acquiring contributions. Alumni Services will be able to identify individuals. The College of Technology has dedicated a staff member for the acquisition of grants and donations. We will work closely with her to optimize our receipts.

e. Discuss the program's plans to institute a capstone course for the major.

Inclusion of a capstone experience in the form of a course would necessitate increasing the number of credits required for the degree. The AET curriculum is already at the Vice President of Academic Affair's limit of 128 credits for programs with an internship. The other possibility would be to eliminate another course in favor of the capstone. This is not a desirable option. Typically the capstone experience would involve research, design, development and testing. This would necessitate the development of a facility which presently does not exist. We currently have substantial needs within existing courses and programs and development of a new course and laboratory may not be currently prudent.

An alternative is to refine our current practice. Each intern is required to complete weekly projects and a comprehensive Internship Project. Our plan is to expand and more conclusively define the parameters of this project. The advantages of this plan are:

1. The creation of an additional course is not needed. This will maintain the 128 credit level and not add tuition expenses for the student.
2. The project will correspond to, be pertinent with, and will bolster the student's internship experience.
3. The project will include elements of problem definition, solution formulation, development and testing.
4. The product, resulting from the project, must be of benefit to the employer.
5. The student will be able to utilize the resources of the employer which in most cases will far exceed what we have available on campus.
6. This will promote enhanced communication between the student, the internship advisor and the employer mentor.

f. Discuss the program's recruitment plan. In particular, does the program have ideas on how to recruit more women and minorities?

In the past five years, the program and the department have recruited very little. However, due to the current slump in enrollment, we are implementing a new plan. Current plans include visitations of high school automotive programs, high school college night functions, inviting high school programs to visit the Automotive Center, enhancement of our website, and the production of recruiting brochures and videos. For the AET and AHM degrees we plan to additionally visit Community Colleges to recruit transfer students. Thus we have a two prong approach aimed at recruiting for the two entry points of the program.

Most students who enter the Automotive Service Technology program matriculate to AET, AHM, or Technical Education, with AET gaining the majority. The percentage is currently around 85% and growing every year. This holds true for women and ethnic minorities (W&EM) so the answer to recruiting more W&EM into AET may be in recruiting more W&EM into Automotive Service Technology. The very first AET alumna was a female who transferred into the program, allowing her to graduate one semester ahead of her cohort. To date, every matriculated female, since the first, has chosen to pursue AHM over AET. Herein may lay the difficulty. Automotive Service can be a very physically demanding and dirty career, not seen as glamorous by most young students and their parents.

The department's top priority for recruiting, as it pertains to W&EM, is to neither discriminate against nor exclude any particular group or individual. We aim to provide absolute equal access and opportunity to all. Therefore we will not take action to show preference to any particular group or individual. To focus extra resources or finances toward one group over another would indeed constitute discrimination against the latter.

The best effort we can put forth in recruiting is to make the program as visible as possible to all individuals with an interest in the career paths represented by our various offerings. By focusing recruiting at urban schools as well as non-urban and by being present at college nights we should increase our visibility to females and ethnic minorities. Once these groups are familiar with our programs, I am certain enrollment amongst W&EM groups will rise.

g. Discuss the composition of the program's advisory committee. What segments of the industry are represented on it?

The composition of the advisory committee is:

AET Faculty	4
AST Faculty	1
Manufacturing Faculty	3
Students	3
Employers	3
Alumni	3
Assistant Dean	1

We invite representation on the committee from all employers. It is difficult to attain participation because of time constraints and travel. Most employers are from the eastern side of the state and out-of-state.

Corporate representation is from tier 1 and tier 2 manufacturers, engineering firms, testing labs, and research and development companies.

h. Discuss the program's relationship, curricular and otherwise, to the AST program.

Effective Fall 2006, the first two years of the AET program are comprised of the AST curriculum minus Auto 250 Service Floor and a choice of either AUTO 211 Automatic Transmissions or Auto 214 Automotive HVAC. These exclusions were implemented to allow for the inclusion of MATH 216 Applied Calculus and MATH 341 Material Selection Metals.

Prior to this the complete Automotive Service Technology Curriculum formulated the first two years of the AET curriculum. The AET program is designed to produce Engineers and Engineering Technicians with a very complex technical ability in automotive theory and design. The inclusion of the Auto Service classes produces a candidate with an extreme familiarity of the systems, components, and controls of the automobile and the skills to diagnosis, repair, analyze and modify these vehicles. This strategy has proven very successful. As indicated earlier in this document, Toyota was very impressed with the technical skills of our students. Also this past summer, another AET student was placed on Internship with Mercedes Benz at their Ann Arbor, Michigan Technology Center. Mr. Eric Schneider related to me that he has Mechanical Engineering students from the University of Michigan "coming out of his ears" but all they want to do is design parts on a computer all day. "I want an Intern who knows cars, can work with them, and really enjoys the types of testing we do here." He was very pleased with our student, offering him employment at the end of his internship.

hands-on experience

Inclusion of the AST curriculum within the AET curriculum allows for very easy matriculation into the AET program. Many students would receive the Associate degree and continue into the Bachelor's program. As the AET curriculum evolves, this will become more difficult due to increased math, science, and manufacturing courses. The creation of the 0-4 AET curriculum will allow students to efficiently progress through the program without the encumbrance of additional courses. Maintaining the 2+2 curriculum will allow the student, originally interested in the least painful college experience, the opportunity to excel and enter the bachelor's program with little additional course work beyond the four year schedule. The earlier the student opts for the bachelor's program, the lesser the impact on the duration of the degree. With the AST curriculum fully embedded within the AET program, the future of the Associate degree is certain.

The AET program also shares staff with the AST program. All AET instructors also teach AST courses including Basic Electricity and Electronics, Manual Transmission, Automatic transmission, and Service Floor. Currently AET advisors also advise AST students, although this is declining as the number of AET students increase. Classrooms and some laboratories are also shared by the two programs as well as a good deal of service equipment.

i. Discuss the perception of some students that they needed and expanded familiarity with the profession.

Unfortunately, there exists a sense of competition for students within the Automotive Department. A faction of the faculty has elected to attempt to bolster their enrollment by denigrating the reputation of the AET program. Students have been advised that the program is not one of the best in the AET field, that the instructors are incompetent, and that the advisors are never available to assist their students. The students were also told that they will not be able to land careers as engineers and that they are nothing more than glorified technicians. Of course, the experience of AET alumni nullifies these claims, but the damage has already been done. This was very apparent last spring among students enrolled in AUTO 460 and 480.

These actions have served to completely demoralize the students and they are expressing their concern, as evidenced through statements made on surveys. The concerns are manifested in two categories: career awareness and familiarity with the program. The claims made by ill-meaning staff have created an element of doubt within the students.

We are dealing with situation in-house. The staff responsible has been put on notice that these practices must stop. Evidence has surfaced and a substantial case can be made. We are currently creating materials to demonstrate the success of program alumni. Certainly this will lie to rest any anxieties which have been wrongfully instilled within our students.

j. Discuss faculty development opportunities available to AET faculty.

The diversity of the program promotes a diversity of opportunity. Professional Development is available in a plethora of areas. Faculty can pursue growth in instructional technology, teaching methodology, the science of learning, automotive service technology through the OEMs, web based learning, engineering level training through the SAE, and technology advancement training through a myriad of sources. Due to rapidly developing automotive technology, there is always a steady supply of training opportunities, although financial support may be less than adequate.

$32k 1st Year

Academic Program Review Council
Questions for the AET Program
6 pm, Tuesday, October 10, 2006—ASC 2082

1. Please supply a checksheet for the program.
2. Questions:
    a. Discuss the status of the ABET accreditation effort.
    b. Discuss the criticalness of the program's need for a new Chassis Dynamometer.
    c. Discuss the criticalness of the need for computer software for Desktop Dynamometer, Desktop Dragstrip, the engine management software, and other lab equipment.
    d. Discuss the program's plans to encourage equipment donation from corporate friends and partners.
    e. Discuss the program's plans to institute a capstone course for the major.
    f. Discuss the program's recruitment plan. In particular, does the program have ideas on how to recruit more women and minorities?
    g. Discuss the composition of the program's advisory committee. What segments of the industry are represented on it?
    h. Discuss the program's relationship, curricular and otherwise, to the AST program.
    i. Discuss the perception of some students that they needed and expanded familiarity with the profession.
    j. Discuss faculty development opportunities available to AET faculty.

Academic Program Review Council

Name of Program: Automotive Engineering Technology (AET)

Reviewer Notes Sheet

Reviewer: Jim

Reviewers: As you read the reports, jot down your observations in the following categories. For program improvement purposes, it is important to note the evidence behind the observation as well.

Observation — Evidence

1. **Strengths**
   - **Only 1 other bona fide program in the country - Mankato**
   - **Employers are well satisfied with the graduates**
   - **Good contact with their Advisory Board**
   - **Students pretty well satisfied with instruction and facilities**
   - **Good faculty with diverse background**
   - **Students received good advising**
   - **The program is well supported by administration**
   - **100% placement of graduates**
   - **Good enrollment**
   - **Fits the university mission**
   - **Several scholarships available for students**
   - **Equipment is in working order**
   - **Active in the Society of Automotive Engineers**
   - **Mini-Baja vehicle project and the Indy car project**
   - **Faculty are using WebCt for some functions such as testing**

2. **Weaknesses**
   - **Poor operating budget and capital outlay for equipment**
   - **Faculty has fair to poor assessment of the instructional facility**
   - **Program needs a higher quantity of equipment available for a course section**
   - **The Chassis Dynamometer needs to be updated**
   - **Some students felt that they needed an expanded familiarity with the profession**
   - **Some faculty members felt a lack of professional development opportunities**

3. **Opportunities**
   - **Continue to pursue ABET accreditation**
   - **Need computer software for Desktop Dynamometer, Desktop Drag Strip, and engine management software for the engine dynamometer**

4. **Suggestions**
   - **APRC needs the program checksheet and a list of faculty with their vitae**

5. **Rating**

Program Review - Chair Input

AET program

In five years the program has grown from 0 to 117. The last two graduating classes have been around 25 plus.

Automotive Engineering Technology enrollment chart

2001	2002	2003	2004	2005	2006
37	50-60	62	74	78	118

Program visibility and distinctiveness: Universities with BS programs; see attachment (2). As can be seen there are only two Automotive Engineering Technology programs; Mankato State and Ferris State University. Mankato is the only Automotive Engineering Technology program in the United States that is ABET accredited. Ferris State University's Automotive Engineering Technology program has applied for ABET accreditation. This process is going on at the same time as the academic program review process.

The value; characteristics; quality of the program can be seen in both the large amount of transfer students, 34 out-of- state transfers, along with 12 in-state transfers from community colleges for a total of 46 transfers students out of 78. With the next 2 year cycle one can see the large amount of freshmen and sophomores; attachment (3). Also, please see attached job titles and company positions in the last two years alone; attachment (4).

The composition and the quality of the faculty can be seen in the ABET accreditation Part 1 self study book which lists all the faculties resumes that teach in the program. As can be seen most of the engineering faculty come from the manufacturing, material science and product design areas. As a result the majority of the classes in the Automotive Engineering Technology program are taught by faculty other than automotive.

Adequacy of the facilities and the equipment, the junior level classes Auto 310 and Auto 320 have very good labs the senior year labs need some equipment some of which will have to be purchases by the university for Auto 450, Auto 460, and Auto 480. The fuels and lubes labs need some equipment, some of which will have to be purchased. The program was started without any supply & expense budget and has run for five years with no source of funding. No specific faculty has been hired for this program.

Attachment 1

4-Year Universities with BS Programs in Automotive Technology (2/2006)		
College/Univ	Address	Contact Person
Andrews University BT - Auto Technology	College of Technology Andrews University Berrien Springs, MI 49104	227 Harrington Hall College of Technology 616-471-3450
	www.andrews.edu/cot/degree_details/list_bt_auto_tech.html	
B. Franklin - Inst. Of Tech. BS - Automotive Tech.	41 Berkely Street Boston, MA 02116 617-423-4630	Donald Tuff, Program Coordinator
	www.bfit.edu/academics/automotive_technology.php	
Brigham Young University BS - Auto Technology Mgt.	Dept. of Automotive 525 South Center St. Rexburg, ID 83460	Dondavid Powell, Dept. Chair Austin 126, (208) 496-1857 powelld@byui.edu
	www.byui.edu/automotive	
Central Missouri State Univ. BS - Auto Technology Mgt.	School of Technology TRG 318, CMSU Warrensburg, MO 64093 660-543-4940 fax 4431	Dr. John Sutton, Dept Chair email: sutton@cmsu1.cmsu.edu Dr. Scott Wilson, Prog. Coordinator swilson@cmsu.edu
	www.cmsu.edu/technology	
Colorado State Univ. - Pueblo BS - Auto Industry Mgt.	Dept. of Automotive Industry Management 2200 Bonforte Boulevard Univ. of Southern Colorado Pueblo, CO 81001-4901	Ron Darby, Department Chair Dept. of Automotive Industry Management 719-549-2675 fax: 549-2519
	http://coops.colostate-pueblo.edu/aim	
Farmingdale State Univ. BS - Auto Technology Mgt.	2350 Broadhollow Rd, Rte 110 Farmingdale, NY 11735 631-420-2000	Robert Lagnoso, Prog. Coordinator Auto Technology Mgt. 631-420-2117
	www.farmingdale.edu	
Ferris State University BS - Auto Engineering Tech. BS - Auto Heavy Equip. Mgt.	Automotive Technology Department 708 Campus Drive Big Rapids, MI 49307-5982	Greg Key, Prof. & Chair Automotive Technology Department 231-591-2652
	www.ferris.edu/htmls/colleges/technolo/auto	
Indiana State University BS - Auto Technology Mgt.	Dept. of Industrial & Mechanical Tech. John Meyers Technology Center Indiana State University Terre Haute, IN 47809	Dr. Marlen Schafer, Chairperson John Meyers Technology Center 201A 812-237-3353 fax: 237-4527 email: mschafer@isugw.indstate.edu
	www.indstate.edu/imt/curri_BS_ATM.htm	
Minnesota State Univ.-Mankato BS - Auto Engineering Tech.	Auto & Manufacturing Engineering Tech. 205 Trafton Science Center E Minnesota State Univ.-Mankato Mankato, MN 56001	Ms. Ann Goebel, Chairperson Auto & Manufacturing Engineering Tech. 507-389-2154 email: ann.goebel@mnsu.edu
	http://cest.mnsu.edu/aet/aboutus/narrative.htm	
Montana State Univ.-Northern BS - Automotive Tech.	Montana State Univ.-Northern P.O. Box 7751 Harve, MT 59501-7751	Wane Boyson College of Tech. Studies - 210 Brockman 406-265-3740
	www.msun.edu/academics/cots/index.htm	
Morrisville State College BBA - Auto Technogy Mgt	Morrisville State College PO Box 901 Morrisville , NY 13408	Stephen Law 315-684-6627 laws@morrisville.edu
	www.morrisville.edu/academics/sci_Tech/autoBBA/index.htm	
Penn. College of Tech. (part of Penn State Univ.) BS - Auto Technology Mgt.	School of Transportation Technology Penn. College of Tech. Parks Auto Tech. Center - 133 Williamsport, PA 17701	Dr. Ronald Garner Automotive Technology Mgt. email:transportation@pct.edu 570-327-4512
	www.pct.edu/schools/tt	
Pittsburg State University BST - Automotive Tech. BAS- Auto Service Tech. BAS - Diesel & Heavy Eqip. Tech.	Dept. of Automotive Technology Pittsburgh State Univ. 1701 S. Broadway Pittsburgh, KS 66762	Dr. Bob Frisbee, Coordinator KTC, room N 120 D 620-235-4380 rffrisbe@pittstate.edu
	www.pittstate.edu/ist/autotech/degreeoptions.htm	
Southern Illinois University BS - Automotive Tech.	Dept. of Automotive Technology College of Applied Sciences & Arts SIU, Carbondale, IL 62901-6895	Jack Greer, Chair Dept. of Automotive Technology 618-453-4024 fax: 453-8483 email: jgreer@siu.edu
	www.siu.edu/~atase/about.html	
Walla Walla College BS - Automotive Tech.	Department of Technology 306 SW 4th Street College Place, WA 99324	Linda F. Nelson, Ed. D. Professor & Chair 509-527-2712
	www.wwc.edu/academics/technology	
Weber State University BS - Automotive Tech.	Automotive Technology Department Weber State University 1503 University Circle Ogden, UT 84408-1504	Rick DeMoss Program Leader - Automotive Tech. email: rdemoss@weber.edu 801-626-6579
	www.weber.edu/automotive/default.html	

ATTACHMENT 3

COLLEGE OF TECHNOLOGY
AUTOMOTIVE ENGINEERING TECHNOLOGY
Fall 2004 / Winter 2005

School	State	Last name	First name	College		Program
British Columbia Inst of Tech	BC	CHRZANOWSKI,	RAFAL	TEC	SR	AET
British Columbia Inst of Tech	BC	JOSHI,	CHETAN	TEC	SR	AET
British Columbia Inst of Tech	BC	YAHIA,	HAYDAR	TEC	SR	AET
BC Count	3					
Shasta College, UTI	CA	HILLIS,	JOSHUA	TEC	SR	AET
Somerset CC, Pellissippi St Tech Comm College	CA	MILLER,	LANCE	TEC	SR	AET
CA Count	2					
Black Hawk College E Campus	IA	GOULD,	ADAM	TEC	SO	AUSV
Black Hawk College Moline	IA	VANWOLVELAERE,	RYAN	TEC	SO	AUSV
IA Count	2					
Oakton CC, UTI	IL	AKBAR,	SYED	TEC	SR	AET
Triton College-Illinois, DeVry University Chicago, UTI	IL	CONTRERAS,	ADRIAN	TEC	SR	PAET
Oakton CC, UTI	IL	EDMONDS,	JOE	TEC	SR	AET
Houston CC, University of Phoenix, UTI	IL	FORD,	MATTHEW	TEC	SR	AET
UTI, William Rainey Harper College	IL	HUMMEL,	DANIEL	TEC	SR	AET
College of DuPage, UTI	IL	KHAN,	RAHIL	TEC	SR	AET
College of DuPage, UTI, De Anza College	IL	MIRZA,	RIZWAN	TEC	SR	AET
College of DuPage, UTI	IL	NANCE,	MARC	TEC	JR	PAET
College of Dupage, UTI, Purdue University W	IL	SMITH,	JEFFRY	TEC	SR	AET
College of Dupage, UTI	IL	KHAN,	RAHIL	TEC	SR	AET
IL Count	10					
Vincennes University	IN	DEMETRIOU,	ATHANASIOS	TEC	SR	AET
IN Count	1					
UTI	KY	MOORE,	BENJAMIN	TEC	SR	AET
KY Count	1					
Massasoit CC, Massachusetts Bay CC	MA	FENELON,.	MATTHEW	TEC	SR	AET
MA Count	1					
Guilford Technical CC, UTI	NC	DUNLAP,	MARK	TEC	SR	AET
Guilford Technical CC, UTI	NC	HARTSELL,	GRANT	TEC	SR	AET
NC Count	2					
Columbia Greene CC	NY	BEYMAN,	RUSSELL	TEC	SR	AET
UTI, New York Institute Technology, Adelphi Univ	NY	HARRISON,	BRYAN	TEC	SR	AHM
NY Count	2					
Stark State College of Tech	OH	CARR,	BRIAN	TEC	SR	AET
Ohio Business College	OH	FROST,	ANTHONY	TEC	SR	AET
OH Count	2					
Rogers State Univ, UTI	OK	LEE,	KENNY	TEC	SR	AET
OK Count	1					
Linn Benton CC	OR	HITT,	CHRISTOPHER	TEC	SR	AET
OR Count	1					

Brookhaven College, Dallas County CC	TX	SORENSEN,	BJERRE	TEC	SR	AET
TX Count	1					
Thomas Nelson CC, Christopher Newport Univ	VA	RICHARDS,	ANDREW	TEC	SR	AET
Germanna CC, Northern Virginia CC	VA	RITCHIE,	BRADLEY	TEC	JR	AET
Virginia Western CC, UTI, New River CC	VA	SHANKIN,	DYLAN	TEC	SR	AET
VA Count	3					
Vermont Technical College	VT	PROCTOR,	GABREL	TEC	SR	AET
VT Count	1					
UTI, Milwaukee School Engineering	WI	GAST,	ANDREW	TEC	SR	AET
WI Count	1					
Out of State	**34**					
Delta College	MI	GROSSKOPF,	JAMES	TEC	JR	AET
Delta College	MI	LABELLE,	LAURENCE	TEC	JR	AUSV
Grand Rapids CC	MI	MATTHYSSE,	JASON	TEC	SO	PAET
Henry Ford CC	MI	POMPA,	RALPH	TEC	SR	AET
Lansing CC	MI	COSCARELLI,	NEIL	TEC	SR	AET
Lansing CC	MI	FEDEWA,	MATTHEW	TEC	SR	AET
Lansing CC	MI	SPERRY,	DEAN	TEC	SR	AET
Macomb CC, UTI	MI	INGLIS,	KYLE	TEC	SR	PAET
Monroe County CC	MI	RUSSEAU,	JUSTIN	TEC	SR	AET
Monroe County CC	MI	SMITH,	WILLIAM	TEC	SR	AET
Muskegon CC	MI	SCHLICHTING,	MARC	TEC	SR	AET
Washtenaw CC, Eastern Mich Univ	MI	SIMONS,	DONALD	TEC	SR	AET
Washtenaw CC, Jackson CC	MI	WOOD,	RYAN	TEC	SR	AET
MI Count	**13**					
Sinclair CC, Ferris	MI	CROMER,	JASON	TEC	SR	AET
Schoolcraft College, Ferris	MI	SIMON,	JEFFERY	TEC	SR	AET
Mott CC, Ferris	MI	VANDERPLOEG,	TIMOTHY	TEC	SR	AET
Northwestern Michigan College, Ferris	MI	MITCHELL,	MARK	TEC	SR	AET
West Shore CC, Ferris	MI	REENE,	JONATHAN	TEC	JR	AUSV
Jackson CC, Ferris	MI	MALVASI,	NICHOLAS	TEC	SR	AET
Ferris	MI	ANDREE,	JEFFREY	TEC	SR	AET
Ferris	MI	BALL,	JUSTIN	TEC	JR	AET
Ferris	MI	BECKER,	ANDREW	TEC	SR	AET
Ferris	MI	BRUIN-SLOT,	NATHANIEL	TEC	SR	AHM
Ferris	MI	COLLIER,	CHRIS	TEC	SR	AET
Ferris	MI	EAGER,	JASON	TEC	JR	AUSV
Ferris	MI	HOLDEN,	NATHANIEL	TEC	JR	AHM
Ferris	MI	KRAWCZAK,	JORAN	TEC	SR	AET
Ferris	MI	LEECH,	JASON	TEC	SR	AET
Ferris	MI	NOWITZKE,	BRIAN	TEC	SR	AET
Ferris	MI	VANGILDER,	SCOTT	TEC	SR	AET
Ferris	MI	WESTENBERG,	TIMOTHY	TEC	SR	AET
Ferris	MI	LEECH,	JASON	TEC	SR	AET
Ferris State Univ Count	**19**					
Grand Count	66					

COLLEGE OF TECHNOLOGY
AUTOMOTIVE ENGINEERING TECHNOLOGY
Fall 2005 / Winter 2006

School	State	Last name	First name	College		
Montgomery College Germantown	AL	NARAYANAN,	BHARADWAJ	TEC	JR	AET
AL Count	1					
British Columbia Inst of Tech	BC	ASANTE,	ROBERT	TEC	SR	AET
British Columbia Inst of Tech	BC	CHIU,	KELSEY	TEC	SR	AET
BC Count	2					
Somerset Community College, Pellissippe St Tech Comm College	CA	MILLER,	LANCE	TEC	SR	AET
CA Count	1					
Black Hawk College Moline, Misc Mich Colleges	IA	VANWOLVELAERE,	RYAN	TEC	JR	AUSV
IA Count	1					
College of DuPage, UTI, DeAnza College	IL	MIRZA,	RIZWAN	TEC	SR	AET
Oakton Community College, UTI	IL	AKBAR,	SYED	TEC	SR	AET
Shasta College, UTI	IL	HILLIS,	JOSHUA	TEC	SR	AET
Universal Technical Institute, Purdue University-W LaFayette	IL	DOESBURG,	ANDREW	TEC	SR	AET
Universal Technical Institute, Triton College - Illinois	Il	GRANIAS,	LUKE	TEC	SR	AET
IL Count	5					
Community College Baltimore, Carroll Community College	MD	GRZYMALA,	FRANK	TEC	JR	AET
MD Count	1					
Univ Minnesota,	MN	LEINBERGER,	JEFFREY	TEC	SR	AET
MN Count	1					
Guilford Technical Community College/Universal Technical Institute	NC	DUNLAP,	MARK	TEC	SR	AET
NC Count	1					
Brookdale Community	NJ	MARZAN,	GIANPATRICK	TEC	JR	AUSV
NJ Count	1					
Stark State College of Tech	OH	CARR,	BRIAN	TEC	SR	AET
OH Count	1					
Rogers State University, UTI	OK	LEE,	KENNY	TEC	SR	AET
OK Count	1					
Universal Technical Institute, Houston Community College, University of Phoenix	TX	FORD,	MATTHEW	TEC	SR	AET
UTI, Houghton College	TX	OH,	YUN	TEC	SR	AET
TX Count	2					
Virginia Western Community College, UTI, New River Community College	VA	SHANKIN,	DYLAN	TEC	SR	AET
VA Count	1					
Waukesha County Technical College	WI	MEYER,	MATTHEW	TEC	JR	AET
WI Count	1					
Out of State	**20**					
Brookdale Community, County College of Morris	MI	DEURLOO,	RACHEL	TEC	JR	AET
Delta College	MI	HOLSWORTH,	BRETT	TEC	JR	AET

Delta College	MI	LABELLE,	LAURENCE	TEC	JR	AET
Grand Rapids CC	MI	EDWARDS,	CHRISTOPHER	TEC	JR	AET
Grand Rapids CC	MI	MATTHYSSE,	JASON	TEC	SR	AET
Henry Ford CC	MI	STINSON,	STEVEN	TEC	SR	AET
Henry Ford CC	MI	TRAHEY,	KEVIN	TEC	JR	AET
Lansing CC	MI	COSCARELLI,	NEIL	TEC	SR	AET
Lansing CC	MI	FEDEWA,	MATTHEW	TEC	SR	AET
Monroe County CC	MI	RUSSEAU,	JUSTIN	TEC	SR	AET
Muskegon CC	MI	DODY,	LANCE	TEC	JR	AET
Western Wyoming CC	MI	BAILEY,	JAMES	TEC	SR	AET
MI Count	**12**					
Ferris State Univ	MI	ALBERTSON,	DALE	TEC	SR	WELE
Ferris State Univ	MI	ANTHONY,	RYAN	TEC	SR	AET
Ferris State Univ	MI	BALL,	JUSTIN	TEC	SR	AET
Ferris State Univ	MI	BARVELD,	JOSHUA	TEC	SO	AUSV
Ferris State Univ	MI	BOARTS,	JONATHAN	TEC	JR	AET
Ferris State Univ	MI	BORNHOFT,	DUSTIN	TEC	SR	AET
Ferris State Univ	MI	BOULTER,	DANIEL	TEC	SR	AET
Ferris State Univ	MI	BUCHINGER,	SETH	TEC	JR	AET
Ferris State Univ	MI	BURCHILL,	DANIEL	TEC	SR	AET
Ferris State Univ	MI	DENNEY,	BRIAN	TEC	JR	AET
Ferris State Univ	MI	HOLCOMB,	BENJAMIN	TEC	JR	AHM
Ferris State Univ	MI	HUGHES,	JAMES	TEC	JR	AET
Ferris State Univ	MI	HUGHES,	PATRICK	TEC	JR	AET
Ferris State Univ	MI	KRAWCZAK,	JORAN	TEC	SR	AET
Ferris State Univ	MI	LEECH,	JASON	TEC	SR	AET
Ferris State Univ	MI	LYNDRUP,	CASEY	TEC	JR	AET
Ferris State Univ	MI	MCKAY,	PAUL	TEC	JR	AET
Ferris State Univ	MI	MCKINNEY,	DANIEL	TEC	JR	AHM
Ferris State Univ	MI	METZ,	TODD	TEC	JR	AUSV
Ferris State Univ	MI	MORGAN,	RYAN	TEC	SR	AET
Ferris State Univ	MI	NORTHUP,	RYAN	TEC	SO	AUSV
Ferris State Univ	MI	NYEHOLT,	KYLE	TEC	SR	AET
Ferris State Univ	MI	PETACK,	JEFFREY	TEC	JR	AET
Ferris State Univ	MI	RYBICKI,	KYLE	TEC	JR	AUSV
Ferris State Univ	MI	THEMM,	JEREMY	TEC	JR	AET
Ferris State Univ	MI	WEGRZYNOWICZ,	KEVIN	TEC	JR	AHM
Ferris State Univ Count	**26**					
Ferris State Univ, Brookhaven College, Dallas County (23)	MI	SORENSEN,	BJERRE	TEC	SR	AET
Ferris State Univ, Black Hawk College	MI	GOULD,	ADAM	TEC	SO	AUSV
Ferris State Univ, Grand Rapids CC (3)	MI	SMITHWICK,	BRETT	TEC	SR	AET
Ferris State Univ, Hope College (24), West Shore CC (5)	MI	RIEMER,	RYAN	TEC	JR	AET
Ferris State Univ, International College (36), Grand Rapids CC (25)	MI	MISTRY,	AREEZ	TEC	SR	AET
Ferris State Univ, Lansing CC (39), Western Michigan Univ(70)	MI	SMITH,	AARON	TEC	SR	AHM
Ferris State Univ, Macomb CC (10)	MI	MCALONAN,	JASON	TEC	SR	PAET
Ferris State Univ, Mott CC (4)	MI	THEMM,	DUSTIN	TEC	SR	AET
Ferris State Univ, Mott CC (4)	MI	VANDERPLOEG,	TIMOTHY	TEC	SR	AET
Ferris State Univ, Oakland CC (-)	MI	KASLER,	CHAD	TEC	JR	AET
Ferris State Univ, Saddleback College (23)	MI	PRINCIPE,	FRANK	TEC	JR	AET
Ferris State Univ, Wastenaw CC (4)	MI	STEFANI,	ANTHONY	TEC	SO	AUSV

Ferris State Univ, Wayne County CC (3)	MI	CHARTIER,	TODD	TEC	SR	AHM
Ferris State Univ, West Shore CC (31)	MI	REENE,	JONATHAN	TEC	SR	AET
Ferris State Univ,Baker College Auburn Hills (19.97)	MI	SMITH,	DOUGLAS	TEC	SR	AHM
FSU and transfer MI Count	**15**					
Grand Count	**73**					

ATTACHMENT 4

Automotive Engineering Technology Student Job Titles
Assistant Regional Service Manager
Design Engineer
Dynamometer Technician
Electrical Test Technician
Engine Development
Engine Technician
Engineer
Engineering Assistant
Engineering Co-op
Engineering Intern
Engineering Technician
Engineering Test Tech
Entry level assistant to 997 Build Program
Failure Analysis Technician
Hi Performance Engine Designer / Builder
Intern
Lab Test Engineer
Land Rover Hotline operator
Management Associate
Management Trainee
Maximo Administrator
Off Road Vehicle Fabrication
Parts Technical Engineer
Prep Shop
Production, S.P.C.
Project Engineer
QA Inspector
Quality Measurements Technician
Repair Logistics Engineer (RLS)
Resident Product Engineering Intern
RLS Engineering
Service Support IT administrator
Service Development Assistant
Service Development Associate
Service Engineer
Service Manager
Service Writer/Manager
Tech
Tech Line Operator
Tech Support
Technical Communications Intern
Technical Service Intern
Technician
Technician Team Leader
Test Cell Technician
Test Technician
Turbo Kit Installer And R+D
Warranty Planning & Administration Intern

Ferris State University
College of Technology
Automotive Department

Automotive Engineering Technology

Academic Program Review Committee

AET Faculty and Chair	Matthew J. McNulty
AET Faculty	Patrick English
AET Faculty	Russell Leonard
AET Faculty	William Wagner
Special Interest Faculty	Timothy Wagner, Automotive
External Faculty Member	Kimberly Beistle, Dental Hygiene
Department Chair	Greg Key

Report

September 22, 2006

Table of Contents

SECTION 1 PROGRAM OVERVIEW 3

A. Goals 4
B. Visibility and Distinctiveness 6
C. Relevance 7
D. Value 8

SECTION 2 COLLECTION OF PERCEPTIONS 11

A. Graduate 12
B. Employer 13
C. Graduating Student 14
D. Student 20
E. Faculty 26
F. Advisory Committee 29

SECTION 3 PROGRAM PROFILE 40

A. Profile of Students 41
B. Enrollment 46
C. Program Capacity 47
D. Retention and Graduation 48
E. Access 49
F. Curriculum 49
G. Quality of Instruction 51
H. Composition and Quality of Faculty 53
I. Service to Non-majors 56
J. Degree Program Cost and Productivity Data 57
K. Assessment and Evaluation 57
L. Administration Effectiveness 59

SECTION 4 FACILITIES AND EQUIPMENT 62

A. Instructional Environment 63
B. Computer Access and Availability 64
C. Other Instructional Technology 66
D. Library Resources 67

SECTION 5 PRP EFFECTIVENESS 69

A. Relationship to FSU Mission 70
B. Program Visibility and Distinctiveness 70
C. Program Value 71
D. Enrollment 71
E. Characteristics, Quality and Employability of Students 72
F. Quality of Curriculum and Instruction 72
G. Composition and Quality of the Faculty 7

APPENDICES 81

Section 1
Program Overview

Section 1 - A. Program Goals

1) State the goals of the program.

Automotive Engineering Technology
Program Goals

1. To provide students with the knowledge and skills necessary to professionally apply Automotive Engineering Technology in industry.
2. To provide students with the knowledge and skills necessary to successfully demonstrate their knowledge on state and nationally recognized evaluations
3. To provide students with an educational foundation that allows for and encourages future growth.
4. To provide students with a current, safe and barrier free educational environment.
5. To provide students with flexible options that increase their opportunities both educational and extracurricular, to successfully compete in the job market.
6. To increase FSU's Automotive Engineering Technology Department's relationship with industry.
7. To use industry personnel to help guide the direction of the Automotive Engineering Technology Department curriculum.
8. To provide the automotive and other applicable industries with qualified entry level application engineering personnel.
9. To help industry improve the perception of automotive business by encouraging and promoting honesty, integrity and professionalism.
10. To work as a liaison between industry and secondary / vocational schools in an effort to identify and recruit students that will be successful in the automotive industry and to assist with continuing education.
11. To work within the university community and provide leadership on committees at the college and university levels.
12. To provide a strong and viable program that will bring recognition to the university and encourage industry support.
13. To increase the University's visibility through unique and innovative recruiting methods and curriculum offerings.
14. To promote professional development among faculty and Staff and provide an environment that encourages Innovative teaching methods.
15. To work with university administration to prepare a plan for future growth and expansion.

2) Explain how and by whom the goals were established.

The goals of the AET program were developed over a nine to ten year period. During this time, courses were designed and trial offerings were completed. Data and input addressing industry needs, which directed the development of the curricula and goals for the program were collected from potential employers, advisory committee members, students, and faculty. Faculty also visited

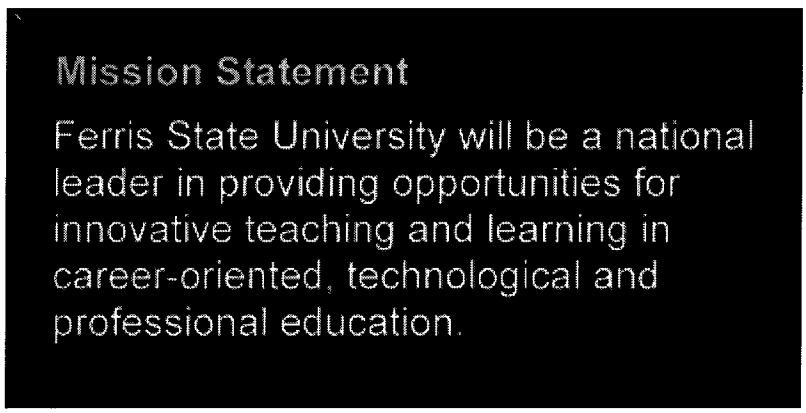
3) How do the goals apply to preparing students for careers in and meeting employer needs in the community, region, and/or marketplace?

The AET graduate must possess at least two skill sets: Automotive Service Technology and Engineering Technology. The goals are defined to achieve these skill sets. In addition, the three emphasis areas (Diesel, Management, and Manufacturing) allow the student to enhance her/his abilities and marketability.

4) Have the goals changed since the last program review? If so, why and how? If not, why not?

The AET Program is currently undergoing its first Program Review. The goals have remained unchanged since the inception of the program.

5) Describe the relationship of the program goals to the University's mission, and the departmental, college and divisional strategic plans.



The AET program has quickly become a national leader amongst the ranks of AET programs. All faculty, actively teaching in the AET program, utilize all available innovative teaching tools. The program has been highly successful in preparing students as they graduate to their careers.
The AET program has been a model of success for the College of Technology. The comprehensive curriculum has resulted in a program which provides it's graduates with cutting-edge skills in the latest of automotive technologies. The program has been responsible for attracting near record number of students to

the Automotive department which has benefited the Automotive Service Technology (AST) and Automotive-Heavy Equipment Management (AHEM) programs as well.

As the goals and plans of Academic Affairs have progressed to maintain Ferris as a competitive and viable choice for the nation's students, the AET program has responded to also meet these challenges. The curriculum has recently (2005-06) been modified to meet the criteria of a maximum of 124 credits, while also adding required courses to achieve ABET accreditation. The innovative curriculum attracts students from all over North America.

Section 1 - B. Program Visibility and Distinctiveness

1) Describe and assess the program's ability to attract quality students.

The FSU AET program is one of two programs nationwide that are true AET programs. Several others claim the title, but a study of their curriculum shows a closer similarity to an Automotive Management Program. The FSU AET program consistently and increasingly draws transfer students from out of state and internationally.

2) Identify the institutions that are the main competitors for prospective students in this program.

Most visiting students have conveyed that they have chosen to visit Minnesota State – Mankato and FSU. Very often we are chosen, with our facility and faculty being sited as the primary reasons. Students demonstrating a preference for Mankato have sited their ABET certification as the primary reason. The AET program is currently in the process of attaining the ABET accreditation, and

when granted, we will enjoy even greater success in recruiting students. The other main competitor is Pittsburg State University in Pittsburg, Kansas. Their curriculum has changed drastically over the past few years.

3) How are these programs similar and different from the FSU program?

FSU AET students currently receive the same Automotive Service Technology training as those students who wish to complete the Associates degree and pursue a career in Automotive Service. This component of our program produces a very technically competent student. Neithe Mankato nor Pittsburg do this. The automotive service courses are unique to their bachelors programs and do not possess the same depth of subject matter as FSU courses. Also,

Automotive Engineering Technology

APRC 2006 - 2007

section 2 of 3

FSU AET courses in the third and fourth years provide in-depth studies into air induction, engine dynamometer testing, emissions, and alternative fuels. Our competitors offer nothing similar.
The curriculums are shown in Appendix A.

4) **What can be learned from them that would improve the program at Ferris?**

It is absolutely essential they we achieve ABET accreditation.

Section 1 - C. Program Relevance

1) **Provide a labor market demand analysis: This activity is designed to assess the marketability of future graduates. Reports from the Department of Labor and from industry are excellent sources for forecasting demand on graduates. Request information from your Library Liaison.**

The employment opportunities for Automotive Engineering Technology graduates on nationwide employment statistics, fall under the general category of Engineering Technicians, SOC Code 17-3029 on the National Employment Matrix. According to the US
Bureau of Labor Statistics, Engineering Technicians have a forecasted nationwide increase in the number of positions of 11,236 between the years 2004 and 2014, representing an increase of 12.32%. Projections in the Occupation Outlook Handbook indicate

that the growth in this field may go as high as 17% making the number of available positions 15,503 by the year 2014.
(http://www.bls.gov/emp/empiols.htm) (http://www.bls.gov/oco/ocos112.htm)

The employment opportunities for Automotive Engineering Technology graduates on statewide employment statistics fall under the following categories: Electrical/Electronic Engineering Technicians SOC Code 17-3023, Electro-Mechanical Technicians SOC Code 17-3024, Environmental Engineering Technicians SOC Code 17-3025, Industrial Engineering Technicians SOC Code 17-3026, and Mechanical Engineering Technicians SOC Code 17-3027. The State of Michigan Department of Labor forecast for years 2002-2012 is an average of 18.4% growth for all of the above listed employment areas. This translates into 1,980 jobs during this period in the state of Michigan alone. Average annual openings statewide for the listed employment areas are 464, which include 197 new jobs and 272 replacement workers (http://www.michlmi.org/LMI/occ_proj/occ_02.htm).

2) **Describe and assess how the program responds to emerging issues in the discipline, changes in the labor force, changes in employer needs, changes in student needs, and other forces of change.**

Input received from the program constituents is assessed by the faculty and advisory committee. The conclusions of these groups are forwarded to the Department Chair and Curriculum Committee for action.

3) **Assess why students come to FSU for the program. Summarize the results of the graduate exit survey and the student program evaluation.**

There are currently two actual Automotive Engineering Technology programs in the United States: FSU's and Minnesota State University's. The MSU program is the only ABET accredited program. Prospective students who tour our program also tour MSU and state a preference for our facility and curriculum. Our acquisition of ABET accreditation should ensure our status as the top program in the nation.

4) **How well does the program meet student expectations?**

Students who responded to the Alumni survey are employed by Detroit Diesel, Land Rover, Hegenscheight-MFD Corporation, and Ferris State University. All respondents are employed at a level above that of an entry level service technician.

5) **How is student sentiment measured?**

Student representation on the AET Advisory Committee, SAI, Student survey, Graduating student survey, Alumni survey, feedback from Advisors and Professors.

Section 1 - D. Program Value

1) **Describe the benefit of the program, facilities, and personnel to the University.**

The Automotive Engineering Technology Program at Ferris State University enables the University to offer technically driven Bachelors Degree in Automotive Engineering Technology, combining the depth of Automotive Technology with the breadth of Engineering.

The facilities benefit the University by providing classrooms and labs for not only AET students, but, for students in Auto Service and other majors.

The personnel of the AET Program provide a high quality education for the students of Ferris, while maintaining and upholding the positive role of Ferris with business and industry as well as in the educational community.

2) Describe the benefit of the program facilities, and personnel to the students enrolled in the program.

The Automotive Engineering Technology Program at Ferris State University provides a solid education in Automotive Technology and adds to that foundation the knowledge and skills needed to be successfully employed in the engineering and testing companies of the Transportation Industry. The facilities allow the student real world opportunities to learn in a variety of settings. Students are

taught in comfortable classrooms with access to the latest projection technologies and wireless internet. Students are also given the opportunity to learn in service bay settings while dealing with the whole automobile. The service bay also includes a chassis dynamometer where students may run tests on the vehicle while simulating various driving conditions. Labs dedicated to specific aspects of the students' education are in place to allow students to concentrate on those areas. The Survey of the Faculty does suggest that the program could be strengthened and augmented by the replacement of some older pieces of equipment and the addition of some new equipment. The Chassis Dynamometer, originally installed when the building was constructed, is a piece of equipment that is still in good working order, although parts are no longer available for this unit. The Faculty of the AET Program provides students with above average instruction as well as the benefit of years of experience in all aspects of the Transportation Industry.

3) What is the assessment of program personnel of the value of the program to employers? Explain how is this value is determined.

The value of the program to employers is determined in through the advisory committee and information gathered with surveys to employers. The advisory committee is responsible for providing the guidance that ensures that the program will continue to offer graduates with experiences and skills valuable to employers. The use of the advisory committee to guide the program was rated as good by six out of eight faculty members and excellent by one faculty member. The extent to which the AET Program uses the information gathered on labor market needs was rated as good by four out of eight faculty surveyed and excellent, by two faculty. The value of the program is also determined through the close relationships maintained with the Transportation Industry by the Faculty with past graduates and Companies benefiting from the skills of participants in the internship program. Key insights are gained through the interactions between the companies that employ AET Interns and Faculty that provide information on industry needs. The survey results show that four of the

eight faculty members responding believe the use of professional or industry standards is good and three of the eight rated the use of these standards as excellent.

4) Describe the benefit of the program, faculty, staff and facilities to entities external to the University (services that faculty have provided to accreditation bodies, and regional, state, and national professional associations; manuscript reviewing; service on editorial boards; use of facilities for meetings, etc.).

The provision for work experience for the students was rated good by two of the eight faculty surveyed and excellent by five faculty members. The internship requirement is the provision for work experience; it benefits employers throughout North America by providing them with an opportunity to have highly skilled additions to their workforce on an intern basis. The employers can benefit from the skills of these students and determine if they would like to hire them on for a permanent position.

The AET Program is active in the Society of Automotive Engineers, participating in the Mini-Baja vehicle project and the Indy car project. These projects challenge students to design and build vehicles for competition against other schools in cooperation with students from The Mechanical Engineering Technology.

5) What services for extra-University general public groups (e.g., presentations in schools or to community organizations) have faculty, staff or students provided? Describe how these services benefit students, program, and community.

The AET Program through its Auto Service foundation provides auto repairs on the service floor of the Automotive Building. The service floor provides auto repairs for Ferris students, Faculty, Staff, and the general public without a labor charge.

The Faculty provides update training for high school instructors in the spring at no cost to the instructors. The training helps high school instructors keep up with changes in the auto industry and provides them with a familiarity with Ferris State University and what is offered here. The benefit of the program through coordination with other groups outside the University was rated as good by five out of eight faculty members surveyed and excellent by one faculty member. The Faculty are currently developing a program for high school students designed to educate them about degrees and all the options they have to consider in choosing the best path to a career.

Section 2
Collection of Perceptions

Section 2 – A. Graduate Follow-Up Survey

The purpose of this activity is to learn from the graduates their perceptions and experiences regarding employment based on program outcomes. The goal is to assess the effectiveness of the program in terms of job placement and preparedness of the graduate for the marketplace.

1) Technique

Paper survey circulated by mail with Business Response return envelope

2) Effectiveness

85 surveys were mailed. Seven were returned by the Post Office as undeliverable. Eight were completed and successfully returned. The AET Alumni have also been surveyed by the Automotive Service Academic Program Review Committee as part of their study. This duplication of effort may have negatively impacted the return rate for the AET study.

Future Automotive Service Program Reviews should be limited to students who completed the Associates degree and did not continue into AET or AHM. Furthermore, it may be prudent to interview only Alumni and Employers of Alumni who have been in the work force for three to five years. The lower limit would allow for maturation of the new employee and the upper limit would negate feedback drawn from dated experiences.

3) Responses

The responses from the Alumni where positive and showed a good deal of diversity in the job requirements of the graduates. The emphasis areas offered as part of the AET Program where seen as important by the respondents, one respondent indicated a belief that more AutoCAD involvement was necessary. Salaries of the respondents who answered both the yearly salary questions provided the figure of forty one thousand dollars as an average starting salary and fifty thousand dollars as an average current salary. All of the respondents have been in the workforce for less than five years as Ferris Graduates.

4) Analysis

A) Job Placement

All of the Alumni of the AET Program that returned the survey are employed in a related area except one. When asked if it was difficult to find employment upon graduation, all respondents indicated that it was not difficult to secure employment upon graduation from the AET Program, one stated that he had companies from five different states making employment offers to him.

B) Preparedness of the Graduate for the Marketplace

When asked to rate how pertinent the Auto Service Classes where to their employment, on a scale from one to five (five being the highest) the average response was a four. When asked to rate how pertinent the Auto Engineering Technology Classes where to their employment, on a scale from one to five (five being the highest) the average response was a four. When rating how pertinent the emphasis area the student took to their current assignment, also on a one to five scale, the average of the responses was four. Alumni where asked if they believe FSU and the AET Program prepared them to successfully compete in the job market, all but two respondent indicated that they believed they had, one stated it was dependant upon the position. The respondent who indicated that the program did not prepare him to successfully compete in the job market is also the respondent not working in a related career area.

Section 2 – B. Employer Follow-Up Survey

This activity is intended to aid in assessing the employers' experiences with graduates and their perceptions of the program itself. A mailed or e-mailed instrument should be used to conduct the survey; however, if justified, telephone or personal interviews may suffice.

1) Technique

Paper survey circulated by mail with Business Response return envelope.

2) Effectiveness

63 surveys were mailed. Four were returned by the Post Office as undeliverable. Five were completed and successfully returned. The AET Employers have also been surveyed by the Automotive Service Academic Program Review Committee as part of their study. This duplication of effort may have negatively impacted the return rate for the AET study. Future Automotive Service Program Reviews should be limited to students who completed the Associates degree and did not continue into AET or AHM. Furthermore, it may be prudent to interview only Alumni and Employers of Alumni who have been in the work force for three to five years. The lower limit would allow for maturation of the new employee and the upper limit would negate feedback drawn from dated experiences.

3) Responses

The Employers where given the opportunity to evaluate the student and the AET Program through the survey. The responses from employers with AET graduates working for them are overwhelmingly positive, there where no responses on the survey below average in any category.

4) Analysis

A) Employers experience with Grads

Responses relating to the technical knowledge, mechanical skills and task organizational practices of AET Graduates where all in the highest end of the scale. Employer's experiences with graduates quality, dependability, appearance and work habits where all well above average and rated very positively. Overall graduates of the AET Program are rated by their employer as well skilled employees that are quick to learn easy to work with and have been prepared in a manner that will ensure their future success.

B) Perceptions of the Program

Employers responded that they would hire another graduate of the AET Program given the opportunity. The overall impression of the AET Program by employers was good. The Employers where asked to their opinions on the weaknesses of the program and where improvements could be made in the program. The respondents left all the areas pertaining to weaknesses and areas where improvements could be made blank, which may indicate that there where no deficiencies in the student's skills that the employer could see.

Section 2 – C. Graduating Student program evaluation

1) Purpose

The purpose of this survey was to obtain the current students' views as to the:

Quality of Instruction
Quality of Advising
Learner's assessment of the curriculum
Learner's assessment of the Facilities and Equipment

For the purpose of this exercise, "Current student" was defined as students having attained the class status of "Junior" and currently enrolled in first year AET classes (300 level).

2) Technique

To assist in minimizing the impact of the current trend toward "over-surveying" students, brevity was the focus. The paper survey asked five questions in each of the four topics identified above. The responders were also given an opportunity to identify the three improvements, in the program, that they would recommend.

3) Effectiveness

Paper and pencil surveys administered to a captive audience are by far the best way to ensure a quick response with a very high rate of return. Fifty eight third year students were surveyed with a 100% return rate.

4) Responses

The subject was asked to respond to each of twenty statements by indicating the degree of her/his concurrence with that statement, ranging from a low of "Strongly disagree" to a high of "Strongly agree". Point values ranging from a low of 1 to a high of 5 were assigned to each chosen response. In addition, the respondent was asked to identify three areas in need of improvement and to list them from most important to least.

5) Instrument

The following statements were utilized to gauge student perceptions of the AET program:

Faculty

The overall quality of classroom instruction was excellent.
My Instructors' demeanor is kind, courteous, and helpful.
The Instructors overall mastery of subject matter was appropriate.
The AET Instructors are regularly available for assistance.
The Instructors exhibited professionalism in and out of class.

Advising

My advisor is knowledgeable about the General Ed requirements.
My advisor is knowledgeable about the Emphasis area requirements.
My advisor kept me current with what I needed for graduation.
My advisor provided the information I needed to make decisions.
My advisor was able to refer me to other sources of information.

Curriculum

The quality of the material presented in classes is adequate.
The material was presented at an appropriate pace.

The instructional media utilized in class enhanced my learning.
The difficulty of material is appropriate for the level of the course.
The emphasis area courses are very relevant to my intended career.

Facilities & Equipment

The classroom conditions are conducive to learning.
The AET program has adequate facilities and equipment.
The equipment and tools are kept operational and well maintained.
The equipment is current with modern technology.
There is adequate availability of tools and equipment.

What three improvements, listed in order of importance, would you recommend for the AET program?

6) Analysis

A) Tally of responses for the Faculty section:

Faculty	1	2	3	4	5	AVE
The overall quality of classroom instruction was excellent.	0	2	4	12	4	3.82
My Instructors' demeanor is kind, courteous, and helpful.	1	1	1	9	11	4.22
The Instructors overall mastery of subject matter was appropriate.	1	2	3	7	10	4.00
The AET Instructors are regularly available for assistance.	1	2	2	9	9	4.00
The Instructors exhibited professionalism in and out of class.	1	1	3	8	10	4.09
Percent of Responses / Average for Section	4	7	11	39	39	4.02

B) Tally of responses for the Advising section:

Advising	1	2	3	4	5	AVE
My advisor is knowledgeable about the General Ed requirements.	0	3	6	6	8	3.83
My advisor is knowledgeable about Emphasis area requirements.	0	2	5	9	7	3.91
My advisor kept me current with what I needed for graduation.	0	2	8	7	6	3.74
My advisor provided the information I needed to make decisions.	0	4	4	8	7	3.78
My advisor was able to refer me to other sources of information.	2	1	8	7	5	3.52
Percent of Responses / Average for Section	2	11	27	32	29	3.76

C) Tally of responses for the Curriculum section:

Curriculum	1	2	3	4	5	AVE
The quality of the material presented in classes is adequate.	1	4	3	6	9	3.78
The material was presented at an appropriate pace.	0	4	3	6	10	3.96
The instructional media utilized in class enhanced my learn0ing.	0	4	4	6	9	3.87
The difficulty of material is appropriate for the level of the course.	0	4	3	8	8	3.87
The emphasis area courses are very relevant to my intended career.	0	7	4	6	6	3.48
Percent of Responses / Average for Section	1	20	15	28	37	3.79

D) Tally of responses for the Facility & Equipment section:

Facilities & Equipment	1	2	3	4	5	AVE
The classroom conditions are conducive to learning.	0	1	5	8	9	4.09
The AET program has adequate facilities and equipment.	0	5	9	4	5	3.39
The equipment and tools are kept operational and well maintained.	0	3	10	5	4	3.45
The equipment is current with modern technology.	0	4	9	6	3	3.36
There is adequate availability of tools and equipment.	1	3	8	4	6	3.50
Percent of Responses / Average for Section	1	14	36	24	24	3.56

E) Desired Improvements

The responses were sorted into six base categories. These categories and the number of recommendations in each are:

Faculty	2
Advising	1
Curriculum	25
Facility	5
Equipment	12
Career Awareness	7
Knowledge of the Program	3
Internships	2
Hot Rod	5

Many responses reflect personal preferences for subject matter, courses, offerings, and additional programs with such narrow scope that adequate enrollment and job placement would not be attainable. Some responses dealt with curricular, scheduling, grading, and staffing concerns that would also be challenging at best within the University structure. Other responses reflect underclassmen beliefs that the university should provide each and every opportunity with little effort on the student's part. Several responses reflected desires for expanded/new facilities and considerable outlay of funds for purchase of significant equipment.

Filtering for reasonable, attainable and economically feasible responses yielded:

Curriculum	8
Equipment	8
Career Awareness	7
Knowledge of the program	3

1) Curriculum

Three responses suggested accreditation. The program is well into the ABET process and we expect to have preliminary accreditation in October. Three responses asked for additional Lab time in certain AET classes. Availability of equipment currently limits lab time. Two responses recommended the addition of new emphasis areas. This is being discussed among the faculty and will be addressed with the Advisory Committee.

2) Equipment

These requests overwhelmingly addressed the need for:

a) Increasing the quantity of equipment available for use by a lab section. Most AET equipment exists in single units only.

b) Updating existing equipment. The Chassis Dynamometer was installed when the building was built in 1956.

3) Career Awareness

Several students expressed a need for expanded familiarity with the profession. While it seems that these questions would have been answered prior to selecting the major, apparently this is not happening. We have sections of FSUS that are taught by Automotive faculty, offered in the building, and scheduled to coincide with the freshman schedule. We will pursue the addition of an Automotive Careers awareness unit to these sections.

4) Knowledge of Program

Similarly to Career Awareness, some students made recommendations that addressed increasing their familiarity with the program. This can be rolled into the career awareness unit for FSUS.

F) Summary

AREA	AVERAGE SCORE	PERCENT
Faculty	4.45	89.0%
Advising	4.12	82.4%
Curriculum	4.28	85.6%
Facility/Equipment	3.96	79.2%

Recommendations: We need to improve the availability of equipment and improve student familiarity with the profession and the AET ptogram.

Section 2 – D. Student Program Evaluation

1) Purpose

The purpose of this survey was to obtain the graduating students' views as to the:

Quality of Instruction
Quality of Advising
Learner's assessment of the curriculum
Learner's assessment of the Facilities and Equipment

For the purpose of this exercise, "graduating student" was defined as students having attained the class status of "Senior" and currently enrolled in second year AET classes (400 level).

2) Technique

To assist in minimizing the impact of the current trend toward "over-surveying" students, brevity was the focus. The paper survey asked five questions in each of the four topics identified above. The responders were also given an opportunity to identify the three improvements, in the program, that they would recommend.

3) Effectiveness

Paper and pencil surveys administered to a captive audience are by far the best way to ensure a quick response with a very high rate of return. Twenty three fourth year students were surveyed with a 100% return rate.

4) Responses

The subject was asked to respond to each of twenty statements by indicating the degree of her/his concurrence with that statement, ranging from a low of "Strongly disagree" to a high of "Strongly agree". Point values ranging from a low of 1 to a high of 5 were assigned to each chosen response. In addition, the

respondent was asked to identify three areas in need of improvement and to list them from most important to least.

5) Instrument

The following statements were utilized to gauge student perceptions of the AET program:

Faculty
The overall quality of classroom instruction was excellent.
My Instructors' demeanor is kind, courteous, and helpful.
The Instructors overall mastery of subject matter was appropriate.
The AET Instructors are regularly available for assistance.
The Instructors exhibited professionalism in and out of class.

Advising

My advisor is knowledgeable about the General Ed requirements.
My advisor is knowledgeable about the Emphasis area requirements.
My advisor kept me current with what I needed for graduation.
My advisor provided the information I needed to make decisions.
My advisor was able to refer me to other sources of information.

Curriculum

The quality of the material presented in classes is adequate.
The material was presented at an appropriate pace.
The instructional media utilized in class enhanced my learning.
The difficulty of material is appropriate for the level of the course.
The emphasis area courses are very relevant to my intended career.

Facilities & Equipment

The classroom conditions are conducive to learning.
The AET program has adequate facilities and equipment.
The equipment and tools are kept operational and well maintained.
The equipment is current with modern technology.
There is adequate availability of tools and equipment.

What three improvements, listed in order of importance, would you recommend for the AET program?

6) Analysis

A) Tally of responses for the Faculty section:

Faculty	1	2	3	4	5	AVE
The overall quality of classroom instruction was excellent.	0	2	4	12	4	3.82
My Instructors' demeanor is kind, courteous, and helpful.	1	1	1	9	11	4.22
The Instructors overall mastery of subject matter was appropriate.	1	2	3	7	10	4.00
The AET Instructors are regularly available for assistance.	1	2	2	9	9	4.00
The Instructors exhibited professionalism in and out of class.	1	1	3	8	10	4.09
Percent of Responses / Average for Section	4	7	11	39	39	4.02

B) Tally of responses for the Advising section:

Advising	1	2	3	4	5	AVE
My advisor is knowledgeable about the General Ed requirements.	0	3	6	6	8	3.83
My advisor is knowledgeable about Emphasis area requirements.	0	2	5	9	7	3.91
My advisor kept me current with what I needed for graduation.	0	2	8	7	6	3.74
My advisor provided the information I needed to make decisions.	0	4	4	8	7	3.78
My advisor was able to refer me to other sources of information.	2	1	8	7	5	3.52
Percent of Responses / Average for Section	2	11	27	32	29	3.76

C) Tally of responses for the Curriculum section:

Curriculum	1	2	3	4	5	AVE
The quality of the material presented in classes is adequate.	1	4	3	6	9	3.78
The material was presented at an appropriate pace.	0	4	3	6	10	3.96
The instructional media utilized in class enhanced my learning.	0	4	4	6	9	3.87
The difficulty of material is appropriate for the level of the course.	0	4	3	8	8	3.87
The emphasis area courses are very relevant to my intended career.	0	7	4	6	6	3.48
Percent of Responses / Average for Section	1	20	15	28	37	3.79

D) Tally of responses for the Facility & Equipment section:

Facilities & Equipment	1	2	3	4	5	AVE
The classroom conditions are conducive to learning.	0	1	5	8	9	4.09
The AET program has adequate facilities and equipment.	0	5	9	4	5	3.39
The equipment and tools are kept operational and well maintained.	0	3	10	5	4	3.45
The equipment is current with modern technology.	0	4	9	6	3	3.36
There is adequate availability of tools and equipment.	1	3	8	4	6	3.50
Percent of Responses / Average for Section	1	14	36	24	24	3.56

E) Desired Improvements

The responses were sorted into six base categories. These categories and the number of recommendations in each are:

Faculty	2
Curriculum	20
Facility	1
Equipment	2
Career Awareness	3
Knowledge of the Program	3
Internships	2

Many responses reflect personal preferences for subject matter, courses, offerings, and additional programs with such narrow scope that adequate enrollment and job placement would not be attainable. Some responses dealt with curricular, scheduling, grading, and staffing concerns that would also be challenging at best within the University structure. Other responses reflect underclassmen beliefs that the university should provide each and every opportunity with little effort on the student's part. Several responses reflected desires for expanded/new facilities and considerable outlay of funds for purchase of significant equipment.

Filtering for reasonable, attainable and economically feasible responses yielded:

Curriculum	20
Equipment	3
Career Awareness	3
Knowledge of the program	3

5) Curriculum

Only one response suggested accreditation. The senior group is more aware that the program is well into the ABET process. Two responses asked for additional Lab time in certain AET classes. Availability of equipment currently limits lab time. Five responses recommended the addition of new emphasis areas. This is being discussed among the faculty and will be addressed with the Advisory Committee. The remaining comments were individual issues and preferences which identified perceived concerns with class size (too large at 30) and scheduling (offer more sections), put more math in the program.

6) Equipment

The three responses overwhelmingly addressed the need for updating

existing equipment. The Chassis Dynamometer was installed when the building was built in 1956. This is a very expensive piece of equipment and will most likely require external support.

7) Career Awareness

Similarly to the juniors, several seniors expressed a need for expanded familiarity with the profession. While it seems that these questions would have been answered prior to selecting the major and completing the junior year, apparently this is not happening. We have sections of FSUS that are taught by Automotive faculty, offered in the building, and scheduled to coincide with the freshman schedule. We will pursue the addition of an Automotive Careers awareness unit to these sections. Expansion of the Auto Departments website to include some "FAQ" concerning the AET degree and the different emphasis areas may also help to answer these questions.

8) Knowledge of Program

One student requested clarification in the changes to the program which took effect this semester. As a senior these changes will not affect his course of study. Two others seemed unsure as to career paths available after graduation. The scope of the positions our graduates attain is so broad it is difficult to describe the pathway in simple, easy to understand terms.

7) Summary

AREA	AVERAGE SCORE	PERCENT
Faculty	4.02	80.4%
Advising	3.76	75.2%
Curriculum	3.79	75.8%
Facility/Equipment	3.56	71.2%

The Programs performance on this survey was strong, but not outstanding. We are aware of some difficulties with one course and are working to create an offering, with the same content, through a different department. These personnel are much better suited to teach the subject.
Increasing the students' knowledge of the program and awareness with the profession will significantly bolster student morale and satisfaction with the degree. This may be the singularly most important outcome of this exercise. Attitudes are holistically invasive and, when positive, fuel achievement and success.

As if uncertainty with the program and profession are not stressful

enough, we (attempt to) teach twenty-first century technology on a twentieth century dynamometer. We reinforce prior learning by revisiting those kindergarten lessons of sharing, by requesting two cohorts of thirty to share a singe flow-bench and engine dynamometer cell.

This is an outstanding program attracting talented students from around the world. We are on the verge of becoming ***the world class*** Automotive Engineering Technology program, but we are hindered through a lack of investment by the College of Technology and the University. The first step toward gaining external financial support is to first demonstrate internal support and dedication. If the University is unwilling to commit financially to success, will outside sources?

Section 2 – E. Faculty Perceptions

The purpose of this activity is to assess faculty perceptions regarding the following aspects of the program: curriculum, resources, admissions standards, degree of commitment by the administration, processes and procedures used, and their overall feelings. Additional items that may be unique to the program can be incorporated in this survey.

1) Technique:

The means of collecting the information was Word document circulated by email to the ten Faculty involved in The AET Program.

2) Effectiveness:

Ease of distribution and tabulation of data makes this means of data acquisition the method of choice in a controlled environment.

3) Responses:

The Survey was sent to all ten Faculty members involved in teaching students in the AET Program, eight of the ten surveyed responded. There was space included in the survey for comments on both the first and second pages of the survey, however, the respondents only made comments relating to the items on the second page.

4) Analysis:

Curriculum

The faculty perception of the program goals identifies how the Faculty views the direction of the program and the course objectives identify the individual components of the courses which together comprise the final goal of the curriculum. Half of the responding Faculty believes the

program goals are good with two of the remaining Faculty responses believing them to be excellent. The course objectives are viewed as good by three Faculty and excellent by two of the Faculty. Using information on the labor market to ensure the viability of our graduates was perceived as good by three of the eight Faculty members and excellent by two of the Faculty members. The perception of how well the program uses Job Performance Requirements to guide instruction was viewed as good by five members and excellent by one. The Faculty perception pertaining to adaptation of instruction shows five Faculty members rating it as good and one more in the excellent column.

Resources

The Automotive Engineering Technology Program resources include personnel in administration of the program, clerical support, and the instructional faculty themselves. The Faculty perceptions relating to the leadership, Coordination and the Qualifications of the Administrative or Supervisory Personnel showed five out of eight respondents in each category believe these are excellent. The use of clerical support staff is viewed as excellent by the majority of Faculty surveyed, with six out of eight Faculty members responding in this way.

The Faculty perception of the Faculty as a group, five of the eight responded that they believed they were good with three responding as excellent, the results were identical when asked to rate the qualifications of the Instructional Staff. The Faculty felt that the professional development opportunities were only acceptable, overall with four out of eight Faculty responding in the adequate column, one responding below average, two good and one excellent.

The resources of the AET Program in addition to personnel include facilities, materials, budget considerations and instructional equipment. The adequacy of the instructional facility itself is on the low side with three Faculty viewing them as below expectations and three as only acceptable.

The adequacy and availability of materials, supplies and learning resources was viewed as acceptable by four out of the eight Faculty that responded and good by two of the faculty. The faculty perceives the operating budget as an area where there is room for improvement, three Faculty rate the adequacy of the operating budget as poor, while four have indicated that it is below expectations. The Budget Provisions for Capital Outlay for Equipment is another area where the Faculty perceives an opportunity for improvement, three Faculty members viewing this as poor, while five have indicated it is below their expectations. The survey stated that adequate funds were in place to

replace outdated equipment all eight Faculty members responded by indicating they did not agree with this statement and a comment was made that "funds appear to be lacking". Five of the eight Faculty members agree that an increase in resources would increase the potential for program growth, with one commenting that they perceive this to be true, but, can not prove it. When the Faculty were asked if program resources were adequate to compete with similar programs, six Faculty responded that they did not agree that the program resources were adequate to compete with similar programs and a comment was included stating the respondent believes we could compete better with more resources.

The indication of the Faculty is that the instructional equipment is another area where there is room for improvement; three of the surveyed Faculty members view the current instructional equipment as below expectations, with two others rating them at only acceptable. When the Faculty were asked if current, state of the industry equipment was available for use in instruction five out of eight responded that they did not agree that it was, that it was only available in some cases and that the program needs more state of the industry equipment.

Admissions standards

The Faculty perception of the admission standards of the program can be seen through the responses to questions dealing with the Placement Effectiveness for Students in this Program, provisions for the disadvantaged, as well as Program Availability and Accessibility. Three Faculty members rate the Placement Effectiveness for students in this Program as good, while four rate it as excellent. The Provisions for the Disadvantaged are perceived by the Faculty to be acceptable in the eyes of three Faculty members and three view these provisions as excellent. The Faculty perception of the Program Availability and Accessibility shows six out of eight responses to be excellent and the remaining two as good.

Degree of commitment by the Administration

The AET Program has been well supported by Administration in its five years of operation. The area where commitment from administration seems to be lacking is in funding. The Program currently has no operating budget of its own, three Faculty rate the adequacy of the operating budget as poor, while four have indicated that it is below expectations.

Processes and procedures used

The processes that have not been covered in another section of this document relate to Student follow-up, Program Advisement, Provisions for Employability Information, as well as Career Planning and Guidance.

The Student follow-up for the program is perceived in a positive light with two Faculty members responding excellent, three responding good and two who believe it is acceptable. Program Advisement perceptions show five Faculty members responding excellent and two responding that their perception is that it is good. The Faculty rated the provisions for Employability Information on the positive side of the scale with three good and three excellent. The Provision for Career Planning and guidance shows two Faculty members perceiving it as good and five as excellent. The Adequacy of the Career Planning and Guidance available to the students is viewed by the Faculty as above average, four rate it at excellent and two believe it is good.

Section 2 – F. Advisory Committee Perceptions

1) Purpose

The purpose of this survey is to obtain information from the members of the program advisory committee regarding the:

A) Curriculum
B) Outcomes
C) Facilities
D) Equipment
E) Graduates
F) Advisory Committee
G) Recommendations

2) Technique

This survey was constructed using Microsoft Excel for ease of data compilation and evaluation. The spreadsheet was circulated via email. Upon return, the response column and comments were copied anonymously into the tally sheet.

3) Effectiveness

Nine of eleven members returned their responses following several "reminders" for a return rate of 82%. The instantaneous tally was very effective.

1) Responses

Respondents were asked to identify their level of agreement to the statements in Items A – D and F according to the following table:

Score	Level
1	Strongly disagree
2	Disagree
3	Neutral / No opinion
4	Agree
5	Strongly Agree

Respondents were asked to rate the graduates using the following table:

Score	Level
1	Identified weakness
2	Developing competence
3	Competent
4	Surpasses expectations
5	Not observed / applicable

The results from each survey were averaged for all overall score.

2) Instrument

A) Curriculum

1. The curriculum reflects the knowledge and skill sets required for entry level engineering technology positions.
2. The courses are current and relevent.
3. The curriculum is concentrated in appropriate subjects.
4. The curriculum is routinely reviewed and revised when needed.
5. Advisory committee input is an integral component of curriculum development.
6. The curriculum allows the student to select specialization.

B) Outcomes

1. The program outcomes are aligned with preparing the student for entry level engineering technology positions.

2. The program outcomes are current and relevent to the industry.

3. The outcomes are routinely reviewed and revised when needed.

4. The outcomes ensure the comprehensive development of the student: knowledge, abilities, work ethic, and communication skills.

5. The program outcomes encourage students to excel.

6. ASE Certification is required for employment.

7. ASE Certification should be required for graduation.

8. Select the ASE Certification Areas *most* important on the job:

9. Select the ASE Certification Areas *least* important on the job:

C) Facilities

1. The facilities are well organized and utilized.

2. The facility reflects the quality of the program.

3. The AET program should have designated classroom and labs.

4. Lab facilities are conducive to studies required by the AET curriculum.

5. Additional lab space is needed.

6. Enhancement of the facility would benefit enrollment.

D) Equipment

1. Equipment is modern and reflects industry standards.

2. The equipment is adequate for instructional purposes.

3. Additional equipment is needed for specific classes.

4. The program would greatly benefit from the acquisition of:

E) Graduates

1. Technical knowledge
2. Mechanical skill level
3. Task organizational practices
4. Application of efficient work habits
5. Ability to learn new procedures
6. Cooperation and relationships with co-workers
7. Cooperation and relationships with supervisors
8. Demonstrates effective leadership qualities
9. Level of confidence to complete tasks
10. Ability to diagnose unanticipated problems
11. Ability to accurately perform repairs
12. Interest in developing technical knowledge
13. Verbal communication skill level
14. Written communication skill level
15. Ability to interact with customers
16. Exercises safe work practices
17. Appearance and neatness
18. Demonstrates ethical work practices

F) Advisory Committee

1. The Advisory Committee performs a valuable function.
2. Input provided by the Advisory Committee is promptly acted upon.
3. The Advisory Committee should meet more often.
4. How often?
5. More members are needed on the committee.
6. The Departments report to the Committee is comprehensive and informative.

6) Recommendations

A text box was used for submitting recommendations for the program.

7) Analysis

A) Curriculum

1. The curriculum reflects the knowledge and skill sets required for entry level engineering technology positions.		4.33
2. The courses are current and relevant.		4.11
3. The curriculum is concentrated in appropriate subjects.		3.89
4. The curriculum is routinely reviewed and revised when needed.		3.88
5. Advisory committee input is an integral component of curriculum development.		4.50
6. The curriculum allows the student to select specialization.		4.33
7. The emphasis areas are indicative of industry trends and needs.		3.78
8. The Auto Service Technology curriculum is a crucial Component of the AET curriculum.		4.11
9. AET graduates are well prepared for industry employment.		4.22
10. The Service Floor experience is a valuable component of the AET curriculum.		3.56
11. The Automotive Department should pursue ABET accreditation.		4.89
12. The curriculum should expand into additional areas:		4.25
Noise, Vibration & Harshness	9	
Electric & Hybrid vehicles	9	
Supplemental Restraints & Impact Abatement	1	
All	0	
None	0	
Other	3	
AVERAGE		**4.17**

B) Outcomes

1. The program outcomes are aligned with preparing the student for entry level engineering technology positions.	4.00
2. The program outcomes are current and relevant to the industry.	4.11
3. The outcomes are routinely reviewed and revised when needed.	3.75
4. The outcomes ensure the comprehensive development of the student: knowledge, abilities, work ethic, and communication skills.	3.89
5. The program outcomes encourage students to excel.	4.11
6. ASE Certification is required for employment.	3.22
7. ASE Certification should be required for graduation.	3.67
8. Select the ASE Certification Areas *most* important on the job:	
9. Select the ASE Certification Areas *least* important on the job:	
AVERAGE	**3.82**

C) Facilities

1. The facilities are well organized and utilized.	3.75
2. The facility reflects the quality of the program.	3.50
3. The AET program should have designated classroom and labs.	4.25
4. Lab facilities are conducive to studies required by the AET	3.50
5. Additional lab space is needed.	4.38
6. Enhancement of the facility would benefit enrollment.	4.38
AVERAGE	**3.96**

D) Equipment

1. Equipment is modern and reflects industry standards.	3.11
2. The equipment is adequate for instructional purposes.	3.56
3. Additional equipment is needed for specific classes.	4.38
AVERAGE	**3.68**

E) Graduates

1. Technical knowledge	3.56
2. Mechanical skill level	3.67
3. Task organizational practices	3.33
4. Application of efficient work habits	3.67
5. Ability to learn new procedures	3.56
6. Cooperation and relationships with co-workers	3.89
7. Cooperation and relationships with supervisors	4.00
8. Demonstrates effective leadership qualities	3.78
9. Level of confidence to complete tasks	3.78
10. Ability to diagnose unanticipated problems	3.67
11. Ability to accurately perform repairs	3.89
12. Interest in developing technical knowledge	4.00
13. Verbal communication skill level	3.78
14. Written communication skill level	3.67
15. Ability to interact with customers	3.78
16. Exercises safe work practices	3.67
17. Appearance and neatness	3.78
18. Demonstrates ethical work practices	4.00
AVERAGE	**3.76**

F) Advisory Committee

1. The Advisory Committee performs a valuable function.	4.75
2. Input provided by the Advisory Committee is promptly acted upon.	3.88
3. The Advisory Committee should meet more often.	4.00
4. How often?	
5. More members are needed on the committee.	4.75
6. The Departments report to the Committee is comprehensive and informative.	4.13
AVERAGE	**4.30**

G) Recommendations.

1. As an AET graduate, I feel very good about my abilities and skills obtained from the program. I also realize that not everything was finalized when I enrolled in the program and that changes are always being made. The program is beyond adequate for entry level positions, but I feel that there is some room for improvement in preparing students for advanced positions in their futures. I believe the service program can be condensed somewhat and more time given for engineering experiments and lab work. Statistical process control, six sigma, project managing, manufacturing processes, failure analysis, data acquisition, NVH, finite element analysis (FEA), cost reduction etc., are all very important in the automotive industry. With the current curriculum, not much time is available for courses like these. Thank you for giving me the oppourtunity to share my input with the committee. If you have any more questions about my surevey, or the industry in general, please contact me.

2. I feel that calculus level mathematics is needed as well as additional material science courses. I also feel that failure analysis should be a required course for this program and accreditation is a must

H) Comments from A – F

A) Curriculum

1. Chemistry, CAD, Automotive Design and computer programming

2. Quality emphasis and material science emphasis could be explored.

3. Other classes: thermodynamics, heat transfer & mechanics. This is especially important for enigne emphasis

4. Need more experience with data acquisition systems, Solidworks/CAD, FEA, more strenuous math courses. I think a two year program that focuses on test technician/lab work experiments would be a sound foundation for an engineering degree. I think this would be more beneficial than the automotive service program. Especially if incoming students already had a

working knowledge of automobiles.

5. Hydrogen Vehicles and systems, Fuel Cell Technology.

B) Outcomes

1. have not had a need for my ASE certs although I will continue to renew it when it expires. Yes the program is adequate for entry level positions, but more is needed to migrate into test engineering, application engineering, project engineering, etc. Again, a program more in line with M.E. but automotive based may help.

C) Facilities

1. I have visited the campus only once, I do not feel that I have enough exposure to score these these questions

2. I don't think as much is needed on the service side of the program for the AET degree. Lab areas for the service program could be used more for advanced level AET projects and experiments. Again, instrumentation and data cquisition/analysis

3. Expansion is a must for the overall success of all automotive programs at Ferris.

D) Equipment

1. The use of the available equpment is most important. I do not have sufficent exposure to comment on #3 & #4

E) Graduates

None

F) Advisory Committee

None

8) Summary

AREA	SCORE*
A. Curriculum	4.17
B. Outcomes	3.82
C. Facilities	3.96
D. Equipment	3.68
E. Graduates	3.76*
F. Advisory Committee	4.30

* Items A – D & F were scored on a 5.0 scale
Item E was scored on a 4.0 scale

With an overall raw score of 4.34, the Advisory Committee scored the program as good, but again, not outstanding. Not surprisingly, the Advisory Committee rated themselves highest. The area of most noted concern is equipment.

Once again, our equipment is cited as being outdated and not up to industry standards. We must make improvements, especially if we pursue outside investments and contributions.

The numerical score was low for the Outcomes section due to the inclusion of a question dealing with ASE certification being required for employment. This question was implemented for data gathering and not as an assessment tool. While many members showed little experience with ASE being required for employment, a significant number felt it should be required for graduation, reinforcing the Departments belief in the value of certification.

The Advisory Committee survey contained many valuable comments which will be discussed when the committee meets.

Section 3
Program Profile

Section 3 - A. Profile of students

1) Student Demographic Profile.

a) Gender, race/ethnicity, age (use annual institutional data).

Our industry continues to be a very white-male-dominated industry.

Looking at student gender ratios since the last program review, the students in the AET program have averaged 99.03% male, and 0.97% female. *(Data provided by Institutional Research and Testing 11/8/2005)*

The chart below illustrates the student body profile as it relates to ethnicity / race since the last program review: *(Data provided by Institutional Research and Testing 11/8/2005)*

	2001	2002	2003	2004	2005
African-American	0	0	1	0	0
Hispanic	0	0	1	1	1
Indian/Alaskan	0	0	0	0	0
Asian/Pacific Is.	0	0	0	3	3
White	35	51	54	59	61
Foreign	0	2	1	6	8
No response	2	4	5	5	5
Total Students	37	57	62	74	78

The average age of the AET student is illustrated in the following table:

	2001	2002	2003	2004	2005
Average Age	20.6	22.3	22.5	22.6	22.4

Looking at student age data since the last program review, the students in the AET program have averaged 22.1 years of age.
(Data provided by Institutional Research and Testing 11/8/2005)

b) In-state and out-of-state.

	2001	2002	2003	2004	2005
MI resident	30	43	47	43	52
Non-resident	1	5	9	15	11
Midwest Compact	6	9	6	14	15

Please see Appendix 3-A-1B for details.

c) Full-time and part-time.

All students are enrolled on a full time basis. Occasionally a student may take a semester or two part time for financial or other personal reasons.

d) Attend classes during the day, in the evenings, and on weekends.

Current enrollment does not allow for the offering of class Sections beyond the regular day.

e) Enrolled in classes on- and off-campus.

Current enrollment does not allow for the offering of class sections Off campus.

f) Enrolled in 100% on-line and/or mixed delivery courses.

67% of courses are mixed delivery. One class (EHSM330) is 100% online delivery.

g) Discuss how the information presented in (a) through (f) impacts the curriculum, scheduling, and/or delivery methods in the program.

Program age (5 years) and size (<90 students) necessitates rigid scheduling and limited offerings to maintain full sections. As the program grows additional delivery methods may prove advantageous.

2) Quality of Students.

a) What is the range and average GPA of all students currently enrolled in the program? ACT? Comment on this data.

	2001	2002	2003	2004	2005	AVER
GPA						
Minimum	2.270	1.724	1.958	1.781	2.376	2.022
Maximum	3.953	3.827	3.734	3.980	3.988	3.896
Average	3.135	2.995	2.842	3.004	3.206	3.036
ACT						
Minimum	13	14	14	17	16	14.8
Maximum	29	28	28	27	31	28.6
Average	21.1	20.9	20.7	21.2	21.8	21.14

b) What are the range and average GPA's of students graduating from the program? ACT? Comment on this data.

	2001	2002	2003	2004	2005	AVER
GPA						
Minimum	3.300	2.270	2.617	2.151	2.223	2.512
Maximum	3.300	3.960	3.664	3.536	3.938	3.680
Average	3.300	3.230	3.166	2.925	3.217	3.168
ACT						
Minimum	n/a	18	9	11	19	14.3
Maximum	n/a	26	25	27	23	25.3
Average	n/a	22	18	18.5	20.8	19.8

c) In addition to ACT and GPA, identify and evaluate measures that are used to assess the quality of students entering the program.

All of the students have to be able to start a math sequence up to and including calculus as well as the sequence of Physics 211, and Physics 212.

d) Identify academic awards (e.g., scholarships or fellowships) students in the program have earned. Comment on the significance of these awards to the program and students.

Each year the AET program and Department have a number of scholarships that are available to students. This past year, thirteen scholarships worth $20,000 were available. Please see Appendix 3-A-2D for details.

e) What scholarly/creative activities (e.g., symposium presentations, other presentations or awards) have students in the program participated in? Comment on the significance of these activities to the program and students.

AET students have consistently won the ASE Scholarship every year against Grand Valley and Western Michigan University. Students are required to make classroom presentations in many of their classes. They write numerous research papers in each of their core classes.

f) What are other accomplishments of students in the program? Comment on the significance of these accomplishments to the program and students.

The AET program has a student organization called SAE (Society of Automotive Engineers.) The student organization's goals are to build vehicles to compete against all the universities in the country in the Formula and Baja races. Faculty members advise and actively participate with this organization both from the automotive department and across the college.

3) Employability of students.

a) How many graduates have become employed full-time in the field within one year of receiving their degree? Comment on this data.

According to the "Graduate Follow-Up Survey Report" for the placement rate for the AET program averaged approximately 100%. All data was calculated based on a 20% return rate on the surveys. Students with a 3.0 or higher GPA, and that are willing to relocate, are faced with having to choose from several offers originating from several different states.

b) What is the average starting salary of graduates who become employed full-time in the field since inception (for new programs) or the last program review? Compare with regional and national trends.

We have only had two years of graduates since the program only started five years ago. Based on the information contained in the "Graduate Follow-Up Survey Report" the average starting salary for graduates of the AET program was approximately $41,000 annually.

c) How many graduates have become employed as part-time or temporary workers in the field within one year of receiving their degree? Comment on this data.

Students typically are employed as full-time employees or continue their education. In the last two years we have had one student graduate from University of Michigan with a Master's in Automotive Engineering. One student is attending a PhD program at Virginia Tech University.

d) Describe the career assistance available to the students. What is student perception of career assistance?

Students have access to the office of Student Employment and Career Services, on campus, where they can seek help in creating and posting a

resume, search for prospective employers, view job fair schedules. Faculty also dispense leads as they receive them.

e) How many graduates continue to be employed in the field? Comment on this data.

Recent alumni survey data showed where most respondents continued to be employed in industry.

f) Describe and comment on the geographic distribution of employed graduates.

Graduates have accepted positions distributed across the continent including positions in Canada. Since as high as fifty percent come from out of state, it is not surprising that many go to work in different states or countries.

g) How many students and/or graduates go on for additional educational training? (Give annual average.) Comment on this data.

In the recent Alumni survey and phone conversation with graduates, when asked about the types of training received since graduation, the most significant number was additional technical training and travel to other countries for training. A number of them ask about ABET accreditation because they are now looking into graduate school. They say most of the graduate programs require a BS from an ABET-accredited program.

h) Where do most students and/or graduates obtain their additional educational training? Comment on this data.

The majority of the additional training is done internally within the corporate environment.

Section 3 - B. Enrollment

1) What is the anticipated fall enrollment for the program?

Based on current figures and past experience, the projected enrollment for Fall 2006 is at 80 students on campus. This is estimating the number of new students entering the program to be 40 students, which is up because of transfer students.

2) Have enrollment and student credit hour production (SCH) increased or decreased since the last program review? Supply a table and comment on any enrollment trends.

All of the credit hour production is in the Auto Service program. This is because all of the AET courses are designated as AUTO. This should be changed to provide more accurate data for AET and to more accurately indicate productivity numbers for the Auto Service program.

3) Since the last program review, how many students apply to the program annually?

Many people inquire about the program. We give them an outline of the requirements that they will need to meet. It is not known how many come, complete the requirements, and return. However, since we have one of the highest rates of transfer students both in-state and out-of-state, one would suspect that this rate would be high. The number of transfer students this fall is even higher. The GPA is 2.75 in major and 2.5 in general education along with prepared to enter math 126.

4) Of those who apply, how many and what percentage are admitted?

The Admissions Office is not able to provide this data.

5) Of those who are admitted, how many and what percentage enroll?

The Admissions Office is not able to provide this data.

6) What are the program's current enrollment goals, strategy, and efforts to maintain/increase/decrease the number of students in the program? Please explain.

The goal of the AET program is to increase the number of students enrolled in the program by increasing the program quality. The following is a listing of some of the activities planned.

Become ABET accredited

1. AET faculty will continue to participate in career fairs at area vocational centers and high schools across Michigan and surrounding states.

2. AET faculty will continue marketing the program internally to students in the on-campus associate degree feeder programs.

3. The AET program will offer a new 0+4 program option to compete with other Universities that offer more traditional 4 year degrees.

Section 3 - C. Program Capacity

1) What is the appropriate program enrollment capacity, given the available regulations, and other factors?

Program capacity should peak at around 240 students based upon capacity of the building and availability of faculty. This assumes an even distribution of students throughout the 0+4 program. Currently, program capacity is based upon the 2+2 program with a significant number of students matriculating from the Automotive Service Technology program and an equal or slightly larger transfer population entering for the 2+2 option.

2) Which of these items limits program enrollment capacity?

Classroom, laboratory, and equipment availability will have a major limiting impact on capacity as the building is shared with the Automotive Management and Automotive Service Technology programs. As AET faculty is also shared with AST, Instructor availability may also impact capacity. Declining numbers of students whose objective is to attain the Associate in Automotive Service Technology and exit the program may increase the availability of facilities.

3) Please explain any difference between capacity and current enrollment.

The relative youth of the program is indicated by it's still growing enrollment. As the program matures and gains recognition and familiarity across the continent, capacity will be reached and most probably exceeded.

Section 3 - D. Retention and Graduation

1) Give the annual attrition rate (number and percent of students) in the program.

No complete and usable information was available from FSU to answer this question with specific data. Program is so new that we haven't set a pattern. However, with the fairly high admission criteria standards, there seems to be a very low attrition rate.

2) What are the program's current goals, strategy and efforts to retain students in the program?

Will be developed if needed in the future.

3) Describe and assess trends in number of degrees awarded in the program.

There seems to be some err in the data.
The number of degrees awarded has consistently increased each year.
Below find a table with statistics that were available.

Degrees Awarded	2003	2004	2005	2006
AET	1	7	28	31

4) How many students who enroll in the program graduate from it within the prescribed time? Comment on any trends.

60% to 70% Many AET students pursue additional, elective course work to attain any number of the three available specialty Certificates. In addition, many students elect to dual-major in AET and the Automotive/Heavy Equipment Management, extending their experience on campus. A further analysis of data to illustrate the frequency of elective extension of enrollment is not available.

5) **On average, how long does it take a student to graduate from the program? Please comment.**

Both transfer Students and students with Ferris associate degrees that start the program with their associate degree and have good math skills largely finish in four years.

Section 3 - E. Access

1) **Describe and assess the program's actions to make itself accessible to students. Use examples such as: off-site courses, accelerated courses, other types of flexible learning, use of summer courses, multiple program entry points, e-learning, mixed delivery courses, and scheduling.**

As the program is still in its infancy, little need nor opportunity for expanded accessibility has arisen. Mixed delivery techniques are applied but the goal is to enhance learning rather than ease of access. Internships are mostly undertaken during the summer months, mostly out of necessity rather than accessibility.

1) **Discuss what effects the actions described in (1) have had on the program. Use examples such as: program visibility, market share, enrollment, faculty load, computer, other resources.**

As the program is new and growing steadily, the need for expanded accessibility has not arisen. The use of mixed delivery has resulted in additional load on the computer resources within the building, but usage is still not to the critical level.

2) **How do the actions described in (1) advance or hinder program goals and priorities?**

We have observed no negative impact upon the program due to a lack of off-site offerings or an expanded schedule.

Section 3 - F. Curriculum

1) **The curriculum review section must also contain appropriate check sheets and example syllabi, which may be attached as an appendix.**

The volume of these materials prohibits inclusion in this report. They have been compiled for the NATEF Certification review in 2004 and are currently available in the ABET Self Study in the Automotive Office.

2) Program Requirements. Describe and assess the program related courses required for graduation.

a) As part of the graduation requirements of the current program, list directed electives and directed general education courses. Provide the rationale for these.

Automotive Engineering Technology students are required to pick an emphasis area. The students must take 12 credits in one of the areas.

The AET students must complete the following directed general education courses:

MATH 116, MATH 126, MATH 216 Applied Calculus to complete the quantitative skills needed.

PHYS 211 and PHYS 212 must be completed for the Scientific Understanding.

English 311 (Fulfills university requirement for communication competence.

Communications 221 (Fulfills university requirement for communication competence

Furthermore, the AET students must complete the rest of the general educations electives for Social and cultural enrichment

b) Indicate any hidden prerequisites (instances where, in order to take a program-required course, the student has to take an additional course. Do not include extra courses taken for remedial purposes)

There are no hidden prerequisites. We have a five courses sequence with math and physics in the check sheet.

3) Has the program been significantly revised since the last review, and if so, how?

This is the first program review for AET. We recently adjusted the curriculum to:

A) Meet the VPAA's limit of 128 credits:

1) Elimination of AUTO250 Service Floor
2) Elimination of AUTO116 Engine Electrical

B) Add courses necessary to attain ABET accreditation.

1) Addition of MATH216 Applied Calculus

C) We have added a 0-4 starting point for students that want to come to the University for a Bachelor Degree.

4) Are there any curricular or program changes currently in the review process? If so, what are they?

We need to change the designator so the program can be evaluated for productivity.

5) Are there plans to revise the current program within the next three to five years? If so, what plans are envisioned and why?

Any future curricular changes will be based on the Accreditation review by ABET. We will review their recommendations and make changes accordingly.

Section 3 - G. Quality of instruction

1) Discuss the Student and Alumni perceptions of the quality of instruction.

Based upon feedback from both internships and job placement over the last two years the over all indication is very good. See summary of internship and job placement. Further information and specific data is available in Sections 2-A, C, and D.

2) Discuss the Advisory committee and Employer perceptions of the quality of instruction.

Advisory committee members and employers have already hired for the two back to back years of graduations. Some have hired two to five students over the last three years. We have only been only graduation students for a couple of years. This seems to be a strong indication that both the advisory and employer are very satisfied with the quality of instruction. Further information and specific data is available in Sections 2-B and F.

3) What departmental and individual efforts have been made to improve the learning environment, add and use appropriate technology, train and increase the number of undergraduate and graduate assistants, etc.?

Several forms of instructional technology are used by automotive programs. All of the rooms either have computer projectors or we have portable projectors. Two of the automotive department room were remolded as smart room last year because of the growth of the AET program. Web-CT is used by all of the faculty members in the AET program. All of the faculty members either have laptops or have access to them to use with the computers projectors. The Automotive Center was the first building to be wireless. Faculty members have produced a number of course packets and lab packets.

4) Describe the types of professional development have faculty participated in, in efforts to enhance the learning environment (e.g. Writing Across the Curriculum; Center for Teaching and Learning, etc.).

Faculty take advantage of training opportunities with manufactures related training. Also they attend classes from the Center for Teaching and Learning. Faculty members have taken part in WebCT training to enhance the program and improve interaction between students and staff.

5) What efforts have been made to increase the interaction of students with faculty and peers? Include such items as developmental activities, seminars, workshops, guest lectures, special events, and student participation in the Honors Program Symposium.

- AET students and faculty regularly participate in field trips.
- Ford Testing Center, Chrysler Testing Center, Chicago Emission EPA Testing Center, Ann Arbor Emission Testing Center, Federal EPA Testing Center, an oil refinery in Chicago, Mercedes Benz.
- AET students, COT students and faculty all participate together in Ferris State University's student chapter of Society of Automotive Engineers.

6) Discuss the extent to which current research and practice regarding inclusive pedagogy and curriculum infuse teaching and learning in this program.

Students must fulfill an internship and complete an engineering project during that course. The internship gives the student a significant learning experience and a chance to be hired full time. Many have had position created for them while at the company.

Students use critical thinking skills with their math to apply theory real engineering situations

Projects are used in each of the courses to develop the students to work in small engineering groups.

Students develop their PC skills using many different engineering software packages as well as the standard soft ware (micro soft).

7) What effects have actions described in (5) and (6) had on the quality of teaching and learning in the program?

Using the different faculty in the different engineering programs across the college has exposed the AET students to a much higher level of curriculum, research, and teaching styles. The students have impressed the teachers in the other program with their abilities and interests.

Section 3 - H. Composition and quality of faculty

1) List the names of all tenured and tenure-track faculty by rank.

A) Identify their rank and qualifications.

There is not a separate faculty group in the AET program. We have used the auto service faculty. Please see Auto Service Program Review for this information. The additional faculty from the COT that teach multi-discipline courses are listed in the ABET Self Study Part 1 Review. This is available in the Automotive office and, unfortunately is too large to reproduce here.

B) Indicate the number of promotion or merit awards received by program faculty since the last program review.

All of the faculty that are presently teaching in the AET program are non tenured.

C) Summarize the professional activities of program faculty since inception or the last program review (attendance at professional meetings, poster or platform presentations, responsibilities in professional organizations, etc.).

- WebCT Training
- Faculty Center for Learning and Teaching

Many other activities are too many to list because of the large number of faculty that teach in the program from other departments. Please see their resume in ABET part 1 of the self study.

2) Workload

A) What is the normal, annualized teaching load in the program or Department? Indicate the basis of what determines a "normal" load. On a semester-by-semester basis, how many faculty have accepted an overload assignment?

Load is determined by contractual agreement. Since most of the program is taught be either general educations faculty and faculty within the COT it is hard to say which program causes the overload. The load is distributed over many program faculty. In many cases the program fills seats in the program areas that have lost enrollment. This is very cost effective because they do not run separate class for the AET students.

B) List the activities for which faculty receive release time.

No faculty in the AET program receive release time. The Automotive Department chair is allowed release time to fulfill the duties of the position. Over the past five years, the department chair had 75% release time. Last year the department chair received 100% release time.

3) Recruitment

A) What is the normal recruiting process for new faculty?

We have not hired a faculty for the AET program.

B) What qualifications (academic and experiential) are typically required for new faculty?

The preferred academic requirement is a Master of Science Degree. Minimum of a Bachelor of Science degree with the stipulation that a Master of Science degree must be earned within two years of starting at Ferris. The experiential requirements involve a minimum of five years experience with approximately two years teaching experience, minimum. Almost all of our faculty have secondary teacher education degrees. This means that they only have a two-year associate degree in technical course work. This is why the program uses so many of the engineering faculty from the other programs. The next faculty hired should have a degree in engineering.

Automotive Engineering Technology

APRC 2006-2007

section 3 of 3

C) What are the program's diversity goals for both gender and race/ethnicity in the faculty?

The FSU COT is rated as 4th best in the United States with race and gender. This illustrates the college's commitment to the professional development and advancement of personnel from non-traditional gender and racial/ethnic groups.

D) Describe and assess the efforts being made to attain goals in (c).

The Department adheres to all University policy and State and Federal Laws regarding non-discrimination and equal opportunity in employment.

4) Orientation. Describe and assess the orientation process for new faculty.

New faculty participates in "New Faculty Training" provided by The Faculty Center for Teaching and Learning. Within the department there hasn't been a need for a formal orientation program as new faculty is updated and informed on a "need to know" basis. The department chair, senior faculty, and clerical staff are available to answer questions and lend guidance as individual needs arise. In short, we throw new faculty to the wolves. It's a wonderful sport!

5) Reward Structure: e.g., salary, professional development funds, travel funds, UCEL and FSUGR incentive money.

A) Describe the reward structure in the program/department/college as it relates to program faculty. Indicate the type of reward and eligibility criteria.

There are no reward structures in the COT other than the contract promotion cycle.

B) Does the existing salary structure have an impact on the program's ability to recruit and retain quality faculty?

With FSU Automotive salaries below the level of public school teachers, it is difficult to recruit new faculty with an educational background and automotive experience. It will be next to impossible to recruit anyone with Engineering training and experience for the AET program.

C) Is the reward structure currently in place adequate to support faculty productivity in teaching, research, and service? If not, what recommendations would you make to correct the situation.

The AET program has no unique S&E account and must share funding

with the Auto Service program. "Timme Grants" have been utilized by faculty to fund special projects and travel. Professional Development Incentive (PDI) moneys provide faculty with funds to be used toward enhancing instructional initiatives and program goals. S&E dollars are used for professional development opportunities such as seminars, travel funds, and conferences.

D) Is enhancing diversity and inclusion a component of the reward structure? Please explain.

Enhancing diversity is not included in the reward structure within the program or department. The Department adheres to all University policy and State and Federal Laws regarding non-discrimination and equal opportunity in employment

6) Graduate Instruction (if applicable)

There is currently no course of study, at the graduate level, in AET.

7) Non-Tenure-Track and Adjunct Faculty.

There are no full-time, non-tenure track or adjunct faculty teaching in the AET program. As of Spring 2007, there will be no faculty, within this classification, teaching in the entire Automotive program.

Section 3 - I. Service to non-majors

1) Identify and describe the General Education service courses provided by the program faculty for other departments at FSU.

Non-existent.

2) Identify and describe any non-General Education service courses or courses required for other programs. Comment on your interaction with the departments or programs for which the courses are provided.

Automotive Service Technology courses can be taken by students enrolled in the technical Writing degree for an Automotive emphasis.

3) Discuss the impact of the provision of General Education and non-General Education courses has on the program.

We know of no students who have chosen the Automotive emphasis for Technical Writing.

4) **Does the program plan to increase, decrease, or keep constant its level of service courses? Explain.**

Not currently.

Section 3 - J. Degree program cost and productivity data

The cost per student is $13,568.22 as of 2002-2003

Section 3 - K. Assessment and Evaluation

1) **List and describe what variables are tracked and why, when assessing the effectiveness of the program (e.g. mastery of essentials of subject area, graduation rates, employment rates, pass rates on professional exams).**

The following variables are tracked to assess the effectiveness of the program:

Before advancing to the second half of the Automotive Engineering Technology program, students are assessed and are required to have a minimum of a 2.75 (B+) in each of their first two years of Automotive classes and an overall GPA of 2.5 The minimum grade point requirement is a useful gauge in determining the likelihood of student success in the Automotive Engineering Technology program.

Graduate employment rates are tracked through Institutional Research and Testing (IRT). Data is compiled by IRT through the Graduate Follow-Up Survey. The data collected is then assessed to determine the program's effectiveness at providing employers with quality entry level employees.

Graduation rates are tracked through Institutional Research and Testing (IRT). This information is used to compare graduation rates of Ferris' Automotive Engineering Technology students with graduation rates of students from other institutions offering similar programs.

2) Provide trend data for the variables listed in (1). Compare the data to accreditation benchmark standards if applicable, or provide some other type of assessment of the data.

Assessment of data regarding the variables listed in (1) is stated below:

•According to the data provided by Institutional Research and Testing (IRT), the employment rate for graduates from the Automotive Engineering Technology program is at 98%. *(Data provided by 2003-2004 Graduate Follow-Up Survey from IRT)*

The graduation rate for students in the Automotive Engineering Technology program is 98% completion after 2 years for those students that started the program in fall 2001, and 98% completion after 5 years for those students that started the program in fall 2002. *(Data provided by Institutional Research and Testing Official 7"` Day Counts pg. 7)*

To compare, Michigan institutions offering 4 year degrees average a 55% graduation rate after the student has attended for 5 years. *(Data provided by Michigan Lt. Governor's Commission on Higher Education and Economic Growth)*

In addition, the national average for institutions offering 4 year degrees is a 54% graduation rate after attending for 6 years. . *(Data provided by Michigan Lt. Governor's Commission on Higher Education and Economic Growth)*

3) Describe how the trend data in (2) is used to assess the rigor, breadth, and currency of the degree requirements and curriculum.

Examples of how the data in (2) is used to assess the rigor, breadth, and currency of degree requirements and curriculum are stated below:

The 98% employment rate as reported by Institutional Research and Testing speaks well of the program's ability to provide quality employees to industry. This trend is an indicator of rigorous and current curriculum, and appropriately associated degree requirements. Because of the Automotive Engineering Technology program's reputation for quality programs and qualified graduates, employers actively seek Ferris State University graduates to hire.

The higher than average graduation rate is an indicator of the program's ability to attract and retain quality students. When comparing post secondary opportunities, high school students are attracted to Ferris State University because of employment potential as described previously. This

allows the university to impose minimum entry requirements, resulting in a more prepared student body.

The Automotive Engineering Technology program is in the process of becoming ABET accredited; attesting to the quality, rigor, currency, and completeness of the program. To maintain ABET accreditation, the program must complete a review process every 5 years to ensure the program's adherence to rational standards.

4) Describe how the trend data in (2) is used to assess the extent to which program goals are being met.

Trend data previously described demonstrates the extent to which program goals are being met, examples are noted below:

Goal # I - Trend data shows a correlation with providing students necessary skills and knowledge to perform professional engineering duties in the automotive industry.

Goal #5 - Trend data shows a correlation with providing students with flexible options in both education, such as emphasis areas, and extracurricular activities, such as SAE, that increase their opportunities to successfully compete in the job market.

Goal #8 -Trend data shows a correlation with providing the transportation industry with qualified entry level engineering personnel.

Goal #12 - Trend data shows a correlation with university recognition and enthusiastic industry support.

Goal #13 - Trend data shows a correlation with university visibility in regards to recruiting and Curriculum offerings.

Section 3 - L. Administration Effectiveness

1) Discuss the adequacy of administrative and clerical support for the program.

The department consists of the following programs:

Automotive Service Technology
Automotive and Heavy Equipment Management
Automotive Engineering Technology

The department has 18 tenure/tenure track faculty members, and 6 adjunct faculty members. Because of enrollment trends in the Auto service program 5 adjuncts were laid off fall 2006. The AET program has no faculty assigned to it.

In addition, there is one secretary and one account clerk for the department. The secretary's duties are split between all the programs, providing clerical and accounting support for 18 faculty members and the department chair.

The account clerk is responsible for operations pertaining to the service floor operation, dealing with parts inventory, customer collections, and part-time student employment scheduling and payroll.

One equipment repair technician serves the department.

To provide comparison, the chart below illustrates the responsibilities of department chairs and clerical staff for other departments within the College of Technology.

DEPARTMENT	CHAIRS	CLERICAL	FACULTY	PROGRAMS
Architectural	1	1/2	5	2
Automotive	**1**	**2**	**18**	**3**
Construction	1	1	11	3
Electrical/Electronics	1	1/2	7	3
HVACR	1	1	14	2
Heavy Equipment	1	1	4	2
Manufacturing Technology	1	1/2	16	3
Mechanical Design	1	1/2	12	4
Plastics and Rubber	1	1	7	4
Printing	1	1/2	7	3
Surveying Engineering	1	1/2	5	2
Welding	1	1/2	5	2

2) Are the program and/or department run in an efficient manner? Please explain.

Program requirements are constantly being evaluated by the department chair, with feedback from faculty. Every attempt is made to maximize resources and make the department work more efficiently.

As noted in the chart above, Automotive Technology is the largest department in the College of Technology with no additional clerical or administrative staffing. With the enrollment trend the limited number of support staff has to be addressed.

3) Are class and teaching schedules effectively and efficiently Prepared? Please comment.

All schedules are set by the Department chair to follow the students check sheet so they can graduate on time. The rooms are set by the lab class and the faculty schedules are set last based on their course ability.

4) Are students able to take the courses they need in a timely manner? Please comment.

Yes, classes are scheduled to allow students the opportunity to take the courses in sequence, with additional time in the schedule for general education courses. There is also a winter start to the program as well. For those students wanting to go year around, the last semester, senior year, is offered in the summer, so students can leave campus in December, only needing the internship to graduate.

Section 4
Facilities and equipment

Section 4 - A. Instructional environment

1) Are current classrooms, labs, and technology (both on-campus and at off-site locations) adequate? Explain.

Comments are based on a survey sent to faculty and the tabulated responses are included in the appendix.

Classrooms are considered to be acceptable for instruction by three out of eight faculty and below expectations by three out of eight faculty. The adequacy and availability of instructional equipment was rated as below expectations by three out of eight faculty and adequate by two out of eight faculty. Two of the classrooms were recently updated through the improvement initiative of the Presidents Office.

2) How does the condition of current facilities impact program delivery? Explain.

Classroom equipment varies considerably from one classroom to the next. Some classrooms are equipped with built-in projection units, two automotive classrooms are equipped with document cameras. There is also portable projection equipment available for use in rooms without permanently mounted equipment. Overall, the availability of instructional equipment is very good.

Labs that are dedicated for a particular subject matter are reasonably well equipped and set up. One of the classrooms was created out of a storage room and is too small for a full lecture class.

3) Describe the program's projected needs with respect to instructional facilities.

The Automotive program has had double digit increases in student numbers. This has caused certain courses within the program to be overfilled. The service floor is a good example of this over capacity issue.

The facility is currently being used to its capacity and in some areas has exceeded its capacity. The Automotive Service program was granted temporary use of the storage facility adjacent to the physical plant. This is now being used for lab space by the Ford ASSET students. This helped to increase the size of the service floor by approximately 25%. This expansion coupled with changes in the requirements for a Baccalaureate degree will reduce the numbers on the service floor in the future. Future plans include increasing the level and availability of technology used by AET students in labs and replacing equipment hat is out dated with state of the industry equipment.

4) Describe current plans for facilities improvements and indicate their status.

Closure of the Auto Body program will allow expansion of the AET program into those facilities adding lab and classroom space. We are also contemplating the creation of a dedicated lab for AET Capstone projects and for the Mini-baja and Formula One teams.

5) Describe how proposed changes or improvements to facilities would enhance program delivery.

ABET accreditation will require that our seniors parfticipate in a Senior project/capstone project. Currently this is accomplished during their Internship. Having a dedicated lab would allow us to offer the opportunity for completion in house, with the added support of Faculty and Staff.

Section 4 - B. Computer Access and Availability

1) Outside of computers in faculty and staff offices, identify the computing resources (hardware and software) that are allocated to the program.

Computer hardware available for automotive student use in the computer lab consists of 15 computers, 1 scanner and 1 printer. The lab is in constant use, but, 1 or 2 computers are usually available at any given time. Laptop computers are available at the service counter for students to sign out. There are 24 laptops available for student use which were replaced in December of 2005. The laptops are able to use the internet through the wireless network available in the automotive building which was the first wireless building on campus.

2) Discuss how these resources are used.

The software, programs and on-line resources that students access using the computer lab and laptops are numerous. Automotive students are able to use hundreds of CDs of training, on-line training programs, and factory vehicle service information. Alldata is a program students can use that makes service information available on vehicles of all makes from 1982 to today. Desktop Dynamometer and Desktop Drag Strip are two programs which allow students to change design features of the vehicle or engine and test them to see the effects of their design changes. Desktop Dynamometer is an especially useful program for students to learn how changing conditions affect engine efficiency before using the real engine dynamometer and its management software in engine performance class. While using the engine dynamometer students can use software to plot torque and horsepower curves for the engine as they make changes to parameters such as air fuel mixture and engine temperature. Flow com airflow calculation software is used by students studying the effects of design on airflow through components, this software records and plots airflow

as students prove their experiments on the airflow bench. CODA engine analyzer software is available so that students may use the laptops to aid in diagnosing vehicle problems. Auto Enginuity is a laptop based scan tool software also used by students in the Automotive and AET Programs. The computers are also outfitted with software students can use for all types of projects, these include: Microsoft office suite, Java and Adobe products.

3) Discuss the adequacy of these resources and identify needed additional resources.Does an acquisition plan to address these needs currently exist? Describe the plan. Has it been included in the department or college's planning documents?

The availability of computer hardware for student use is currently adequate; increases in future enrollment may strain resources. Computer software that is currently out of date and needs to be replaced is Desktop Dynamometer, Desktop Drag Strip, and the engine management software for the engine dynamometer. The hardware of the engine dynamometer is in need of replacement, it is currently run by an outdated DOS-based program that is no longer supported. Software will need to be purchased to accompany the hardware and the equipment of a much needed new chassis dynamometer.

4) Discuss the efficacy of online services (including WebCT) available to the program.

The AET Program was approved for a new faculty member position for this year. The AET Program does not currently have an operating budget, though may be eligible to apply for one-time monies available through the University based on program needs. An operating budget for the AET Program would increase the resources available to meet the instructional needs of students. The need for additional resources will be based on program success, enrollment and areas for improvement highlighted by the program evaluation.

5) Discuss the adequacy of computer support, including the support for on-line instruction if applicable.

Online services are a beneficial boost to instruction and a versatile way to give assignments, exams and for students to access the University. The Ferris State University website and campus pipeline are valuable resources for students to schedule classes, access university services, and contact instructors. WebCT and manufacturer online services are widely utilized in the instruction of AET students.

WebCT is one of the most versatile tools for student instruction available today, in addition to testing and homework assignments it can be used to communicate with the students in a particular class or section. Testing and homework submissions on WebCT are graded and points added to by the

program allowing students instant feedback on their progress, features are also included which allow instructors to see the graphs and statistics on test questions to identify potential problem questions or weak areas. WebCT has also been a valuable tool for administering surveys to gauge student satisfaction with the program and individual course.

6) **Discuss the adequacy of computer support, including the support for on-line instruction if applicable.**

Students can get computer support from the student assistants who staff the computer labs and from SATS (Student and Administrative Technology Support) in the West Building. The University provides a complete range of computer support services, for Faculty and Staff, through the Technology Assistance Center. The Technology Assistance Center is available by phone, email and in person by visiting their office in Flite.

Section 4 - C. Other Instructional Technology

1) **Identify other types of instructional technology resources that are allocated or available to the program.**

Technical data for several Original Equipment Manufacturers (OEM) such as DaimlerChrysler, Ford, and General Motors are available via manual, CDROM/DVD, and web based databases. Likewise, one aftermarket data source, ALLDATA is available through the Automotive Center and through FLITE.

2) **Discuss how these resources are used.**

These sources provide the students an opportunity to learn research techniques for data acquisition.

3) **Discuss the adequacy of these resources and identify needed additional resources.**

Very adequate.

4) **Does an acquisition plan to address these needs currently exist?**

N/A

5) **Describe the plan. Has it been included in the department or college's planning documents?**

N/A

6) Discuss the impact of adequacy of other types of instructional technology resources and support of these resources on the program.

FSU Automotive has an abundance of vehicles for instructional purposes provided by several Manufacturers. Support by the Corporations has been outstanding and we anticipate that this will continue well into the future.

Section 4 - D. Library Resources

1) Discuss the adequacy of the print and electronic and other resources available through FLITE for the program.

The Ferris Library for Information, Technology and Education is a multifaceted, complex organization designed to serve the needs of the students of Ferris State University, the faculty and staff and the community at large. We provide access through various channels to information necessary to the success of our students, staff and faculty.

2) Discuss the service and instruction availability provided by the Library faculty and staff with respect to the needs of the program.

The library has a budget that is divided among the 120 or so programs that are offered at Ferris. Books, periodicals and electronic databases are purchased both for specific programs and for the student body at large. Over the last couple of years, the Automotive Department, including the Automotive Engineering Technology Program has had a book budget of some $6,000.00. We have purchased as many books and periodicals as we can afford, along with a number of specific databases. For the College of Technology, the *Applied Science and Technology Abstracts* database most specifically provides access to periodical literature on the automobile/service industry. We also provide links to online automotive resources through our Library homepage. We continue to look for resources that will be of use to our students and faculty.

3) Discuss the impact of the budget allocation provided by FLITE to your program. Is the budget allocation adequate? Explain.

All told, the library provides access to almost 13,000 journals, magazines and other periodicals in various formats. We also have purchased or have database access to almost 40 journals dealing specifically with automotive engineering technology. Some of the databases we provide our students include the *Applied Science and Technology Abstracts Index* (some full-text); *Wilson SelectPlus* (full-text); *InfoTracOne* (full-text) and other general use databases.

For those articles or books to which we do not have direct access (bound periodicals, microfiche/microfilm, electronic full-text, etc.) we provide interlibrary loan service at no charge to our students and faculty. With the improvement in

technology, these articles are usually available within two days of request and often within 24 hours..

A new service that is being funded by the State of Michigan is the new MelCat database made up of participating Michigan libraries online public access catalogs. Eventually every library in Michigan will participate, but currently, there are 51 libraries participating, including Michigan State University, Wayne State University, Central Michigan University and many others. A patron may conduct their own interlibrary loan transaction through the MelCat database, and the book they request will be sent to their home library. If a Ferris student finds a book at another library, after the interlibrary loan request, the book will be sent to Ferris' library and the student will be contacted to come to the Check out Desk and pick it up. The URL for MelCat is: http://elibrary.mel.org/

The library also provides access to a number of specialized computer programs for College of Technology students. These include AutoCad 2004 and Mechanical Desktop 2004 power pack. These computers are located on the 2nd floor of FLITE. We have also added a small number of Apple Computers for those patrons who wish to use graphic intensive programs. All of the computers in the library provide access to Microsoft Office Suite to assist students in writing papers and preparing presentations

Section 5
Conclusions

Conclusions based on data analysis derived from Sections 2-4 and on the collective wisdom and judgment of the PRP. In arriving at these conclusions, the PRP should summarize the relationship of the program to each of following specific categories and any other categories it deems appropriate:

Section 5 – A. Relationship to FSU Mission

The AET Program has a fifteen program goals that align with the mission of the University and are more specific to the program and the needs of the students and industry. The mission statement refers to career-oriented, technological and professional education as the focus areas of the University. The AET Program at Ferris State University is a combination of these three focus areas creating a degree with graduates that are in demand in industry. The students begin with career-oriented and technological education as they attain the skills of an automobile technician in the first two years of the degree. AET Students in the second half of the program continue their technological education and add the elements of their education that will enhance their professional career, for example the quality certification. The program exemplifies the mission statement through the offerings to the student and our graduates' success in business and industry. The most recent example of the national leadership of the program was in September (06), The National Product Quality Manager of one of the top three auto manufacturers in the world made a special visit to Ferris to meet with a representative of the AET Program to discuss many opportunities in the company that Ferris AET graduates would be in demand to fill.

Section 5 – B. Program Visibility and Distinctiveness

The program is visible through our graduates and interns in auto related industries all over the world, student organization activities, and through information readily found on the internet. Although the program has only been in place for five years, when visiting major automotive related industries it is not uncommon to encounter many Ferris AET graduates working in the labs and testing facilities. Ferris graduates are employed in industry leaders such as Ford, Toyota, Nissan, General Motors, Detroit Diesel and AutoLIV, just to name a few. The program visibility is heightened by student projects like the SAE Formula and Baja vehicles. In the SAE formula and Baja projects students work together with Mechanical Engineering students to design and build vehicles for competition. The students must build vehicles that will meet the SAE safety standards and perform under varying conditions. The vehicles created by the students will be used to compete against the vehicles built by students at SAE Chapters at other schools.

The Ferris State University AET Program is among the findings on the first page of any Google search of automotive engineering technology programs. The AET Program has a website liked with the website for Ferris that provides students with complete, easy to navigate information on the school and the program, as well as applications for admission.

The Ferris State University Automotive Engineering Technology Program is clearly set apart from other programs by the technical experiences and emphasis area options

available to students. No other program combines the hands-on technical competence in automotive technology with the higher order thinking skills of engineering technology. The students are required to use their skills in a real world application before graduation. The students will work on the service floor at Ferris as a technician or do an internship in an independent repair facility or dealership to utilize his/her automotive skills in a real world environment. Many schools offer automotive classes, but, the true value of such classes is often not realized by the student until the keys of a malfunctioning customer vehicle are placed in his/her hands and it becomes their responsibility. Time and time again employers have sited the excellent technical competence of Ferris AET graduates as an employability trait that has made them prefer the hiring Ferris Graduates over the graduates of other schools offering Engineering Technology Degrees. Students in the AET Program also must do an internship in an auto related industry as part of their study. Students often intern at labs or testing facilities that make use of the practical aspects of both the automotive and engineering technologies included in the degree. The emphasis areas offer students an opportunity to study their area of greatest interest more in depth while increasing their knowledge in an area that will be valuable to their skill set and future employer. The combination of technical excellence and valuable areas of emphasis has placed the Ferris State University AET Program in the forefront of Automotive Engineering Technology and places AET graduates in high demand.

Section 5 – C. Program Value

Program visibility and distinctiveness: There are only two Automotive Engineering Technology programs; Mankato State and Ferris State University. Mankato is the only Automotive Engineering Technology program in the United States that is ABET accredited. Ferris State University's Automotive Engineering Technology program has applied for ABET accreditation. This process is going on at the same time as the academic program review process.

Section 5 – D. Enrollment

In six years the program has grown from 0 to 118. The last two graduating classes have been around 25 plus with 50% from out of state, it is truly a natural leader. This the first year of the 0-4 entry point, 17 are freshman and the other 25 student increase are all transfers. We expect an additional 20-30 freshman next year for an increase to 140 students in the program. This enrollment growth has had no recruiting what so ever. This program seems to have unlimited enrollment capabilities. In 2005 the AET program is already larger the 5 of the 12 departments in the College of Technology. In 2007 fall the AET program at 140 will be as large as or larger than 8-12 departments. Please see attachment (1) College of Technology Enrollment.

Automotive Engineering Technology enrollment chart

2001	2002	2003	2004	2005	2006
37	50-60	62	74	78	118

Section 5 – E. Characteristics, Quality, and Employability of Students

The value; characteristics; quality of the program can be seen in both the large amount of transfer students; 34 out-of- state transfers, along with 12 in-state transfers from community colleges for a total of 46 transfers students out of 78. With the next 2 year cycle one can see the large amount of freshmen and sophomores coming to Ferris State University for a 0-4 program; attachment (2). Also, please see attached job titles and company positions in the last two years alone; attachment (3).

Section 5 – F. Quality of Curriculum and Instruction

Adequacy of the facilities and the equipment, the junior level classes Auto 310 and Auto 320 have very good labs the senior year labs need some equipment some of which will have to be purchases by the university for Auto 450, Auto 460, and Auto 480. The fuels and lubes labs need some equipment, some of which will have to be purchased. The program was started without any supply & expense budget and has run for five years with no source of funding. No specific faculty has been hired for this program.

Section 5 – G. Composition and Quality of the Faculty

The composition and the quality of the faculty can be seen in the ABET accreditation Part 1 self study book which lists all the faculties resumes that teach in the program. As can be seen most of the engineering faculty come from the manufacturing, material science and product design areas. As a result the majority of the classes in the Automotive Engineering Technology program are taught by faculty other than automotive.

ATTACHMENT 1

College of Technology
Enrollment

	Fall 2000	Fall 2001	Fall 2002	Fall 2003	Fall 2004	Fall 2005	Fall 2006	Difference 2000-2006 +/-
AUTO	301	314	349	408	418	413	391	90
CONM	250	241	261	279	286	306	334	84
MECH/DES	170	200	219	237	218	206	181	11
HVAC	134	124	127	120	122	112	174	40
EET	161	165	143	180	157	164	147	(14)
ARC/FMAN	103	111	97	93	94	112	144	41
WELD	125	116	103	129	137	138	128	3
PLTT	277	251	205	183	153	139	124	(153)
SURE	97	93	107	95	105	129	111	14
MFGT/E	110	100	92	90	84	90	87	(23)
PRINT	111	118	104	98	93	99	84	(27)
HEQT	107	109	95	82	76	78	77	(30)
TOTALS	1,946	1,942	1,902	1,994	1,943	1,986	1,982	36

ATTACHMENT 2

COLLEGE OF TECHNOLOGY
AUTOMOTIVE ENGINEERING TECHNOLOGY
Fall 2004 / Winter 2005

School	State	Last name	First name	College		Program
Linn Benton CC	OR	HITT,	CHRISTOPHER	TEC	SR	AET
OR Count	1					
Brookhaven College, Dallas County CC	TX	SOLENSKE,	[illegible]	TEC	SR	AET
TX Count	1					
Thomas Nelson CC, Christopher Newport Univ	VA	RICHARDS,	ANDREW	TEC	SR	AET
Germanna CC, Northern Virginia CC	VA	RITCHIE,	BRADLEY	TEC	JR	AET
Virginia Western CC, UTI, New River CC	VA	SHANKIN,	DYLAN	TEC	SR	AET
VA Count	3					
British Columbia Inst of Tech	BC	CHRZANOWSKI,	RAFAL	TEC	SR	AET
BC Count	1					
Vermont Technical College	VT	PROCTOR,	GABREL	TEC	SR	AET
VT Count	1					
British Columbia Inst of Tech	BC	JOSHI,	CHETAN	TEC	SR	AET
BC Count	1					
UTI, Milwaukee School of Engineering	WI	GAST,	ANDREW	TEC	SR	AET
WI Count	1					
British Columbia Inst of Tech	BC	YAHIA,	HAYDAR	TEC	SR	AET
BC Count	1					
Out of State	34					
Shasta College, UTI	CA	HILLIS,	JOSHUA	TEC	SR	AET
Delta College	MI	GROSSKOPF,	JAMES	TEC	JR	AET
Somerset CC, Pellissippi St Tech Comm College	TN	LABELLE,	LAWRENCE	TEC	JR	AUSV
Delta College	MI	MILLER,	LANCE	TEC	SR	AET
Grand Rapids CC	MI	MATTHYSSE,	JASON	TEC	SO	PAET
CA Count	2					
Black Hawk College E Campus	MI	POMPA,	RALPH	TEC	SR	AET
Lansing CC	MI	COSCARELLI,	ADAM	TEC	SO	AUSV
Black Hawk College Moline	MI	FEDEWA,	MATTHEW	TEC	SR	AET
Lansing CC	IA	VANWOLVELAERE,	RYAN	TEC	SO	AUSV
IA Count	2					
Macomb CC, UTI	MI	INGLIS,	KYLE	TEC	SR	AET
Oakton CC, UTI	IL	AKBAR,	SYED	TEC	SR	AET
Monroe County CC	MI	RUSSEAU,	JUSTIN	TEC	SR	AET
Triton College-Illinois, Monroe County CC	MI	SMITH,	WILLIAM	TEC	SR	AET
DeVry University Chicago, Muskegon CC	MI	SCHLICHTING,	MARC	TEC	SR	AET
UTI	IL	CONTRERAS,	ADRIAN	TEC	SR	PAET
Washtenaw CC, Eastern Oakton CC, UTI	IL	EDMONDS,	JOE	TEC	SR	AET
Mich Univ	MI	SIMONS,	DONALD	TEC	SR	AET
Houston CC, University of Washtenaw CC, Jackson CC	IL	FORD,	MATTHEW	TEC	SR	AET
Phoenix, UTI	MI	WOOD,	RYAN	TEC	SR	AET
UTI, William Rainey Harper College	IL	HUMMEL,	DANIEL	TEC	SR	AET
MI Count	13					
Sinclair CC, Ferris	MI	CROMER,	JASON	TEC	SR	AET
College of DuPage, UTI	IL	KHAN,	FAHIL	TEC	SR	AET
Schoolcraft College, Ferris	MI	SIMON,	JEFFERY	TEC	SR	AET
College of DuPage, UTI, Delta College	MI	VANDERPLOEG,	TIMOTHY	TEC	SR	AET
Northwestern Michigan College of DuPage, UTI	IL	NANCE,	MARC	TEC	JR	PAET
College of Dupage, UTI, Ferris	MI	MITCHELL,	MARK	TEC	SR	AET
Washtenaw CC, Ferris	MI	BRENE,	JONATHAN	TEC	SR	AUSV
College of DuPage, UTI	MI	KAMASI,	NICHOLAS	TEC	SR	AET
Ferris	MI	ANDREE,	JEFFREY	TEC	SR	AET
FE Count	10					
Vincennes University	MI	DEMETRIOU,	ATHANASIOS	TEC	SR	AET
Ferris	MI	BECKER,	ANDREW	TEC	SR	AET
FE Count	1					
Ferris	MI	BROUSSLOT,	BENJAMIN	TEC	SR	AHM
Ferris	MI	COLLIER,	CHRIS	TEC	SR	AET
FE Count	1					
Macomb CC, Ferris	MI	EAGER,	JASON	TEC	JR	AUSV
Massachusetts Bay CC	MA	FENELON,	MATTHEW	TEC	SR	AET
Ferris	MI	HOLDEN,	NATHANIEL	TEC	JR	AHM
MA Count	1					
Ferris	MI	KRAWCZAK,	JORAN	TEC	SR	AET
Guilford Technical CC, UTI	NC	DUNLAP,	MARK	TEC	SR	AET
Ferris	MI	LEECH,	JASON	TEC	SR	AET
Guilford Technical CC, UTI	NC	HARTSELL,	GRANT	TEC	SR	AET
Ferris	MI	NOWITZKE,	BRIAN	TEC	SR	AET
NC Count	2					
Ferris	MI	VANGILDER,	SCOTT	TEC	SR	AET
Columbia Greene CC	NY	BEYMAN,	RUSSELL	TEC	SR	AET
Ferris	MI	WESTENBERG,	TIMOTHY	TEC	SR	AET
UTI, New York Institute Technology, Adelphi Univ	NY	HARRISON,	JASON BRYAN	TEC	SR	AET AHM
Ferris State Univ Count	19					
NY Count	2					
Grand Count	66					
Stark State College of Tech	OH	CARR,	BRIAN	TEC	SR	AET
Ohio Business College	OH	FROST,	ANTHONY	TEC	SR	AET
OH Count	2					
Rogers State Univ, UTI	OK	LEE,	KENNY	TEC	SR	AET
OK Count	1					

COLLEGE OF TECHNOLOGY
AUTOMOTIVE ENGINEERING TECHNOLOGY
Fall 2005 / Winter 2006

School	State	Last name	First name	College		
Montgomery College Germantown	AL	NARAYANAN,	BHARADWAJ	TEC	JR	AET
AL Count	1					
British Columbia Inst of Tech	BC	ASANTE,	ROBERT	TEC	SR	AET
British Columbia Inst of Tech	BC	CHIU,	KELSEY	TEC	SR	AET
BC Count	2					
Somerset Community College, Pellissippe St Tech Comm College	CA	MILLER,	LANCE	TEC	SR	AET
CA Count	1					
Black Hawk College Moline, Misc Mich Colleges	IA	VANWOLVELAERE,	RYAN	TEC	JR	AUSV
IA Count	1					
College of DuPage, UTI, DeAnza College	IL	MIRZA,	RIZWAN	TEC	SR	AET
Oakton Community College, UTI	IL	AKBAR,	SYED	TEC	SR	AET
Shasta College, UTI	IL	HILLIS,	JOSHUA	TEC	SR	AET
Universal Technical Institute, Purdue University-W LaFayette	IL	DOESBURG,	ANDREW	TEC	SR	AET
Universal Technical Institute, Triton College - Illinois	Il	GRANIAS,	LUKE	TEC	SR	AET
IL Count	5					
Community College Baltimore, Carroll Community College	MD	GRZYMALA,	FRANK	TEC	JR	AET
MD Count	1					
Univ Minnesota,	MN	LEINBERGER,	JEFFREY	TEC	SR	AET
MN Count	1					
Guilford Technical Community College/Universal Technical Institute	NC	DUNLAP,	MARK	TEC	SR	AET
NC Count	1					
Brookdale Community	NJ	MARZAN,	GIANPATRICK	TEC	JR	AUSV
NJ Count	1					
Stark State College of Tech	OH	CARR,	BRIAN	TEC	SR	AET
OH Count	1					
Rogers State University, UTI	OK	LEE,	KENNY	TEC	SR	AET
OK Count	1					
Universal Technical Institute, Houston Community College, University of Phoenix	TX	FORD,	MATTHEW	TEC	SR	AET
UTI, Houghton College	TX	OH,	YUN	TEC	SR	AET
TX Count	2					
Virginia Western Community College, UTI, New River Community College	VA	SHANKIN,	DYLAN	TEC	SR	AET
VA Count	1					
Waukesha County Technical College	WI	MEYER,	MATTHEW	TEC	JR	AET

WI Count	1					
Out of State	**20**					
Brookdale Community, County College of Morris	MI	DEURLOO,	RACHEL	TEC	JR	AET
Delta College	MI	HOLSWORTH,	BRETT	TEC	JR	AET
Delta College	MI	LABELLE,	LAURENCE	TEC	JR	AET
Grand Rapids CC	MI	EDWARDS,	CHRISTOPHER	TEC	JR	AET
Grand Rapids CC	MI	MATTHYSSE,	JASON	TEC	SR	AET
Henry Ford CC	MI	STINSON,	STEVEN	TEC	SR	AET
Henry Ford CC	MI	TRAHEY,	KEVIN	TEC	JR	AET
Lansing CC	MI	COSCARELLI,	NEIL	TEC	SR	AET
Lansing CC	MI	FEDEWA,	MATTHEW	TEC	SR	AET
Monroe County CC	MI	RUSSEAU,	JUSTIN	TEC	SR	AET
Muskegon CC	MI	DODY,	LANCE	TEC	JR	AET
Western Wyoming CC	MI	BAILEY,	JAMES	TEC	SR	AET
MI Count	**12**					
Ferris State Univ	MI	ALBERTSON,	DALE	TEC	SR	WELE
Ferris State Univ	MI	ANTHONY,	RYAN	TEC	SR	AET
Ferris State Univ	MI	BALL,	JUSTIN	TEC	SR	AET
Ferris State Univ	MI	BARVELD,	JOSHUA	TEC	SO	AUSV
Ferris State Univ	MI	BOARTS,	JONATHAN	TEC	JR	AET
Ferris State Univ	MI	BORNHOFT,	DUSTIN	TEC	SR	AET
Ferris State Univ	MI	BOULTER,	DANIEL	TEC	SR	AET
Ferris State Univ	MI	BUCHINGER,	SETH	TEC	JR	AET
Ferris State Univ	MI	BURCHILL,	DANIEL	TEC	SR	AET
Ferris State Univ	MI	DENNEY,	BRIAN	TEC	JR	AET
Ferris State Univ	MI	HOLCOMB,	BENJAMIN	TEC	JR	AHM
Ferris State Univ	MI	HUGHES,	JAMES	TEC	JR	AET
Ferris State Univ	MI	HUGHES,	PATRICK	TEC	JR	AET
Ferris State Univ	MI	KRAWCZAK,	JORAN	TEC	SR	AET
Ferris State Univ	MI	LEECH,	JASON	TEC	SR	AET
Ferris State Univ	MI	LYNDRUP,	CASEY	TEC	JR	AET
Ferris State Univ	MI	MCKAY,	PAUL	TEC	JR	AET
Ferris State Univ	MI	MCKINNEY,	DANIEL	TEC	JR	AHM
Ferris State Univ	MI	METZ,	TODD	TEC	JR	AUSV
Ferris State Univ	MI	MORGAN,	RYAN	TEC	SR	AET
Ferris State Univ	MI	NORTHUP,	RYAN	TEC	SO	AUSV
Ferris State Univ	MI	NYEHOLT,	KYLE	TEC	SR	AET
Ferris State Univ	MI	PETACK,	JEFFREY	TEC	JR	AET
Ferris State Univ	MI	RYBICKI,	KYLE	TEC	JR	AUSV
Ferris State Univ	MI	THEMM,	JEREMY	TEC	JR	AET
Ferris State Univ	MI	WEGRZYNOWICZ,	KEVIN	TEC	JR	AHM
Ferris State Univ Count	**26**					
Ferris State Univ, Brookhaven College, Dallas County (23)	MI	SORENSEN,	BJERRE	TEC	SR	AET
Ferris State Univ, Black Hawk College	MI	GOULD,	ADAM	TEC	SO	AUSV
Ferris State Univ, Grand Rapids CC (3)	MI	SMITHWICK,	BRETT	TEC	SR	AET
Ferris State Univ, Hope College (24), West Shore CC (5)	MI	RIEMER,	RYAN	TEC	JR	AET

Ferris State Univ, International College (36), Grand Rapids CC (25)	MI	MISTRY,	AREEZ	TEC	SR	AET
Ferris State Univ, Lansing CC (39), Western Michigan Univ(70)	MI	SMITH,	AARON	TEC	SR	AHM
Ferris State Univ, Macomb CC (10)	MI	MCALONAN,	JASON	TEC	SR	PAET
Ferris State Univ, Mott CC (4)	MI	THEMM,	DUSTIN	TEC	SR	AET
Ferris State Univ, Mott CC (4)	MI	VANDERPLOEG,	TIMOTHY	TEC	SR	AET
Ferris State Univ, Oakland CC (-)	MI	KASLER,	CHAD	TEC	JR	AET
Ferris State Univ, Saddleback College (23)	MI	PRINCIPE,	FRANK	TEC	JR	AET
Ferris State Univ, Wastenaw CC (4)	MI	STEFANI,	ANTHONY	TEC	SO	AUSV
Ferris State Univ, Wayne County CC (3)	MI	CHARTIER,	TODD	TEC	SR	AHM
Ferris State Univ, West Shore CC (31)	MI	REENE,	JONATHAN	TEC	SR	AET
Ferris State Univ,Baker College Auburn Hills (19.97)	MI	SMITH,	DOUGLAS	TEC	SR	AHM
FSU and transfer MI Count	**15**					
Grand Count	**73**					

ATTACHMENT 3

Automotive Engineering Technology Student Job Titles
Assistant Regional Service Manager
Design Engineer
Dynamometer Technician
Electrical Test Technician
Engine Development
Engine Technician
Engineer
Engineering Assistant
Engineering Co-op
Engineering Intern
Engineering Technician
Engineering Test Tech
Entry level assistant to 997 Build Program
Failure Analysis Technician
Hi Performance Engine Designer / Builder
Intern
Lab Test Engineer
Land Rover Hotline operator
Management Associate
Management Trainee
Maximo Administrator
Off Road Vehicle Fabrication
Parts Technical Engineer
Prep Shop
Production, S.P.C.
Project Engineer
QA Inspector
Quality Measurements Technician
Repair Logistics Engineer (RLS)
Resident Product Engineering Intern
RLS Engineering
Service Support IT administrator
Service Development Assistant
Service Development Associate
Service Engineer
Service Manager
Service Writer/Manager
Tech
Tech Line Operator
Tech Support
Technical Communications Intern
Technical Service Intern
Technician
Technician Team Leader
Test Cell Technician

Test Technician
Turbo Kit Installer And R+D
Warranty Planning & Administration Intern

APPENDICES

Appendix 2 - A

Graduate Survey

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

AUTOMOTIVE ENGINEERING TECHNOLGY

July 3, 2006

Greetings,

Ferris State University conducts ongoing assessments of all academic programs based on a five year rotation. Now that our AET program has been operational for five years, we are conducting our first Academic Program Review.

To achieve the most comprehensive assessment possible, we are surveying all facets of the program. Attached is a copy of the Alumni Survey. The AET program will benefit greatly from your input. Each year we strive to improve the program for future students. There is no-one better qualified to provide input for improvement than our alumni. Your responses are very valuable!

We would like to thank you for your assistance. A postage paid return envelop has been included for your convenience.

Thanks, again!

The AET Program Review Committee

Matthew J. McNulty
Assistant Professor
Chair

FERRIS STATE UNIVERSITY

AUTOMOTIVE ENGINEERING TECHNOLOGY

Alumni Survey

1. What year did you graduate? _____
2. How many years did you attend Ferris? _____
3. Have you received an Associates degree in Automotive Service? _____
4. What University/College/School awarded your Associates? _____
5. Have you attained ASE certification? Yes No
6. How many areas? Automotive _____ Diesel /Truck _____
7. How would you rate the value of ASE certification to your current position?

   ☐ Essential ☐ Valuable ☐ Somewhat Valuable ☐ Not necessary
8. Do you have or are you required to have any other certifications/licenses?

   Yes No

   Issuing Body and Area:
9. On a scale of 1 to 5, how pertinent are your Auto Service classes to your current assignment? _____
10. On a scale of 1 to 5, how pertinent are your AET classes to your current assignment? _____
11. On a scale of 1 to 5, how pertinent are your emphasis area classes to your current assignment? _____
12. What Emphasis area did you study? Diesel Management Manufacturing
13. If you could, would you have selected a different emphasis area? Yes No

    Which? Diesel Management Manufacturing

    Why?

14. AET should have an emphasis area in: _____

15. Did FSU and the AET program prepare you to successfully compete in the job market? Yes No

Please explain:

16. Where are you currently working? _____

Address: _____

City/State: _____

Email: _____

17. How long have you been employed there? _____

18. What is your present position/job title? _____

19. What was your starting salary? $_____

20. What is your present salary? $_____

21. Was it difficult to find a job when you graduated? YES_____ NO_____

Please explain:

22. How effective was your course work in preparing you for work?

☐ Very Effective ☐ Effective ☐ Somewhat Effective ☐ In-effective

Should any changes be made?

23. How effective was your co-op experience in preparing you for work?

☐ Very Effective ☐ Effective ☐ Somewhat Effective ☐ In-effective

Should any changes be made?

24. Was the equipment used in your courses adequate to prepare you for your career? Yes No

Please make recommendations:

25. Are the computers you used and the computer skills you developed in the program useful on the job? Yes No

Please make recommendations:

26. Are you planning on attaining additional degrees?

Masters Yes No

PhD Yes No

27. Are you attending any courses to maintain, enhance, or expand your abilities?

Yes No

What type?

How often?

On behalf of the Department and it's future students who will benefit greatly from your input:

THANK YOU!

Appendix 2 - B

Employer Survey

FERRIS STATE UNIVERSITY
COLLEGE OF TECHNOLOGY

AUTOMOTIVE ENGINEERING TECHNOLGY

July 3, 2006

Greetings,

Ferris State University conducts ongoing assessments of all academic programs based on a five year rotation. Now that our AET program has been operational for five years, we are conducting our first Academic Program Review.

To achieve the most comprehensive assessment possible, we are surveying all facets of the program. Attached is a copy of the Employer Survey. The AET program will benefit greatly from your input.

We would like to thank you for your assistance. A postage paid return envelop has been included for your convenience.

Thanks, again!

The AET Program Review Committee

Matthew J. McNulty
Assistant Professor
Chair

Ferris State University Automotive Engineering Technology
Employer Survey of Graduates

Name of employer:_____
Supervisor: _____Title_____
Name of employee: _____
Employee job title: _____
Date employee was hired (month/year): _____

1. Employee attitudes and abilities.
   Please rate the following items that apply to your employee.
   Circle your response based on the expectations of an entry-level engineering technologist.

Low				High	
1	2	3	4	5	OVERALL TECHNICAL KNOWLEDGE Comments:
1	2	3	4	5	MECHANICAL SKILL LEVEL Comments:
1	2	3	4	5	TASK ORGANIZATIONAL PRACTICES Comments:
1	2	3	4	5	LEADERSHIP QUALITIES Comments:
1	2	3	4	5	LEVEL OF CONFIDENCE TO COMPLETE TASKS Comments:
1	2	3	4	5	INTEREST IN DEVELOPING TECHNICAL KNOWLEDGE Comments
1	2	3	4	5	VERBAL COMMUNICATION SKILL LEVEL Comments:
1	2	3	4	5	WRITTEN COMMUNICATION SKILL LEVEL Comments:
1	2	3	4	5	EXERCISES SAFE WORK PRACTICES Comments:

JUDGMENT

_____ Exceptionally mature
_____ Works well with others
_____ Works with others satisfactorily
_____ Experiences some difficulty working with others
_____ Works poorly with others

Comments: _____

ABILITY TO LEARN

_____ Learns very quickly
_____ Learns readily
_____ Average in learning
_____ Rather slow to learn
_____ Very slow to learn

Comments:_____

ABILITY AND WILLINGNESS TO ADJUST TO SUPERVISION

_____ Excellent
_____ Above average
_____ Average
_____ Below average
_____ Poor

Comments:_____

ATTENDANCE

_____ Outstanding
_____ Acceptable
_____ Irregular

Comments:_____

PUNCTUALITY

_____ Always early
_____ Arrives on time
_____ Barely arrives on time
_____ Sometimes tardy
_____ Regularly tardy

Comments:_____

ATTITUDE-APPLICATION TO WORK

_____ Outstanding in enthusiasm
_____ Very interested and industrious
_____ Average in diligence and interest
_____ Somewhat indifferent
_____ Definitely not interested

Comments:_____

DEPENDABILITY

_____ Completely dependable
_____ Above average in dependability
_____ Usually dependable
_____ Somewhat neglectful or careless
_____ Unreliable

Comments:_____

QUALITY OF WORK

_____ Excellent
_____ Above average
_____ Average
_____ Below average
_____ Poor

Comments:_____

PERSONAL APPEARANCE

_____ Excellent
_____ Above average
_____ Average
_____ Below average
_____ Poor

Comments:_____

CAPACITY TO HANDLE INTERRUPTIONS, ERRORS, ADDITIONAL ASSIGNMENTS, TELEPHONE CALLS, QUESTIONS FROM FELLOW EMPLOYEES, AND AT THE SAME TIME MAINTAIN THE PACE OF REGULAR WORK ACTIVITIES:

_____ Excellent
_____ Above average
_____ Average
_____ Below average
_____ Poor

Comments:_____

YOUR OPINION OF THE FUTURE SUCCESS OF THIS PERSON IN THE INDUSTRY:

_____ Excellent
_____ Above average
_____ Average
_____ Below average
_____ Poor

Comments:_____

What strong characteristics does this person possess?

_____
_____
_____

What weak characteristics do you feel may hinder this person's future success?

_____
_____
_____

Based on your experience with this person would you be favorably inclined to employ more Ferris AET grads?

_____
_____
_____
_____

What are your overall impressions of the AET program?

_____
_____
_____

What are the strengths of the program?

_____
_____
_____

What are the weaknesses of the program?

_____
_____
_____

How could the program be improved?

_____
_____
_____

THANK YOU VERY MUCH FOR TAKING THE TIME TO COMPLETE THIS SURVEY AND ASSISTING FSU TO IMPROVE THE QUALITY OF THE AET PROGRAM.

Appendix 2 - C

Senior Survey

FERRIS STATE UNIVERSITY

AUTOMOTIVE ENGINEERING TECHNOLOGY

Senior Survey

SD –Strongly Disagree A – Agree SA – Strongly Agree

Faculty	SD			A	SA
The overall quality of classroom instruction was excellent.	1	2	3	4	5
My Instructors' demeanor is kind, courteous, and helpful.	1	2	3	4	5
The Instructors overall mastery of subject matter was appropriate.	1	2	3	4	5
The AET Instructors are regularly available for assistance.	1	2	3	4	5
The Instructors exhibited professionalism in and out of class.	1	2	3	4	5

Advising	SD			A	SA
My advisor is knowledgeable about the General Ed requirements.	1	2	3	4	5
My advisor is knowledgeable about the Emphasis area requirements.	1	2	3	4	5
My advisor kept me current with what I needed for graduation.	1	2	3	4	5
My advisor provided the information I needed to make decisions.	1	2	3	4	5
My advisor was able to refer me to other sources of information.	1	2	3	4	5

Curriculum	SD			A	SA
The quality of the material presented in classes is adequate.	1	2	3	4	5
The material was presented at an appropriate pace.	1	2	3	4	5
The instructional media utilized in class enhanced my learning.	1	2	3	4	5
The difficulty of material is appropriate for the level of the course.	1	2	3	4	5
The emphasis area courses are very relevant to my intended career.	1	2	3	4	5

Facilities & Equipment	SD			A	SA
The classroom conditions are conducive to learning.	1	2	3	4	5
The AET program has adequate facilities and equipment.	1	2	3	4	5
The equipment and tools are kept operational and well maintained.	1	2	3	4	5
The equipment is current with modern technology.	1	2	3	4	5
There is adequate availability of tools and equipment.	1	2	3	4	5

What three improvements, listed in order of importance, would you recommend for the AET program?

1. _____

2. _____

3. _____

Appendix 2 - D

Junior Survey

FERRIS STATE UNIVERSITY

AUTOMOTIVE ENGINEERING TECHNOLOGY

Junior Survey

SD –Strongly Disagree A – Agree SA – Strongly Agree

Faculty	SD			A	SA
The overall quality of classroom instruction was excellent.	1	2	3	4	5
My Instructors' demeanor is kind, courteous, and helpful.	1	2	3	4	5
The Instructors overall mastery of subject matter was appropriate.	1	2	3	4	5
The AET Instructors are regularly available for assistance.	1	2	3	4	5
The Instructors exhibited professionalism in and out of class.	1	2	3	4	5

Advising	SD			A	SA
My advisor is knowledgeable about the General Ed requirements.	1	2	3	4	5
My advisor is knowledgeable about the Emphasis area requirements.	1	2	3	4	5
My advisor kept me current with what I needed for graduation.	1	2	3	4	5
My advisor provided the information I needed to make decisions.	1	2	3	4	5
My advisor was able to refer me to other sources of information.	1	2	3	4	5

Curriculum	SD			A	SA
The quality of the material presented in classes is adequate.	1	2	3	4	5
The material was presented at an appropriate pace.	1	2	3	4	5
The instructional media utilized in class enhanced my learning.	1	2	3	4	5
The difficulty of material is appropriate for the level of the course.	1	2	3	4	5
The emphasis area courses are very relevant to my intended career.	1	2	3	4	5

Facilities & Equipment	SD			A	SA
The classroom conditions are conducive to learning.	1	2	3	4	5
The AET program has adequate facilities and equipment.	1	2	3	4	5
The equipment and tools are kept operational and well maintained.	1	2	3	4	5
The equipment is current with modern technology.	1	2	3	4	5
There is adequate availability of tools and equipment.	1	2	3	4	5

What three improvements, listed in order of importance, would you recommend for the AET program?

1. _____

2. _____

3. _____

Appendix 2 - E

Faculty Survey

FACULTY SURVEY OF AET PROGRAM
Faculty Surveyed 10 – Respondents 8

Faculty Perceptions of Occupational Education Programs PROE: Faculty Perception							
1=poor, 2=below expectations, 3=acceptable, 4=good, 5=excellent, ?=don't know	1	2	3	4	5	?	Comments
Goals and Objectives							
1. Participation in Development of College Occupational Education Program Plan				4		4	
2. Program Goals			2	4	2		
3. Course Objectives			3	3	2		
4. Competency Based Performance Objectives			3	5			
5. Use of Competency Based Performance Objectives			2	6			
6. Use of Information on Labor Market Needs			2	3	2	1	
7. Use of Information on Job Performance Requirements				5	1	2	
8. Use of Professional/Industry Standards				4	3	1	
9. Use of Student Follow-Up Information				3	2	3	
Processes							
10. Adaptation of Instruction			1	5	1	1	
11. Relevance of Supportive Courses			1	4	3		
12. Coordination with Other Community Agencies and Educational Programs			1	5	1	1	
13. Provision for Work Experience, Cooperative Education or Clinical Experience				2	5	1	
14. Program Availability and Accessibility				2	6		
15. Provision for the Disadvantaged			3		3	2	
16. Provision for the Handicapped		1	2		3	2	
17. Efforts to Achieve Sex Equity			3	2	2	2	
18. Provision for Program Advisement				2	5	1	
19. Provision for Career Planning and Guidance			1	2	5		
20. Adequacy of Career Planning and Guidance			1	2	4	1	
21. Provision for Employability Information			1	3	3	1	
22. Placement Effectiveness for Students in this Program			1	3	4		
23. Student Follow-up System			2	3	2	1	
24. Promotion of this Occupational Program	1		1	4	1		
Resources							
25. Provision for Leadership and Coordination			1	2	5		
26. Qualifications of Administrators and/or Supervisors			1	1	5		
27. Instructional Staffing				5	3		
28. Qualifications of Instructional Staff				5	3		
29. Professional Development Opportunities		1	4	2	1		
30. Use of Instructional Support Staff			1	5	1	1	
31. Use of Clerical Support Staff			1	6		1	
32. Adequacy and Availability of Instructional Equipment		3	2	1	1	1	

33. Maintenance and Safety of Instructional Equipment		1	3	2	1	1	
34. Adequacy of Instructional Facilities		3	3	1	1		
35. Scheduling of Instructional Facilities		2	3	2	1		
36. Adequacy and Availability of Materials and Supplies		1	4	2	1		
37. Adequacy and Availability of Learning Resources			4	2	2		
38. Use of Advisory Committees		1		6	1		
39. Adequacy of Current Operating Budget	3	4		1			
40. Budget Provisions in Capital Outlay Budget for Equipment	3	5					

Indicate in the appropriate column if you Agree or Disagree with the statements below.	A	D	?	Comments
41. Current, state of the industry, equipment is used in instruction.	2	5	1	In some cases yes, others no We need more current and state-of-the-art equipment
42. Adequate funds are in place for replacement of outdated equipment.		8		Funds appear to be lacking
43. A dedicated classroom would benefit the AET Program and increase its visibility.	5	2	1	We have dedicated labs I don't think we need a dedicated classroom If student numbers and load continues to increase
44. The potential for program growth would increase with an increase in resources.	5	1	2	My perception is yes, but, I can't prove it
45. The program resources are adequate to compete with similar programs at other schools.		6	2	We could certainly compete better with more resources

Appendix 2 - F

Advisory Committee Survey

FERRIS AUTOMOTIVE ENGINEERING TECHNOLOGY
FERRIS STATE UNIVERSITY

Program Review Panel

Advisory Committee Survey

Please indicate your degree of concurrence, using the following the scale, with the statements below:

Score	Level
1	Strongly disagree
2	Disagree
3	Neutral / No opinion
4	Agree
5	Strongly Agree

A. Curriculum

Score

1. The curriculum reflects the knowledge and skill sets required for entry level engineering technology positions.
2. The courses are current and relevent.
3. The curriculum is concentrated in appropriate subjects.
4. The curriculum is routinely reviewed and revised when needed.
5. Advisory committee input is an integral component of curriculum development.
6. The curriculum allows the student to select specialization.
7. The emphasis areas are indicative of industry trends and needs.
8. The Auto Service Technology curriculum is a crucial component of the AET curriculum.

9. AET graduates are well prepared for industry employment.

10. The Service Floor experience is a valuable component of the AET curriculum.

11. The Automotive Department should pursue ABET accredation.

12. The curriculum should expand into additional areas.

    A. Please identify:

Comments on Curriculum:

B. Outcomes

Score

1. The program outcomes are aligned with preparing the student for entry level engineering technology positions.

2. The program outcomes are current and relevent to the industry.

3. The outcomes are routinely reviewed and revised when needed.

4. The outcomes ensure the comprehensive development of the student: knowledge, abilities, work ethic, and communication skills.

5. The program outcomes encourage students to excel.

6. ASE Certification is required for employment.

7. ASE Certification should be required for graduation.

8. Select the ASE Certification Areas *most* important on the job:

9. Select the ASE Certification Areas *least* important on the job:

Comments on Outcomes:

C. Facilities

Score

1. The facilities are well organized and utilized.
2. The facility reflects the quality of the program.
3. The AET program should have designated classroom and labs.
4. Lab facilities are conducive to studies required by the AET curriculum.
5. Additional lab space is needed.
6. Enhancement of the facility would benefit enrollment.

Comments on Facilities:

D. Equipment

Score

1. Equipment is modern and reflects industry standards.

2. The equipment is adequate for instructional purposes.

3. Additional equipment is needed for specific classes.

A. Identify the course(s):

4. The program would greatly benefit from the acquisition of:

Comments on Equipment:

E. Graduates

Score

For this section, please use the following rubric:

Score	Level
1	Identified weakness
2	Developing competence
3	Competent
4	Surpasses expectations
5	Not observed / applicable

1. Technical knowledge .....

2. Mechanical skill level.....

3. Task organizational practices.....

4. Application of efficient work habits.....

5. Ability to learn new procedures.....

6. Cooperation and relationships with co-workers.....

7. Cooperation and relationships with supervisors.....

8. Demonstrates effective leadership qualities.....

9. Level of confidence to complete tasks.....

10. Ability to diagnose unanticipated problems.....

11. Ability to accurately perform repairs.....

12. Interest in developing technical knowledge.....

13. Verbal communication skill level.....

14. Written communication skill level.....

15. Ability to interact with customers.....

16. Exercises safe work practices.....

17. Appearance and neatness.....

18. Demonstrates ethical work practices.....

F. Role of the Advisory Committee

Score

For this section, please use the following rubric:

Score	Level
1	Strongly disagree
2	Disagree
3	Neutral / No opinion
4	Agree
5	Strongly Agree

1. The Advisory Committee performs a valuable function.

2. Input provided by the Advisory Committee is promply acted upon.

3. The Advisory Committee should meet more often.

4. How often?

5. More members are needed on the committee.

6. The Departments report to the Committee is comprehensive and informative.

G. Recommendations

Score

Any recommendations for the Program?

On behalf of the AET

Faculty, Staff, and Students:

THANK YOU!

for your time and dedication.

FERRIS AUTOMOTIVE ENGINEERING TECHNOLOGY
FERRIS STATE UNIVERSITY

Appendix 3 - A

2005-2006 AUTOMOTIVE DEPARTMENT STUDENT SCHOLARSHIPS

AUTOMOTIVE WOMEN'S ALLIANCE EDUCATION SCHOLARSHIP

This $2,500 annual scholarship is available to a woman going into the automotive industry.

Applicant must be a North American citizen with a minimum cumulative GPA of 3.00.

Applicant must be accepted or enrolled in a university or college.

Please see the following site for details:
www.automotivewomensalliance.com/Contributions/ScholarshipList.aspx

FORD MOTOR COMPANY

Eight $2,000 scholarships are available this year.

Four of these scholarships are dedicated to minorities and females.

Applicant must have attained junior-level status in an automotive program (60+ semester hours and in core-course sequence) to be eligible.

Applicant must be a full-time student.

Applicant must be U.S. citizen or legally permitted to work in United States.

Applicant must demonstrate those qualities necessary to make a significant contribution to the industry.

Applicant must have a minimum cumulative GPA of 3.00.

Academic performance and student involvement are considered in the selection process.

Minorities, females, handicapped, veterans and multi-lingual students are encouraged to apply.

General Motors Service Operations Automotive Technology Scholarship

Two $2000 scholarships are available each year.

Applicants must have attained a minimum of sophomore status and be enrolled full-time in any automotive department program.

Applicant must have a minimum cumulative GPA of 3.25.

Applicant must be a U.S. citizen.

Applicant should demonstrate enthusiasm, a positive attitude, strong leadership skills, the ability to work with a diverse population, and a passion for the automobile business.

Preference will be given to applicants that have taken and passed at least one ASE exam, worked at a GM dealership, or participated in a FSU/GM Externship.

Applicant must fill out a GM scholarship application.

GARY TRIMARCO AUTOMOTIVE SCHOLARSHIP

Two $1,500 scholarships are available each year for ALL AUTOMOTIVE Department Students.

The candidate must be accepted into an Automotive Department program (AAS or BS) and be a full time student.

Preference is given to applicants from Osceola, Mecosta, or Montcalm counties.

Financial need shall be a determining criterion.

Applicant must fill out a Trimarco Automotive scholarship application.

A faculty committee from the Automotive Department will review applicants and forward a pool of qualified candidates to Gary and Lynn Trimarco for a final decision.