

*Yavapai*  
COLLEGE

---



**AUTOMOTIVE TECHNOLOGY  
PROGRAM**

**Academic Program Review**

**2000-2001**

The Office of Instruction  
The Office of Institutional Planning,  
Research, and Assessment

# *Yavapai* COLLEGE

---

## **AUTOMOTIVE TECHNOLOGY PROGRAM**

**Academic Program Review**

**2000-2001**

**Committee Members:**

Eric Eikenberry  
Brent Bowen  
Rob Helgesen  
Mike Middleton  
Terry Ristig  
Marjorie Price

Robert O. Salmon, Executive Dean and Chief Academic Officer  
Barbara Wing, Dean of Instruction and Curriculum  
Dr. John W. Quinley, Director of Institutional Planning, Research, and Assessment

# TABLE OF CONTENTS

	Page
<b>I. Overview and Scope of this Review</b> .....	1
A. The Approach.....	1
B. The Committee.....	1
<b>II. Program Profile</b> .....	1
A. Automotive Program Mission and Purpose .....	1
B. Program Goals .....	1
C. Community Benefits .....	2
D. Centrality to College Mission.....	2
E. Program Content .....	3
F. Course Outlines and Syllabi.....	3
G. Facilities and Equipment.....	4
H. The Budget.....	5
I. Program Faculty and Staff .....	6
J. New Outcomes and Programs.....	7
K. Partnerships.....	8
L. Additional Findings from the Review Committee.....	9
<b>III. The Students</b> .....	10
A. Enrollment.....	10
B. Former Students and Graduates.....	11
C. Class and FTSE.....	12
D. Employers of Former Students and Graduates .....	13
<b>IV. Job Forecasts, Trends, and Training Requirements</b> .....	13
A. Jobs and Skills.....	13
B. Job Forecast – Nationwide.....	14
C. Job Forecast – State and Local.....	14
D. Job Training .....	16
E. Trends .....	16
<b>V. Recommendations</b> .....	17

# **Automotive Technology Program Academic Program Review**

## **I. Overview and Scope of this Review**

### **A. The Approach**

This review was initiated in the spring semester of 2001. Automotive employers and student completers of the program responded to surveys for this review. The program budget, full-time student equivalent numbers, headcount, course information, and other statistics were gathered and evaluated by the Office of Institutional Research. In addition, selected automotive employers were interviewed extensively to determine the degree to which the competencies taught in the Automotive Program match the skills required by automotive technicians in the industry.

### **B. The Committee**

A committee consisting of the program's full-time faculty and staff, a full-time communications instructor, and the technology computer lab manager submitted historical data in May of 2001. That information has been incorporated into this document.

## **II. Program Profile**

### **A. Automotive Technology Program Mission and Purpose**

This program prepares students for employment, at all levels, in the increasingly sophisticated automotive repair industry. Students gain knowledge of computerized shop equipment, electronic automotive components, mechanical systems, chemistry, physics, and diagnostic techniques—all while developing their skills with traditional hand tools. Instruction in entrepreneurial and business techniques cap the program.

### **B. Program Goals**

1. Deliver learning-centered education with life-long learning options.
2. Instill competencies which lead to certification (such as Automotive Service Excellence [ASE]) and employment.
3. Prepare students to readily adapt to new and emerging technologies.
4. Encourage and prepare students to seek opportunities for advancement in the field.

5. Provide advanced course work and continuing education programs.
6. In addition to the professional preparation track, this program also supports classes for recreational and personal enrichment interests.

### **C. Community Benefits**

1. There are approximately 200 automotive repair facilities in Yavapai County alone. Many of these employers have stated and restated the need for qualified service technicians. The Yavapai College Automotive Program trains approximately 60 students each year to help meet this need.
2. Each year, the Automotive Program hosts many external training seminars for the local automotive industry professionals.
3. Enrichment course options provide car enthusiasts with opportunities to repair or customize their own vehicles.
4. The “Know your Car” classes have helped hundreds of students who are not pursuing an automotive career learn basic car maintenance, emergency repairs, and become better informed consumers of automotive services.
5. The Auto Club—a nonprofit, campus-affiliated club—assists the Automotive program and the community in the following ways:
  - Reconditions six to eight vehicles each year. One or two of these vehicles are donated to needy families. Proceeds from the sale of the other vehicles are used for club projects.
  - Performs automotive service and minor and major automotive repair work for people in financial hardship situations.
  - Sponsors a family or two each Christmas with gifts, food & clothing.
  - Organizes “fun runs” and car shows in Yavapai County for College awareness.
6. Yavapai College serves as a regional site for Automotive Service Excellence (ASE) testing. Approximately 120 people take these tests during each two-week cycle.

### **D. Centrality to the College Mission**

1. The State Board of Directors for Community Colleges of Arizona, Rules and Regulations #R7-1-702-A1 states: “Occupationally oriented

curricula – Each college district shall offer occupationally oriented programs designed to lead to an associate degree.”

2. The Automotive Technology Program meets the criteria in the Yavapai College Board of Governors Community Benefits Statement and is supportive of the mission and strategic initiatives of Yavapai College. The program is a competency-based occupational program, which prepares students for entry into the workforce and provides advanced levels of instruction as well.

#### **E. Program Content**

1. Technician Certification Program – provides students with the technical skills to obtain direct employment and prepares them for the National Automotive Service Excellence (ASE) Certification examinations, which are required for most entry-level employment opportunities in the industry. Two years of post-high school educational training, such as that offered in these automotive certificate and degree programs, may be substituted for up to one year of the hands-on work experience requirement of the ASE certification.
2. Master Certification Program – provides students with the troubleshooting and analysis skills to increase their diagnostic and repair abilities including applied computer and information distribution skills. The program also prepares students for the National ASE Certification examinations to become a Certified Master Automobile Technician and Certified Engine Machinist.
3. Automotive Management Associate of Applied Science Degree Program – prepares students for positions utilizing a combination of automotive technology and business management skills such as service managers, insurance adjustors, and small business owners. Like the Master Certification Programs, this degree will prepare students for the National ASE Certification examinations to become a Certified Master Automobile Technician and Certified Engine Machinist.

#### **F. Course Outlines and Syllabi**

1. Courses have been updated as new technologies have appeared in automobiles and in diagnostic equipment.
2. With the NCA visit approaching, assessment has been brought to the forefront of the instructional process. With the guidance of the Yavapai College Outcomes Assessment Coordinator, a process to evaluate the course outcomes of each course has been initiated.

3. The Board of the National Institute for Automotive Service Excellence (ASE) is the body responsible for the Automobile Technician Training Certification Program. ASE grants certification to programs that comply with their evaluation procedures, meet their established standards, and adhere to their policies. This certification is under the direct supervision of the Board of Trustees of the National Automotive Technicians Education Foundation, Inc. (NATEF). While NATEF does not endorse specific curricular materials, it does set standards for facilities and the content of instruction, which includes tasks, books, tools and equipment, hours, and instructor qualifications. The eight areas eligible for certification are:
  1. Brakes
  2. Electrical/Electronic Systems
  3. Engine Performance
  4. Suspension and Steering
  5. Automatic Transmission and Transaxle
  6. Engine Repair
  7. Heating and Air Conditioning
  8. Manual Drive Train and Axles
4. Additional advanced courses and performance laboratory experiences are provided to meet the hours and skills preparation required for ASE certification.
5. The Yavapai College Automotive Technology Program is NATEF certified in all eight areas until February 2002. The course outlines in the areas listed above, and the equipment necessary to support those classes, were in compliance with the national standards set forth by NATEF in 1997, when the certification was first awarded.

## **G. Facilities and Equipment**

1. Facilities: Currently, the automotive program occupies 6,827 square feet of classroom, office, storage, and shop space on the ground floor of Building 4, on the Prescott Campus. There is also a 12,000 square foot fenced yard with parking, vehicle storage, some covered workspace and a steam cleaning area.

Facilities are used from 7am until 10pm Monday through Thursday and until 5pm on Fridays. Even so, classes are “doubled up” in the shop area during the days due to inadequate space. That is, two different classes are held simultaneously in the same space.

2. Equipment: The equipment situation in this program is “spotty.” For some courses, the program has the “latest and greatest” equipment and for others, the equipment is woefully lacking. For example, the Automotive Program utilizes “Mitchell On Demand,” a database

software package that leads the industry in providing technical information for diagnosis and repair. Another example of exceptional equipment is the Berco 650 M, a top-of-the-line machine, capable of numerous milling, boring, and resurfacing tasks.

On the other hand, some of the diagnostic oscilloscopes are 1970's vintage and can no longer be repaired, and students do not receive relevant instruction using this type of equipment.

3. Although the automotive program is NATEF certified, it is increasingly difficult for the program to stay current with the technological changes in the automotive industry. With each new model year of vehicle, design changes are made that necessitate new and more sophisticated equipment to diagnose them. Approximately \$40,000 has been spent since 1998 to upgrade the Yavapai College Automotive shop equipment. However, it is estimated that an additional \$60,000 (at a minimum) is needed to bring the shop into the 21<sup>st</sup> Century. Even if this were achieved, equipment upgrades in this arena, as with most of technology, is necessarily ongoing. This consideration was a major factor in beginning discussions with Lamb Chevrolet toward the possibility of partnering with them for space and equipment.

## **H. The Budget**

1. The total budget for the Automotive Program this fiscal year is \$236,259. This figure includes all full and part-time faculty and staff, and all supplies – both operational and “regular” capital.
2. In the past few years, the Automotive Program has also received additional capital funding from the “\$100,000 capital disbursement” that the then, three campuses received. This amount of additional capital has averaged \$13,333 per year.
3. The Automotive Program also receives about \$2,000 for travel each year.
4. The Yavapai College Auto Club has also helped tremendously with the Automotive Program's budgetary needs. Over the past several years it has:
  - Purchased equipment for the Automotive Program (\$8,000 in support last year alone)
  - Sponsored the student awards recognition day
  - Sponsored students to attend and compete in Vocational Industrial Clubs of America (VICA) competitions



## **I. Program Faculty and Staff**

1. The program staff consists of a division associate dean, a division administrative assistant, and the faculty—full and part-time—and an instructional specialist, who is described later in this section. The Associate Dean is responsible to the Executive Dean of the Prescott Campus and Chief Academic Officer for all academic and administrative issues. The Associate Dean interacts with faculty and staff members to ensure the overall quality of the program and student outcomes.
2. The program has two full-time faculty members who are responsible for the delivery of instruction, the sequencing of courses, selection and oversight of adjuncts, and supervision of a full-time instructional specialist.

Full-time faculty member Brent Bowen has worked for Yavapai College for 15 years. He has a total of 35 years of automotive repair experience with dealerships, independent repair facilities and 10 years of owning his own automotive repair facility. His credentials follow:

- B.S. in Occupational Education and Liberal Arts
- Automotive Service Excellence (ASE) Certification in:
  1. Assembly Specialist
  2. Brakes
  3. Cylinder Head Specialist
  4. Engine Repair
  5. Suspension and Steering

Full-time faculty member Terry Ristig has taught for 29 years in all levels of education including a period of time as an instructional designer for the Honda Corporation. He has spent the past 13 years at Yavapai College. His credentials follow:

- M.S. in Technical Education
- Automotive Service Excellence (ASE) Certification in:
  1. Engine Repair
  2. Automatic Transmission/Transaxle
  3. Manual Drive Train and Axles
  4. Suspension and Steering
  5. Brakes
  6. Electrical/Electronic Systems
  7. Heating and Air Conditioning
  8. Engine Performance
  9. Auto Advanced Engine Performance

3. The program employs a full-time instructional specialist, with 14 years of experience, who assists both full and part-time faculty with course delivery.
4. This year, an Automotive Outreach Coordinator was hired on a one year, temporary basis. This 180-day position was created to place our regular automotive students and our vocational “rehab” into internships with Tri-City automotive employers. This position works with students, faculty, school districts, employers, and the on-site technician who mentors the student.
5. The program has a core of five to eight adjunct faculty members who teach in the following areas:
  - Heating and Air Conditioning
  - Performance Lab (adds clock hours for ASE certification)
  - Introduction to Auto Mechanics
  - Steering and Suspension
  - Manual Drive Train and Axles
  - Introduction to Drag Racing
  - Know Your Car
  - Car Care Basics
  - RV Maintenance

All adjunct faculty who teach in an ASE subject area, are ASE certified to instruct in those subjects. All adjunct faculty either own their own automotive repair facilities or work professionally in the field. All faculty are community college certified.

6. Finally, the program employs a part-time Tool Crib Attendant.

## **J. New Outcomes and Programs**

1. Based on input from Veteran Vocation Rehabilitation (Voc Rehab) and the Automotive Advisory Committee, a new, nine credit hour, modularized, certificate program, Automotive Shop Maintenance, was offered for the first time this semester. This program was designed to prepare learning disabled students for specific jobs identified by the advisory committee as persistently available. Each of the seven modules, or classes, builds upon the previous module. However, the outcomes embedded within each module prepare the students with marketable skills, even if the entire certificate program is not completed. The seven modules are:
  - a. Building maintenance
  - b. Equipment maintenance

- c. Parts cleaning
- d. Car portering
- e. Tire techniques
- f. Lube, oil and filter
- g. Transmission removal & replacement

Students have been referred from the Veterans Vocational Rehabilitation (Voc Rehab) and Bradshaw Mountain High School special education departments. There are currently six students enrolled. Because this number does not meet our enrollment minimums, Voc Rehab has assumed the instructional costs.

- 2. Every 12 months, every car manufacturer releases new variations on their various automobile makes and models. The Yavapai College Automotive Program has dealt with this ongoing challenge by teaching students a method for self-instruction. With electronics, for example—the most dynamic component of automobiles—instructors examine wiring diagrams in the software database, Mitchell on Demand, to determine what changes have been made to electronic systems. Instructors then provide instruction on the theory of electronic systems and students study generic sensors and actuators (for example) that incorporate the latest upgrades. In this way, students learn to apply their theoretical knowledge to whatever vehicle they may be working with.
- 3. The automotive program has taken full advantage of the new Technology Division computer lab in Building 10. Students in the Computer Applications in Automotive Shop Management class learn to use database and word processing programs to analyze shop profits and losses, prepare customer bills, write correspondence, resumes, job applications, and find and use Internet data.

## **K. Partnerships**

- 1. For the past 14 years Yavapai College has partnered with Bradshaw Mountain High School and Chino Valley High School in the delivery of automotive classes. Students from the high schools take classes on the Prescott campus and receive dual high school and college credit for their work. Each year approximately 15 Bradshaw Mountain students participate. Chino Valley's participation has been less consistent and more sporadic with about 30 students participating over the years.

The high schools pay for the students' tuition and recently the Yavapai County Tech Prep Consortium has paid for their textbooks. Many of these students continue their automotive education at Yavapai College.

2. The Yavapai County Tech Prep Consortium, mentioned above, is a partnership between the college and the ten Yavapai County high schools. This federally funded program is part of the Carl Perkins Act and exists to streamline the transition for vocational students from secondary to post-secondary institutions. For the past three years, Yavapai College automotive faculty have met with high school automotive faculty and produced articulation agreements between the following high schools: Mingus, Prescott, Seligman, Sedona, Bradshaw Mountain, Chino Valley, Ash Fork, and Bagdad.
3. Partnerships with private businesses have enabled the automotive program to provide classes in the maintenance and repair of recreational vehicles (RV's). These classes have been held at Mile High RV in Prescott Valley and, most recently, at York RV Service and Sales in Prescott.
4. The automotive program has placed students in the "Shop Simulation" in internships in automotive repair facilities throughout the county over the past five years.

#### **L. Additional Findings from the Review Committee**

1. Because of the limited amount of classroom and lab space, only four of the eight core classes can be offered each semester. With adequate space, the program could realize a long-term goal of offering all eight core classes every semester. This would enable students to begin their studies at any time during the academic year instead of waiting for the fall rotation.

The eight core areas are:

1. Brakes
2. Electrical/Electronic Systems
3. Engine Performance
4. Suspension and Steering
5. Automatic Transmission and Transaxle
6. Engine Repair
7. Heating and Air Conditioning
8. Manual Drive Train and Axles

### III. The Students

#### A. Enrollment

1. In fall 1999, there were 65 automotive technology student majors. This was the largest number of automotive majors over the last five years, a 44 percent increase from 45 majors in fall 1995.
2. The typical automotive technology student is white (80.0%), male (92.3%), and under 24 years of age (72.3%). The student is from Yavapai County (92.3%) and attends school part-time (75.4%). The automotive technology student profile has been consistent over the last five years.

<b>Automotive Student Demographics</b>	Fall 1995	Fall 1996	Fall 1997	Fall 1998	Fall 1999
Total	45	50	59	47	65
Race					
Black	—	—	1.7%	—	—
White	80.0%	84.0%	78.0%	87.2%	80.0%
Native American	4.4%	2.0%	—	—	1.5%
Hispanic	4.4%	4.0%	8.5%	8.5%	4.6%
Other	11.1%	10.0%	11.9%	4.3%	13.8%
Gender					
Female	6.7%	4.0%	6.8%	8.5%	7.7%
Male	91.1%	96.0%	93.2%	91.5%	92.3%
Non Reported	2.2%	—	—	—	—
Age					
16 and under	—	6.0%	3.4%	2.1%	7.7%
17 to 24	71.1%	66.0%	63.8%	63.8%	64.6%
25 to 34	8.9%	18.0%	20.7%	12.8%	15.4%
35 to 59	15.6%	8.0%	10.3%	17.0%	10.8%
60 and over	4.4%	2.0%	1.7%	4.3%	1.5%
Credit load					
Part-time	64.4%	74.0%	71.2%	68.1%	75.4%
Full-time	35.6%	26.0%	28.8%	31.9%	24.6%
Residence					
Other AZ county	8.9%	10.0%	5.1%	2.1%	4.6%
Yavapai county	84.4%	90.0%	32.2%	97.9%	92.3%
Out-of-state	6.7%	—	1.7%	—	3.1%

3. Eight students (about 15 percent of all automotive students) were included in the Current Student Survey conducted in Spring 2000. Over eight in ten automotive students reported their parents were important or very important influences in

their decision to attend Yavapai College. About four in ten reported spouses, friends, and teachers and staff at the college as important or very important influences. Factors affecting college attendance that were important or very important for more than 50 percent of automotive students were academic reputation, teaching emphasis, classes offered at night, small class size, low tuition cost, convenient location, relevance to job availability of job placement/career development, a class schedule that allows you to work, availability of financial aid, and quality of facilities.

4. The most effective recruiting strategies are sending brochures that detail specifics of the program, the college catalog, a college representative visiting high school and the college web page. These students prefer that the schedule of classes be mailed to their home, to get information about classes, programs, and services on the college web page, and to receive the schedule of classes from various community locations.
5. One hundred percent of automotive students rated the quality of instruction as good or very good; labs and shops were rated good or very good by 71 percent, with 29 percent of students rating labs and shops as fair.

## **B. Former Students and Graduates**

1. Many automotive students take individual courses to meet their educational goals rather than completing a degree. One-half of the former students indicated their reason for attending Yavapai College was to “take classes only.”
2. A survey of students who completed at least two vocationally or technical credit classes and did not return to the college for a consequent fall and spring included 10 automotive students. Of these students 50 percent never intended to earn a degree. Ninety percent of former automotive students reported that they completely (50%) or partially (40%) reached their education goal. Two students had attended another school since leaving Yavapai College and 70 percent plan to definitely (30%) or perhaps (40%) return to the college.
3. Eighty percent of former automotive students rated satisfaction with instruction as good (30%) or very good (50%). All students would recommend the college to family and friends, 80 percent without any reservation.

4. In the past five years, the average number of graduates from the automotive program has ranged from 4 to 6 students per academic year.

Year	# Automotive Graduates
1996/97	5
1997/98	6
1998/99	5
1999/00	4
2000/01	4
TOTAL	24

5. The degrees that students have earned over the past five years, have been in the following areas:

	# Graduates
Basic certificate	3
Advanced certificate	11
Applied science degree	<u>10</u>
	24

6. From a survey of 120 graduates, only one automotive graduate was included. In that year, there were five automotive graduates in total.

**C. Class and FTSE**

The annual number of classes, enrollments, and FTSE has remained stable over the last five years. Class sections range from 28 to 32. Enrollments ranged from 342 to 399, and FTSE range from 72.0 to 86.4. Academic year 1999–00 saw the highest number of sections, enrollment, and FTSE.

**Full Time Student Equivalent (FTSE)**

/Percent Change	1995–96	1996–97	1997–98	1998–99	1999–00
Number of sections	32	29	29	28	32
		-9.4%	0.0%	-3.4%	14.3%
Total enrollment	342	361	355	339	399
		5.6%	-1.7%	-4.5%	17.7%
FTSE	78.5	78.2	86.2	72.0	86.4
		-0.4%	10.2%	-16.5%	20.0%

#### **D. Employers of Former Students and Graduates**

1. Of the employers who have hired Yavapai College former students and graduates in the past three years, 25 percent have hired 1 employee and 75 percent have hired 2-5 employees.
2. Yavapai College students/graduates were hired for the following positions: helper, greater—lube tech, entry-level technician and service technician. Employer satisfaction was high (80 percent “good/very good”) in the following areas: personal skills, ability to learn on the job, oral/listening skills, written communications skills, computation skills and interpersonal skills.
3. Employers suggested the following areas for improvement: critical thinking skills, knowledge of general content, technical skills, productivity and overall preparation. They identified workforce needs in the automotive industry (in terms of positions and skills in their companies), as “need high level/smart people.”
4. All of the employers indicated they would hire another Yavapai College student or graduate—75 percent without reservations.

### **IV. Job Forecasts, Trends, and Training Requirements**

#### **A. Jobs and Skills**

According to the United States Department of Labor:

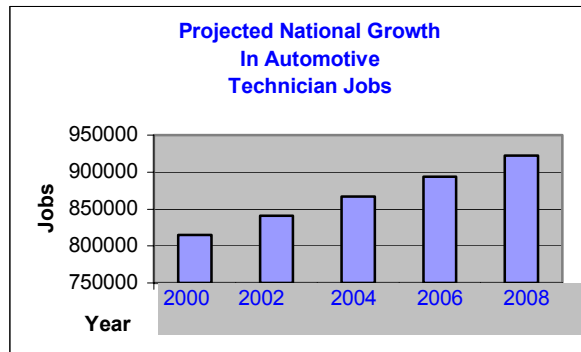
1. Beginners usually start as trainee technicians, mechanics’ helpers, lubrication workers, or service station attendants and gradually acquire and practice their skills, by working with experienced mechanics and technicians.
2. There are more computers aboard a car today than aboard the first spaceship. A new car has from 10 to 15 on-board computers operating everything from the engine to the radio. As a result, knowledge of electronics has grown increasingly important for automotive mechanics and service technicians.
3. Employers look for people with strong communication and analytical skills. Good reading, mathematics, and computer skills are needed to interpret technical manuals to keep abreast of new technology.



**B. Job Forecast—Nationwide**

1. Job opportunities in this occupation are expected to be good for persons who complete automotive training programs in high schools, vocational and technical schools, or community colleges.
2. Nationwide, automotive mechanics held about 790,000 jobs in 1998. Today that figure is about 816,000 jobs, and the number is expected to grow to 923,000 by 2008.
3. Several years ago, the US Department of Labor projected a need for 12,000 to 16,000 additional technicians a year, beyond those needed to replace the technicians who retire or leave the industry.
4. Automotive mechanics can expect steady work because changes in economic conditions have little effect on the automotive repair industry. During a downturn, however, some employers may be more reluctant to hire inexperienced workers.

**National growth projections in graph form:**



**C. Job Forecast—State and Local**

1. Below are occupational projections from the Arizona Department of Economic Security for automotive mechanics and service technicians and related occupations for 1998 — 2008.

Occupational Title	1998	2008	10-year Change	Change	Rate	Replacement Openings	Openings
Automotive Mechanics & Service Technicians	13,877	18,699	4,792	479	3.5%	345	824
Mobile Heavy Equipment Mechanics	2,408	3,243	835	84	2.5%	101	185
Tire Repairers & Changers	1,303	1,664	361	36	2.8%	57	93
All Other Mechanics, Installers, & Repairers	6,342	9,010	2,668	267	4.2%	111	378

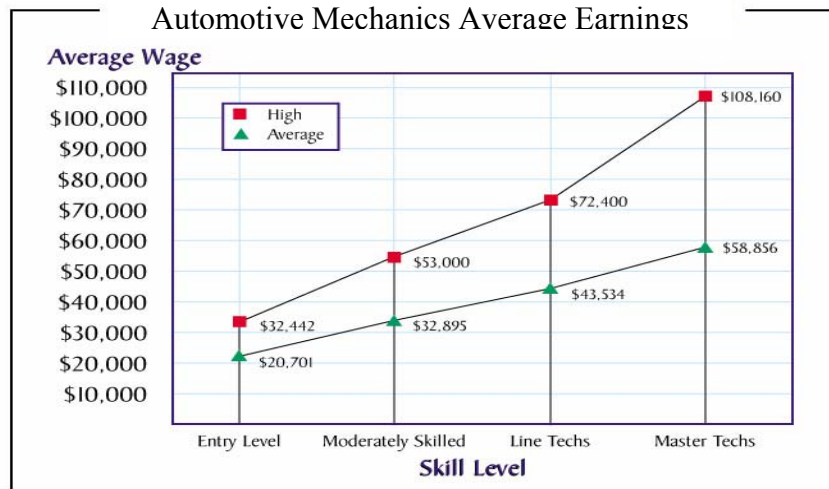
2. Below is wage information from the Arizona Department of Economic Security for automotive mechanics and service technicians and related occupations.

Occupational Title	Mean Wage	Mean Annual Wage	Entry Wage	Entry Annual Wage	10 <sup>th</sup> Pct. Wage	10 <sup>th</sup> Pct. Annual Wage	Median Wage	Median Annual Wage	90 <sup>th</sup> Pct Wage	90thPct Annual Wage
Automotive Service Technicians & Mechanics	14.56	30,279	8.91	18,525	6.73	14,007	13.07	27,195	23.61	49,119
First Line Supervisors of Mechanics	20.50	42,641	16.83	35,007	14.61	30,393	19.69	40,952	26.49	55,106
Mobile Heavy Equip Mechanics	15.84	32,950	12.03	25,010	11.33	23,560	15.82	32,900	20.40	42,440
Automotive Body & Related Repairers	14.71	30,600	8.30	17,250	7.61	15,820	13.93	28,980	23.06	47,970
Automotive Glass Installers & Repairers	13.67	28,430	10.02	20,830	9.32	19,390	14.29	29,730	16.94	35,230
Tire Repairers & Changers	6.93	14,413	5.93	12,334	5.62	11,691	6.76	14,058	8.70	18,104

3. The National Automobile Dealership Association (NADA) reports that, "dealerships in parts of the Mountain region, particularly Arizona, Nevada, and Colorado, have become known for their high volume sales. Thus, it's not surprising that the region was first nationally in the average number of new units sold per dealership—a whopping 45 percent above average. Total sales at Mountain region dealerships were up by 7.1 percent in 2000 compared to 1999. . . . All top management positions made at least 14 percent above the national average. Other dealership personnel such as salespeople, technicians, and clerical and office workers generally made above average salaries, although to a much lesser degree than the management positions."
4. For Yavapai County, wage data from the Arizona Department of Economic Security is as follows:

Job Title	# Employed	10% Wage	Median Wage	90% Wage
Automotive Service Technicians	600	20,000	28,000	39,000

5. Additional wage data in graph form:



Source: Automotive Youth Educational Systems (AYES)

#### D. Job Training

According to the U.S. Dept. of Labor:

1. Current automotive technology uses sophisticated computer sensors and controls for an increasing number of systems every year. This new, rapidly evolving technology requires technicians with higher skill levels than were needed in the past.
2. Most employers regard the successful completion of a vocational training program in automotive mechanics at a postsecondary institution as the best preparation for trainee positions.
3. Persons without formal automotive training are likely to face competition for entry-level jobs

#### E. Trends

According to the U.S. Department of Labor:

1. Employment growth will continue to be concentrated in automobile dealerships, independent automotive repair shops, and specialty car care chains.

2. More national department store chains will provide auto repair services in large shops that employ many technicians to do after-warranty repairs taking less than four hours to complete.
3. Employment of mechanics in service stations will continue to decline.
4. Employers will increasingly send experienced automotive service technicians to manufacturer training centers to learn to repair new models or to receive special training in the repair of components, such as electronic fuel injection or air-conditioners.
5. Dealerships may send promising beginners to manufacturer-sponsored mechanic training programs.
6. The number of automotive mechanics will increase, due to the expansion of the driving age population and the number of households with multiple motor vehicles.
7. More job openings for automotive mechanics and service technicians are expected than for most other occupations, as experienced workers transfer to related occupations, retire, or stop working for other reasons.
8. With an increase in the number of motor vehicles in use, the number of vehicles damaged in accidents will also increase. Therefore, automotive body/collision repairers will be needed. New automobile designs increasingly have body parts made of steel alloys, aluminum, and plastics—materials that are more difficult to work with than traditional steel body parts. Because these lighter weight automotive designs are prone to greater collision damage than older, heavier designs, more time is consumed in repair. The need to replace experienced repairers will account for many new job openings. The automotive repair business is not very sensitive to changes in economic conditions, and experienced body repairers are rarely laid off.

## **V. Recommendations**

- The program should be continued, but upgraded, in order to keep pace with the rapidly changing and sophisticated technology in the industry.
- Establish an agreement to utilize service bays at Lamb Chevrolet for instructional purposes.

- The present space allocation is not sufficient for current courses—evidenced by the necessity of doubling up classes in the shop area.
  - The present space has prohibited the program from growing—evidenced by capacity enrollment and FTSE for the past five years. Partnering with Lamb Chevrolet will provide Yavapai College with eight bays and will allow for all eight automotive core instructional areas to be offered each semester. This will also open the door for continuous, short-term instructional modules to be interspersed with internships.
  - In addition to space considerations, much of the Yavapai College automotive equipment is outdated. Collaborating with Lamb Chevrolet will alleviate some of these problems through innovative scheduling of students and equipment usage.
  - Students will benefit from observing, first-hand, the day-to-day operations of a professional, automotive service establishment.
  - The opportunity to learn automotive skills in a brand new, modern, automotive repair facility, utilizing the latest equipment and gadgetry, will undoubtedly attract new students.
- Complete the Outcomes Assessment Plan for the Automotive Program
  - Require degree seeking automotive students to participate in internships during various phases of their training.
  - Arrange internships in accordance with a student’s specialization interest. That is, a student wishing to specialize in Fords would intern with the Ford dealer. Those students wishing to be “generalists” or who are undecided, could intern with an independent repair facility.
  - Incorporate the use of computers for instructional diagnostic and repair simulations.
  - Increase the number of students who complete degrees or certificates.
  - Pursue NATEF reaccreditation after move to Lamb Chevrolet.
  - Evaluate alternative delivery of curriculum: for example, eight weeks of class—eight weeks of internship.
  - Conduct a needs analysis for a “collision repair” program.
  - Reorganize the Automotive Advisory Committee to align with and better support the recommendations in this document.