Motorcycle Technology Program Review

2008 – 2009

Spring 2009

Prepared by:
Dave Brown, Faculty
Transportation Technology Department

Citrus College

Motorcycle Technology Program Review
Committee Members
2006/2007 (2008/2009)

Dave Brown, Faculty
Transportation Technology

Wanda Cunnyngham, Dean*
Career, Technical, Continuing and Contract Education

Nicki Shaw, Faculty
Academic Senate Representative

James Lancaster, Faculty**
Curriculum Committee Representative

Michelle Plug, Faculty
Articulation Officer, Counseling Representative

Barbara Rugeley, Faculty
Library/Learning-Resources Representative

*2006/2007
**James Lancaster served as Curriculum Committee representative during initial 2006/2007 writing and Dean during 2008/2009 revision s

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Faculty:

Full-Time Faculty:

Dave Brown, Instructor

Adjunct Faculty:

None

List of Certificates/Awards Offered:

Motorcycle Repair* (Skill Award)
Courses Required: MOTO 100 & 101
Employment Opportunity: Motorcycle Technician, Motorcycle Salesperson, Parts Salesperson

Personal Watercraft Repair* (Skill Award)
Courses Required: MOTO 102 & 103
Employment Opportunity: Entry-level position in watercraft industry

*Required courses for skill awards have not been offered in over 5 years.

New Certificate Pending Approval:

Motorcycle Technician
Required Courses: AUTO or MOTO 101, MOTO 141, 142, 144, 146 & 148

List of Degrees:

Associate in Science

List of Industry Based Standard Certificates:

None

Advisory Committee List:

Dave Brown, Faculty, Citrus College
Chris Dyer, Service Manager, Pomona-Valley Harley-Davidson
Brian Law, General Manager, Pomona-Valley Harley-Davidson

Motorcycle Technology Program (Sequence of Courses):

MOTO 105[1]	Fundamentals of Motorcycle Technology	2 Units
MOTO 291	Engine Performance Enhancements and Tuning	3 Units

Courses Not Offered in the Last Two Years:

MOTO 100[2]	Motorcycle Repair I	2 Units
MOTO 101[2]	Motorcycle Repair II	2 Units
MOTO 102[1]	Personal Watercraft Repair I	2 Units
MOTO 103[1]	Personal Watercraft Repair II	2 Units

[1]Course to be deleted and removed from College Catalog
[2]Course to be rewritten (see below)

Courses to be Developed:

MOTO 100 Fundamentals of Motorcycle Technology 3 Units

Lecture/Demonstration based course intended to provide an overview of motorcycle technology and do-it-yourself maintenance intended for non-majors. Will replace existing MOTO 100 & 105.

Courses Recently Approved:

MOTO 101 Fundamentals of Motorcycle Technology, Service & Repair 5 Units

Lecture/Demonstration and Laboratory based course (72hrs/54hrs) intended to introduce motorcycle technology to those students who intend to study motorcycle technology with a career focus. Course will prepare students for employment as a motorcycle inspection/maintenance technician. Replaces previous MOTO 101.

MOTO 141 Motorcycle Engine Diagnosis, Service & Repair 4 Units

Lecture/Demonstration and Laboratory based course (54hrs/54hrs) to be offered concurrently with AUTO 141

MOTO 142 Motorcycle Power Transmission Systems 5 Units

Lecture/Demonstration and Laboratory based course (72hrs/54hrs) to be offered concurrently with AUTO 142

MOTO 144 Motorcycle Chassis & Brake Systems 5 Units

Lecture/Demonstration and Laboratory based course (72hrs/54hrs) to be offered concurrently with AUTO 144

MOTO 146 Motorcycle Electrical & Electronic Systems 4 Units

Lecture/Demonstration and Laboratory based course (54hrs/54hrs) to be offered concurrently with AUTO 146

MOTO 148 Motorcycle Engine Management Systems 5 Units

Lecture/Demonstration and Laboratory based course (72hrs/54hrs) to be offered concurrently with AUTO 148

The Motorcycle Technology program has adopted the Institutional General Education Competencies of Citrus College. The General Education Competencies (as set forth in the Academic Senate minutes dated August 25th 2004) are as follows:

Institutional General Education Competencies
Part of Instructional Mission

General education competencies serve as a common set of core curricular components identified as defined by Faculty. Student Learning Outcomes are behaviors based on these competencies.

Any student transferring or completing a degree or certificate from Citrus College must demonstrate effectively assessed awareness, understanding, knowledge, skills and abilities in the selected competencies.

1. Communication:

   Examples
   Reading Analytically and Critically
   Writing with Clarity and Fluency
   Speaking Articulately
   Listening Actively

2. Computation

   Examples
   Technology
   Math Proficiency
   Analyzing and Using Numerical Data
   Application of Mathematical Concepts and Reasoning
   Computer Proficiency
   Decision Analysis
   (Synthesis and Evaluation)

3. Creative, Critical and Analytical Thinking

   Examples
   Curiosity
   Analysis
   Synthesis
   Evaluation
   Creativity
   Research
   Learning Strategies
   Problem Solving
   Decision Making
   Aesthetic Awareness

4. Community

   Examples
   Respect for Other Beings
   Cultural Awareness
   Ethics
   Community Service
   Integrity
   Citizenship
   Interpersonal Skills
   Lifelong Learning
   Self Esteem
   Empathy

5. Technology/Information Competency

   Examples
   Basic Computing and Word Processing

6. Discipline/Subject Area Specific Content Material – Project Plan

Program Description:

The Motorcycle Technology program at Citrus College has a long history of successful course offerings and good attendance. Previously taught only by adjunct faculty, the program had little college-to-career focus—the core student population being "hobbyists" wishing to learn about motorcycles from the point of view of personal enrichment. The program ceased to be offered in 2003.

In 2004, the possibility of "reviving" the program was explored by Dave Brown, under the leadership of Dr. Kim Holland. It was decided that the program should be offered as a true vocational program with the intent that it would create entry-level employees for local motorcycle dealerships and independent repair facilities.

Vocational programs are often expensive and equipment intensive as they often relate to technology which is ever advancing. It was evident the motorcycle program, when it was offered, had suffered from years of neglect and under-investment. In the motorcycle laboratory, there was no working equipment with which to raise a motorcycle off the ground; no equipment to remove, install and/or balance tires; no equipment to disassemble, inspect and/or repair/re-assemble any components—mechanical, electrical/electronic or otherwise. Nor were there *any* operational motorcycles whatsoever.

Thus, it was further decided that the program should be "re-invented." In 2004 Dave Brown, again under the leadership of Dr. Kim Holland, wrote successful VTEA grant proposals which have resulted in substantial investment in program equipment. There are now sufficient apparatus in the laboratory for students to lift motorcycles, service tires, and inspect, diagnose, and service brakes, suspensions, engines, transmissions and electrical/electronic systems using industry-standard equipment. There is even a motorcycle chassis dynamometer, which is useful in diagnosis and in the tuning of modified motorcycles. Motorcycle modification is exceedingly popular with motorcycle enthusiasts. As a result, the dynamometer serves as a showcase/recruiting tool in addition to its aforementioned diagnostic/tuning value.

Until Fall 2008, the program still had no operational motorcycles. There is further investment to be made if the program is to be considered "legitimate." VTEA proposals in 2005 – 2006 and 2006 – 2007 were denied, although some "one-time" funds were made available to expand student capacity in the laboratory. Additionally, a successful VTEA proposal in 2007 – 2008 made available two late-model Harley-Davidson motorcycles for use in the lab.

As of this writing, there are two newly-written courses that have been offered since 2005: MOTO 105 and MOTO 291 (see page 6). Courses 100, 101, 102, and 103 have not been offered for many years. The curriculum for those courses, as written, is no longer representative of the needs of industry (see Advisory Council Minutes). Those courses are to be scrapped and replaced with new curriculum incorporating Advisory Council recommendations and Student Learning Outcomes (SLOs).

What's more, to help offset staffing deficiencies, as well as to better integrate the motorcycle program with existing Transportation Technology offerings, certain newly-written Motorcycle Technology courses will be offered concurrently with those courses in Automotive Technology in which there is sufficient technological "crossover" to warrant student integration. While this approach will be feasible and appropriate for lecture/demonstration, there will need to be a skilled motorcycle laboratory assistant to ensure students get adequate opportunities to apply what they have learned to actual motorcycles.

Motorcycle technology has advanced at a quick pace since the late 1980s. Emission-control standards (similar to that of modern automobiles and light-duty trucks) adopted by the United States Environmental Protection Agency in 2006 has brought about a greater-than-ever need for trained motorcycle technicians. What's more, there is virtually *no* motorcycle technology training available to would-be technicians. Exceptions include private institutions (most notably Motorcycle Mechanics Institute in Phoenix Arizona and Orlando Florida, with a student-cost of approximately $30,000 for a one-year program), Sacramento City College, and small-but-growing programs at Cypress College and Citrus College.

Motorcycle technology training at Citrus College, in spite of having been offered for many years up until 2002, is in its infancy. There is much work to be done and a great deal of investment to be made if this program is to become a viable alternative to a $30,000 investment on the part of a student to attend MMI. A larger lab facility is needed. It is anticipated that a large area of existing lab space will become available at the completion of the current Automotive Technology facility construction. This will help in this regard and discussions are ongoing. Marketing and outreach projects targeting career-minded students need to be undertaken. Industry partnerships—both at the corporate and local levels—need to be nurtured to ensure our curriculum and equipment is always up-to-date and to ensure the best possible job-placement opportunities and career paths for students. Labor market information is scarce for this program, but informal surveys of potential employers reveal frustration with the scarcity of well-trained, entry-level candidates.

Program Goals:

1. To provide introductory training and education to students wishing to explore potential careers in the motorcycle industry
2. To provide adequate training and education to provide entry-level technicians to local businesses in the motorcycle industry
3. To provide adequate training and education to lay a framework for entry-level technicians to advance into journeyman positions
4. To offer training and education in an environment that is of like and kind quality to that in which students will find themselves upon gaining entry-level employment
5. To provide opportunities for career advancement for incumbent workers in the motorcycle industry who have a need to catch up with technological advancements

6. To provide opportunities for personal enrichment and lifelong learning in ever-changing areas of motorcycle technology

These ambitious goals are similar to what is already being done in the Automotive Technology program. Currently, the Motorcycle Technology program is doing a fair job with numbers 1 & 6. The program requires further investment in equipment, mainly in examples of modern motorcycles themselves, to achieve a sense of "legitimacy" from industry partners. Further, the program requires investment in publicity and marketing to generate a greater awareness of the program in potential students, potential industry partners, and in the community at large. As the program grows, there is a high likelihood there will be an FNIC issue. Currently, there is only one instructor in the program—a fulltime Faculty member who teaches motorcycle technology as an overload assignment.

Program Student Learning Outcome Objectives:

Communication (personal expression and information acquisition):

1. Student will demonstrate listening comprehension and retention skills via examinations (written and practical) based on lecture material.
2. Student will demonstrate reading comprehension and retention skills via examinations (written and practical) based on lecture material.
3. Student will demonstrate writing ability via research reports and lab exercises documented on worksheets.
4. Student will demonstrate effective oral/verbal skills via presentations made to class(es) on various topics.

Computation:

5. Student will demonstrate computer/information-systems proficiency via lab exercises requiring them to research and document specifications.
6. Student will demonstrate the application of mathematical concepts and reasoning via lab exercises requiring them to compare motorcycle test results/readings to specifications and determine failed components (if any) and necessary remedial action.

Creative, Critical and Analytical Thinking:

7. Student will demonstrate problem solving skills by evaluating, diagnosing, proposing remedial action and performing remedial action on motorcycles that have problems.
8. Student will demonstrate curiosity, analysis, evaluation skills and creativity by proposing solutions to industry-wide challenges in both written reports and oral presentations.

Community:

9. Student will demonstrate an understanding of high ethical standards by answering questions (verbally and in writing) regarding challenges faced in any customer service industry.
10. Student will demonstrate high standards of integrity by evaluating needed repairs on motorcycles known to be beyond reasonable repair and documenting their opinions on lab worksheets.
11. Student will demonstrate aesthetic awareness by being held to account for industry-standard professional appearance in a lab setting.

Technology/Information Competency:

12. Student will demonstrate computer and word processing skills via research reports necessitating a consistent format (margins, line-spacing, font-size, etc.).
13. Student will demonstrate computer skills by making oral presentations with multi-media support.

Discipline/Subject Area Specific Content Material – Project Plan

14. Student will demonstrate an awareness of the intricacies of motorcycle technology that result in an industry-wide need for trained motorcycle technicians by composing research reports and/or presentations, and by answering questions—both verbal and in writing via examination.

15. Student will demonstrate detailed knowledge of specific areas of motorcycle technology including engines & engine designs, chassis systems, braking systems, power transmission systems, electrical & electronic systems and engine management systems by composing research reports and/or presentations, and by answering questions—both verbal and in writing via examination.

SLO Timeline:

Student Learning Outcomes will be developed for all motorcycle technology courses based on the following timeline:

Existing Courses:	**Projected course outline completion date to include Student Learning Outcomes**
MOTO 100	Spring 2009
MOTO 101	Completed
MOTO 291	Spring 2009

New Courses

MOTO 141	Completed
MOTO 142	Completed
MOTO 144	Completed
MOTO 146	Completed
MOTO 148	Completed

Existing courses MOTO 102, 103, and 105 will be removed.

All new Motorcycle Technology courses will have Student Learning Outcomes developed when the class is submitted via the CurricUNET process.

The department will work with the Curriculum Committee to ensure the course outlines are being developed according to standards developed by the Committee.

Mission:

Motorcycle Technology Mission Statement:

To provide students with access to high-quality training in motorcycle technology, to develop high-quality entry-level employees for local industry, and to offer high-quality career-advancement training to incumbent workers.

Commendations:

- The Motorcycle Technology program at Citrus College has undergone a transformation in the past two years and is well on its way to becoming a bona fide career program.
- The current Faculty and Management in the Department are on-task with plans for program improvement and restructuring according to recommendations from industry partners (Advisory Committee).
- New curriculum and training pedagogy reflect a high level of academic rigor and professionalism.
- Technological (equipment) investment in recent years has the program facilities at nearly like-and-kind quality to their private industry counterparts.

Previous Recommendations Completed:

- The Motorcycle Technology program has shifted its focus from hobbyist to career training.
- Customer service and other “soft skills” are being addressed in program curriculum.

Recommendations:

- Greater public, student, and industry awareness of this program is needed and marketing/publicity materials should be created emphasizing the availability and low cost of training at Citrus College, the high-quality of the program, and the career opportunities in motorcycle technology.
- A College designee should be identified and charged with securing partnerships with local businesses and ensuring they understand the benefits of the program, its high quality, and its advantage over expensive private training.
- Begin hiring adjunct faculty and/or laboratory assistants that meet the minimum qualifications for Motorcycle Technology.

Need:

Commendations:

- Advisory meetings confirm the need for quality, trained entry-level personnel in the motorcycle industry is currently unmet by available training from private institutions and elsewhere, emphasizing the potential for explosive growth in the Motorcycle Technology program at Citrus College.

Previous Recommendations Completed:

- Partnerships with local businesses are being strengthened to offer job placement potential to program students.

Recommendations:

- Partnerships with local businesses must be further strengthened and awareness of the program increased to help change the emphasis from hobbyist to career-path.
- Publicity, marketing, and recruitment materials need to be developed to increase student awareness and increase enrollment.

Feasibility:

Commendations:

- Recent investment has made motorcycle hoists, jacks, complete hand-tool sets and diagnostic equipment available to students in up to six small groups.
- Recent investment and a donation from a community member have made three late-model motorcycles available to students in the program for use in lab assignments.

- A recent donation Suzuki Motor America made 8 identical engines available to students for use in lab assignments.
- Recent allocation of Bays 4 & 5 of Tech G to Motorcycle Technology have provided available space in which to house the lab equipment.

Previous Recommendations Completed:

- There have been significant recent tool/equipment purchases.

Recommendations:

- The motorcycle lab presents itself with a great readiness to work on motorcycles. Further investment needs to be made, or partnerships developed, to provide late-model examples of modern motorcycles from all of the major manufacturers offering motorcycles in the United States (initial emphasis should be on the most popular manufacturers, namely, Harley-Davidson, Honda, Kawasaki, Suzuki, and Yamaha).
- Communication with manufacturers, dealerships, tool/equipment manufacturers and insurance companies need should be made and donations should be sought.
- Currently, Motorcycle Parking is allowed in only very limited portions of the Citrus College campus parking lot(s). Many students in the Motorcycle Technology routinely ride motorcycles to class. Steps need to be taken to allow for adequate space in the parking lot nearest Tech G for motorcycle parking.

Quality:

(See attached syllabi)

Commendations:

- Course syllabi include clear grading criteria & expectations, weekly reading and homework assignments, instructor contact information & office hours, attendance policy, and ADA/DSP&S information.
- Significant recent investment in technology and equipment has transformed the motorcycle lab facility into a modern, professional-looking facility worthy of serious students seeking careers.
- On-going curriculum development is working to meet the needs of industry while maintaining emphasis on Citrus College's Institutional General Education Competencies, Student Learning Outcomes, and the academic rigor of the Transportation Technology department.
- The motorcycle lab equipment will soon be moving from a small, one-room environment in Tech G and a shared facility with Automotive Technology in Tech F to a larger, multi-bay area of Tech G that is dedicated solely to Motorcycle Technology use.
- Program quality is slated to be significantly increased by offering new courses modeled after already-successful courses in Automotive Technology.
- New Courses under development will bring about the potential for concurrent enrollment in certain key automotive courses, expanding the number of course offerings, FTES, and broadening the offerings of the program.

Previous Recommendations Completed:

- Information on DSP&S and attendance policy are included on each course syllabus.

Recommendations:

- Advisory Committee meetings need to be held more frequently and efforts need to be made to expand meeting attendance.
- Further investment needs to be made to make modern, fully-functional motorcycles available for students to practice their newly-acquired skills.
- There have been numerous incidents of theft of Citrus College property related to the Motorcycle Technology program. Additionally, a student's motorcycle was stolen in Fall 2007. Moreover, some items that were purchased, delivered to (and signed for by) the warehouse were lost and never delivered to the program. Steps need to be taken to insure institutional integrity and effectiveness.

Compliance:

Commendations:

- All Motorcycle Technology courses offer accommodation according to the Americans with Disabilities Act (ADA).
- Students in the motorcycle lab are trained in common safety practices and adhere to safety regulations developed by the Department including the use of safety glasses, hand-tool safety and properly securing motorcycles being raised off the ground for service.

Previous Recommendations Completed:

No previous recommendations

Recommendations:

- All Motorcycle courses need to adopt Student Learning Outcomes (in progress).
- Fire extinguishers and eyewash stations need to be installed in accessible locations for students in Tech G, Bays 4, 5, & 6.
- Advisory meetings need to be held more frequently (at least annually).
- Program Review Committee membership needs to be finalized and a meeting convened to review this document and to ensure the recommendations contained herein are pursued.

Appendix I—*Course Syllabi*

Citrus College

Moto 105:
Fundamentals of
Motorcycle Technology

Spring 2008

M-W 6pm – 8:15pm

Course Syllabus

Dave Brown
Instructor

CITRUS COLLEGE
Moto 105: Fundamentals of Motorcycle Technology
Spring 2008

INSTRUCTOR:	Dave Brown
CONTACT INFO:	Office phone: (626) 852-8007 Office email: dbrown@citruscollege.edu
OFFICE LOCATION:	TA 410
OFFICE HOURS:	½ hour before & after class and by appointment Other office hours TBA
TEXT:	*Motorcycles: Fundamentals, Service, Repair*—Johns, Edmundson, Scharff
MATERIALS: (To be brought to every class meeting)	1. This Syllabus 2. Course Textbook 3. Paper 4. Pen & #2 Pencil 5. Scantrons (Form 882—100 item) 6. Highlighter 7. Safety glasses 8. Simple Calculator (this must be a stand-alone calculator, **not** your cell-phone)
COURSE DESCRIPTION:	An introduction to motorcycle technology, this course will offer an overview of the evolution of the modern motorcycle from the machines of the early 20th century to present. Fundamentals of design and operation of modern motorcycles will be covered along with basic repair procedures and manufacturer-specific maintenance procedures to preserve new vehicle warranty.
GRADING CRITERIA:	Lab Assignments 30% Final Exam 10% Quizzes & Midterms 10% Homework/non-lab Assignments 20% Participation & Attendance 20% End-of-Term Portfolio 10%
GRADING SCALE:	A = 92 - 100% B = 78 - 91% C = 67 - 77% F = 66% and lower
CHEATING:	The names of any individuals engaging in any form of academic dishonesty (cheating) will be given to the Dean of Student Services. In addition, a minimum penalty of a zero on that particular assignment ***and*** a zero for the "Participation & Attendance" portion of the grade will be awarded—which will adversely affect the final grade in the class. **Cheating comes in many forms including, but not limited to:** Written assignments that are not in your own words, falsified lab-exercise results, lab sheets copied from other students, vehicles represented as having been repaired and/or diagnosed that have not, vehicle damage that has been hidden from the instructor. If you are dishonest, you can expect to be penalized. Do not allow yourself to be made an example.

Important

If you have questions, difficulties, or concerns regarding your ability to successfully complete this class, please bring them to my attention as soon as you can. If you require special accommodations for completion of coursework, it is your responsibility to make me aware of those needs by the **second week** of class. Also, if you decide to withdraw from this course, it is **your** responsibility to complete and submit the proper paperwork to the Admissions and Records Office by the deadline date in the class schedule.

Special Attendance Problems

Should you encounter difficulty in attending class due to obligations beyond your control (e.g. military obligations, jury duty, family emergency, etc.) please inform your instructor as soon as possible so options can be discussed. If this occurs before the drop date, it may be best to drop the class. After the drop date, your instructor will entertain requests for incomplete contracts.

CITRUS COLLEGE
Moto 105: Fundamentals of Motorcycle Technology
Spring 2008

Class Standards

As employees in the motorcycle industry you will be expected to follow established standards of conduct. Students are expected to follow the standards listed below while attending this class.

ATTENDANCE:	Attendance in this class is mandatory. Material will be covered quickly. Students may be dropped after the third absence (regardless of reason for absence).
TEST ATTENDANCE:	No tests or quizzes can be made up when missed unless specific arrangements are made in **advance**. If you are late and a test is being taken, you **will not take the test**.
DRESS CODE:	Appropriate clothing should be worn at all times—absolutely ***no*** open-toed shoes, no shorts, no hats.
COURTESY:	Always exercise common courtesy while in class. Other classes will be in session—***please do not disturb them.***
SMOKING:	Smoking is ***not*** allowed anywhere in the Transportation Technology Department. Students are asked to support this policy. Violators of this policy will be dismissed from class and marked absent. This will impact the attendance portion of the grade.
FOOD & DRINK:	Food is **NOT** allowed in the classroom or shop. Beverages are ok, but your instructor may revoke this privilege at any time if cleanup becomes a problem.
CLEAN UP:	The classroom should be left neat and orderly at the end of each class session. **All chairs must be pushed in.** Clean up in the lab will begin 30 minutes before the end of class and all tools should be returned to their proper location prior to that time. ***Everyone*** will assist in clean up. Both the classroom and shop should look better after you leave than it did when you arrived.

Vehicles in the Shop

Students are encouraged to bring in their own motorcycles and/or those of family and friends for lab activities. All vehicles brought in for work must have instructor approval to prevent being ticketed by security. Vehicles may be stored overnight **only** with instructor approval (repair-order signature required). Vehicles left 72 hours or more without authorization may be towed without any additional warning. Citrus College and your instructor accept **NO** responsibility for damage or theft of personal property.

Preparedness

It is the responsibility of the student to be prepared for all activities, both classroom and shop.
What this means: Anticipate what you are going to have to do. If you don't have the right tools to take something apart, it doesn't get taken apart. If you don't have a pencil or Scantron, you don't take a test.

Special Grading Note

This syllabus serves an agreement between you (the student) and me (the instructor). I reserve the right to **raise** the grade of any student by a maximum of one letter if I determine, based solely on my own subjective impression, the student has made a particularly ***valiant*** effort throughout the course. This policy will never be used to **reduce** a rightfully earned grade. I do, however, reserve the right to grant a **zero** on the "Participation & Attendance" portion of the grade to those students who consistently fail to observe class standards or who fail to report promptly to class on a regular basis.

CITRUS COLLEGE

Moto 105: Fundamentals of Motorcycle Technology
Spring 2008

End-of-Term Portfolios

Course notebooks (your portfolio) are intended to provide students with a convenient means of storing and retrieving information that is derived from this course. What's more, they are meant to serve as evidence of successful completion of this course and will contain documentation to that effect. In order to develop a good course notebook the following criteria should be met:

1. Use a large (2-3 inch) three-ring loose-leaf binder that will accommodate standard 8½ by 11-inch paper. "View" binders are encouraged so that you may place attractive, identifiable media in the cover and spine. **Extra credit will be awarded for attractive and appropriate covers.**

2. Use index dividers to divide your notebook into appropriate sections. Each section should be clearly labeled.

3. The following should be easy to find in your notebook: blank paper, notes taken in class, handouts, worksheets (both classroom and lab), Sign-Off Sheets, Lab Competency Sheets, quizzes, technical articles (see #5 below) and other material **you** believe will be useful to you as a Motorcycle Technician.

4. Organize all of your material in a neat and logical manner. **Sign off sheets** and **Lab Competency Sheets** should be in the **first** section so they can be easily accessed.

5. ***Technical Articles:*** Each week, you must read at least one Motorcycle Technology related technical article from a magazine of your choice. A copy of the article should be kept in your notebook, along with a 1-paragraph summary (for format requirements, see "Other Assignments" below.)

6. **Important:** Use a **typed** table of contents. No notebook will receive a grade higher than "F" without one.

These notebooks should be organized in a manner that will promote their continued use and updating. There is no single "best" method of organization. Each student should continue to experiment with different ways of organizing the information that he/she collects and constantly strive to become more efficient in the various ways that he/she collects, stores, retrieves and uses automotive information and materials.

Course notebooks account for 10% of the course grade. Take care to turn in a good notebook; your grade will be adversely affected if you do not.

Notebooks will be due the day of the final. No late notebooks will be accepted.

Reading

Numerous quizzes will be given and a large portion of the material will be drawn from the text.

Note: There are a lot of reading assignments. Some of the chapters in the book are not specifically assigned. It is recommended that you read these sections anyway. You know yourself better than anyone else. You know what you understand and what you don't. **You are responsible for your own success.** Merely coming to class is not enough.

Homework

All homework assignments (review questions and chapter quizzes) should be hand written and stored in your notebook for reference. These assignments will not be collected, but will be part of your portfolio review at the end of the term.

Other Assignments

All written assignments (essays, research papers, reports, technical-article summaries, etc.) shall be word-processed and include student name, course number, and date ***single-spaced*** in the upper right-hand corner. The text of the assignment will be right-hand justified with 1-inch margins, ***double-spaced***, and shall use a twelve-point font.

Citrus College

Auto/Moto 291:
Engine Performance Enhancements and Tuning

Spring 2006

Course Syllabus

Dave Brown
Instructor

CITRUS COLLEGE

Auto/Moto 291: Engine Performance Enhancements and Tuning
Spring 2006

Instructor:	Dave Brown
Contact Info:	Office phone: (626) 852-8007 Office email: dbrown@citruscollege.edu
Office:	TA 410
Office Hours:	Monday – Thursday 1pm-2pm
Text:	***No Required Text*** Optional Text: How to Tune and Modify Engine Managements Systems, *Jeff Hartman*
Materials: (To Be Brought To Every Class Meeting)	1. This Syllabus 9. Three ring binder with dividers 10. Note taking material 11. Scantrons (Form 882—100 item) 12. Safety glasses 13. Basic hand tools (to be discussed in detail) 14. Simple calculator
Course Description:	This class covers the engine performance enhancements available for automobiles and motorcycles. The subject areas covered include stand-alone engine management systems, fuel systems, turbochargers, superchargers, nitrous oxide, ignition systems, and the use of the chassis dynamometer as a tuning tool.
Grading Criteria:	Lab Work 20% Final 10% Quizzes & Midterms 10% Notebook 20% Homework and other assignments (non-lab) 20% Participation & attendance (subjective) 20%
Grading Scale:	A = 92 - 100% B = 78 - 91% C = 69 - 77% F = 68% and lower
Cheating:	The names of any individuals engaging in any form of academic dishonesty (cheating) will be given to the Associate Dean of Student Services for appropriate disciplinary action to be determined. In addition, a penalty of a zero on that particular assignment and a zero for the "Participation & Attendance" portion of the grade will be awarded. **DO YOUR OWN WORK.**

Important

If you have questions, difficulties, or concerns regarding your ability to successfully complete this class, please bring them to my attention as soon as you can. If you require special accommodations for completion of coursework, it is your responsibility to make me aware of those needs by the **second week** of class. Also, if you decide to withdraw from this course, it is **your** responsibility to complete and submit the proper paperwork to the Admissions and Records Office by the deadline date in the class schedule.

Special Grading Note

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CITRUS COLLEGE

Auto/Moto 291: Engine Performance Enhancements and Tuning
Spring 2006

Class Standards

As employees in the motorcycle industry you will be expected to follow established standards of conduct. Students are expected to follow the standards listed below while attending this class.

Attendance:	Attendance in this class is mandatory. Material will be covered quickly. Students may be dropped after the third absence (regardless of reason for absence).
Test Attendance:	No tests or quizzes can be made up when missed unless specific arrangements are made in **advance**. If you are late and a test is being taken, you **will not take the test**.
Dress Code:	Appropriate clothing should be worn at all times—no open-toed shoes, no shorts. Eye protection must be worn during lab activities.
Courtesy:	Always exercise common courtesy while in class. Should other classes be in session, please do not disturb them.
Smoking:	Smoking is not allowed anywhere in the Transportation Technology Department. Students are asked to support this policy. Violators of this policy will be dismissed from class and marked absent. This will impact the attendance portion of the grade.
Food & Drink:	Food is **NOT** allowed in the classroom or shop. Beverages are ok, but your instructor may revoke this privilege at any time if cleanup becomes a problem.
Clean Up:	The classroom should be left neat and orderly at the end of each class session. **All chairs must be pushed in.** Clean up in the lab will begin 30 minutes before the end of class and all tools should be returned to their proper location prior to that time. **Everyone** will assist in clean up. Both the classroom and shop should look better after you leave than it did when you arrived.

Special Attendance Problems

Should you encounter difficulty in attending class due to obligations beyond your control (e.g. military obligations, jury duty, family emergency, death of pet rock, etc.) please inform your instructor as soon as possible so options can be discussed. If this occurs before the drop date, it may be best to drop the class. After the drop date, your instructor will entertain requests for incomplete contracts.

Vehicles in the Shop

Students are encouraged to bring in their own cars, trucks, and motorcycles and/or those of family and friends for lab activities. All vehicles brought in for work must have instructor approval to prevent being ticketed by security. Vehicles may be stored overnight **only** with instructor approval (repair-order signature required). Vehicles left 72 hours or more without authorization may be towed without any additional warning. Citrus College and your instructor accept **NO** responsibility for damage or theft of personal property. Please note: This is a zero-tolerance policy. Do not allow yourself to be made an example.

Preparedness

It is the responsibility of the student to be prepared for all activities, both classroom and shop.

What this means: Anticipate what you are going to have to do. If you don't have the right tools to take something apart, it doesn't get taken apart. If you don't have a pencil or Scantron, you don't take a test.

"Improvise, adapt, overcome…"—*Gunny Highway*

CITRUS COLLEGE

Auto/Moto 291: Engine Performance Enhancements and Tuning
Spring 2006

Course Notebooks

Course notebooks are intended to provide students with a convenient means of storing and retrieving information that is derived from this course. In order to develop a good course notebook the following criteria should be met:

1. Use a large three-ring loose-leaf binder that will accommodate standard 8½ by 11-inch paper. "View" binders are encouraged so that you may place attractive, identifiable media in the cover and spine. **Extra credit will be awarded for attractive covers.**

2. Use index dividers to divide your notebook into appropriate sections. Each section should be clearly labeled.

3. The following should be easy to find in your notebook: blank paper, notes taken in class, handouts, worksheets (both classroom and lab), sign-off sheets, quizzes, and other material **you** believe will be useful to you as a Motorcycle Technician.

7. Organize all of your material in a neat and logical manner. **Sign off sheets** should be in the **first** section so they can be easily accessed.

8. **Important:** Use a **typed** table of contents. No notebook will receive a grade higher than "C" without one.

9. ***Technical Articles:*** Students are required to read at least one current engine performance improvement related article per week. A copy of the text of the article must be kept in your notebook along with a summary (one paragraph, minimum—typed) written by **you**. Technical articles account for 50% of the notebook grade.

These notebooks should be organized in a manner that will promote their continued use and updating. There is no single "best" method of organization. Each student should continue to experiment with different ways of organizing the information that he/she collects and constantly strive to become more efficient in the various ways that he/she collects, stores, retrieves and uses motorcycle information and materials.

Course notebooks account for 20% of the course grade. Take care to turn in a good notebook; your grade will be adversely affected if you do not.

Notebooks will be due the day of the final. No late notebooks will be accepted.

Reading & Homework

Reading assignments are optional in this class. Students who choose to purchase and read any of the optional texts will be asked to evaluate the quality of those texts. Extra Credit will be awarded.

"Effort equals results"—*Roger Penske.*

"He who makes the poorest use of his time is the first to complain of its shortness"—*Chinese Proverb*

Appendix II—*Course Outlines of Record*

Please see CurricuNet for most current course outlines of record

Appendix III—*Program Statistical Data*

Key Performance Indicator	FA 02	FA 03	FA 04	FA 05	FA 06	FA 07
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Program Access						
Majors (total)						
New Majors						
Courses Offered (total # of courses)	4			1	1	1
Classes Offered (total # of sections)	4			1	1	1
Morning (Prior to 11:59AM)						
Afternoon (12:00 to 4:29PM)						
Evening (4:30PM or Later)	4			1	1	1
Arranged Hour						
Weekend						
Short term						
Distance Education (full term)						
Distance Education (short term)						
Enrollment	41.0			29.0	22.0	28.0
Weekly Student Contact Hours (WSCH)	151.0			112.6	85.5	141.8
Full-Time Equivalent Students (FTES)	5.2			3.9	2.9	4.3
Program Resources						
Full-Time Equivalent Faculty (FTEF)	0.7			0.2	0.2	0.2
Credit Reimbursement Rate	**$2,850.73**	**$2,790.53**	**$2,922.30**	**$3,259.71**	**$3,476.34**	**$4,367.00**
Program Operation						
WSCH/FTEF	204.1			592.5	449.8	708.8
FTES/FTEF	7.0			20.3	15.4	21.6
Fill rate at Census	39.5			120.8	91.7	112.5
Program Success						
Error! Hyperlink reference not valid.	67%			41%	50%	68%
Retention Rate	90%			90%	86%	96%

Key Performance Indicator	FA 02		FA 03		FA 04		FA 05		FA 06		FA 07	
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
Student Demographic Data												
	#	%	#	%	#	%	#	%	#	%	#	%
Gender												
Female	1	3%					2	7%	3	14%	2	7%
Male	37	97%					27	93%	19	86%	26	93%
Total	38	100%					29	100%	22	100%	28	100%
Age												
19 or younger	5	13%					11	38%	3	14%	6	21%
20-24	17	45%					6	21%	8	36%	10	36%
25-29	5	13%					4	14%	6	27%	3	11%
30-34	2	5%					3	10%	2	9%	3	11%
35-39	4	11%					1	3%		0%	3	11%
40-49	3	8%					3	10%		0%	3	11%
50 or older	2	5%					1	3%	3	14%		0%
Total	38	100%					29	100%	22	100%	28	100%
Ethnicity												
Asian	4	11%					1	3%	3	14%	3	11%
Black	1	3%						0%		0%	2	7%
Caucasian	22	58%					15	52%	6	27%	10	36%
Hispanic	10	26%					13	45%	11	50%	11	39%
Native American		0%						0%		0%		0%
Other		0%						0%	2	9%		
Declined to State	1	3%						0%		0%		
Unknown		0%						0%		0%	2	7%
Total	38	100%					29	100%	22	100%	28	100%
Educational Goal												
Degree/Cert/Transfer	28	74%					23	79%	14	64%	13	46%
Career/Ed Development	4	11%					2	7%	3	14%	3	11%
Improve Basic Skills											1	4%
Undecided											1	4%
Unknown	6	16%					4	14%	5	23%	10	36%
Total	38	100%					29	100%	22	100%	28	100%

Key Performance Indicator	SP 03	SP 04	SP 05	SP 06	SP 07	SP 08
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Program Access						
Majors (total)						
New Majors						
Courses Offered (total # of courses)	4			1	2	1
Classes Offered (total # of sections)	4			1	2	1
Morning (Prior to 11:59AM)						
Afternoon (12:00 to 4:29PM)						
Evening (4:30PM or Later)	4			1	2	1
Arranged Hour						
Weekend						
Short term						
Distance Education (full term)						
Distance Education (short term)						
Enrollment	54		25	27		31
Weekly Student Contact Hours (WSCH)	198.4		95.7	108.0		156.9
Full-Time Equivalent Students (FTES)	7.2		3.5	3.9		4.8
Program Resources						
Full-Time Equivalent Faculty (FTEF)	0.7		0.2	0.4		0.2
Credit Reimbursement Rate	2,850.7	2,790.5	2,922.3	3,259.7	3,476.3	4,367.0
Program Operation						
WSCH/FTEF	268.1		503.6	257.2		784.7
FTES/FTEF	9.7		18.2	9.3		23.9
Fill rate at Census	54.0		104.2	66.3		129.2
Program Success						
Success Rate	52%		27%	41%		65%
Retention Rate	93%		88%	96%		100%

Key Performance Indicator	SP 03		SP 04		SP 05		SP 06		SP 07		SP 08	
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
Student Demographic Data												
	#	%	#	%	#	%	#	%	#	%	#	%
Gender												
Female	3	6%			2	8%		0%			2	6%
Male	44	94%			24	92%	23	100%			28	90%
											1	3%
Total	47	100%			26	100%	23	100%			31	100%
Age												
19 or younger	9	19%			5	19%	5	22%			7	23%
20-24	14	30%			8	31%	10	43%			11	35%
25-29	5	11%			5	19%	1	4%			3	10%
30-34	8	17%			3	12%		0%				0%
35-39	5	11%			2	8%	4	17%			1	3%
40-49	4	9%			2	8%	2	9%			4	13%
50 or older	2	4%			1	4%	1	4%			5	16%
Total	47	100%			26	100%	23	100%			31	100%
Ethnicity												
Asian	5	11%			1	4%	2	9%			1	3%
Black	2	4%				0%		0%			4	13%
Caucasian	25	53%			5	19%	11	48%			5	16%
Hispanic	13	28%			19	73%	8	35%			18	58%
Native American		0%				0%		0%				
Other	1	2%			1	4%	1	4%				
Declined to State	1	2%				0%	1	4%				
Unknown		0%				0%		0%			3	10%
Total	47	100%			26	100%	23	100%			31	100%
Educational Goal												
Degree/Cert/Transfer	25	53%			12	46%	14	61%			13	42%
Career/Ed Development	10	21%			3	12%	4	17%			8	26%
Improve Basic Skills											2	6%
Undecided											2	6%
Unknown	12	26%			11	42%	5	22%			6	19%
Total	47	100%			26	100%	23	100%			31	100%

Key Performance Indicator	SU 02	SU 03	SU 04	SU 05	SU 06	SU 07
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Program Access						
Majors (total)						
New Majors						
Courses Offered (total # of courses)	No data					
Classes Offered (total # of sections)						
Morning (Prior to 11:59AM)						
Afternoon (12:00 to 4:29PM)						
Evening (4:30PM or Later)						
Arranged Hour						
Weekend						
Short term						
Distance Education (full term)						
Distance Education (short term)						
Enrollment	No data					
Weekly Student Contact Hours (WSCH)	No data					
Full-Time Equivalent Students (FTES)						
Program Resources						
Full-Time Equivalent Faculty (FTEF)	No data					
Credit Reimbursement Rate	2,850.7	2,790.5	2,922.3	3,259.7	3,476.3	4,367.0
Program Operation						
WSCH/FTEF						
FTES/FTEF						
Fill rate at Census	No data					
Program Success						
Course Retention	No data					
Course Success (any course, C or better or "Pass")						

Key Performance Indicator	SU 02		SU 03		SU 04		SU 05		SU 06		SU 07	
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
Student Demographic Data												
	#	%	#	%	#	%	#	%	#	%	#	%
Gender	**No Data**											
Female												
Male												
Total												
Age												
19 or younger												
20-24												
25-29												
30-34												
35-39												
40-49												
50 or older												
Total												
Ethnicity												
Asian												
Black												
Caucasian												
Hispanic												
Native American												
Other												
Declined to State												
Unknown												
Total												
Educational Goal												
AA or AS Degree												
Degree & Transfer												
Transfer (no degree)												
Certificate												
License												
Job Skills												
Personal												
Unknown												
Total												

Key Performance Indicator						WN 08
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Program Access						
Majors (total)						
New Majors						
Courses Offered (total # of courses)						No data
Classes Offered (total # of sections)						
Morning						
Afternoon						
Evening						
Arranged Hour						
Weekend						
Short term						
Distance Education (full term)						
Distance Education (short term)						
Enrollment						
Weekly Student Contact Hours (WSCH)						
Full-Time Equivalent Students (FTES)						
Program Resources						
Full-Time Equivalent Faculty (FTEF)						
Credit Reimbursement Rate						**$4,367.00**
Program Operation						
WSCH/FTEF						
FTES/FTEF						
Fill rate at Census						
Program Success						
Course Retention						
Course Success (any course, C or better or "Pass")						

Key Performance Indicator											WN 08	
	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
Student Demographic Data												
	#	%	#	%	#	%	#	%	#	%	#	%
Gender	**No Data**											
Female												
Male												
Total												
Age												
19 or younger												
20-24												
25-29												
30-34												
35-39												
40-49												
50 or older												
Total												
Ethnicity												
Asian												
Black												
Caucasian												
Hispanic												
Native American												
Other												
Declined to State												
Unknown												
Total												
Educational Goal												
AA or AS Degree												
Degree & Transfer												
Transfer (no degree)												
Certificate												
License												
Job Skills												
Personal												
Unknown												
Total												

Key Performance Indicator	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Program Resources						
Revenue: FTES* Reimbursement Rate	35,235.0	-	10,111.2	25,327.9	10,185.7	39,739.7
Total District Adopted Program Budget	na/	0	0	NO DATA	4,000	4,000
Support Personnel (wage without benefit, 2200 and 2400 in budget)	n/a	NO DATA	NO DATA	n/a	n/a	n/a
Supplies (4300 in budget)	n/a	0	NO DATA	0	0	0
Cost (district funds only)	n/a	0	NO DATA	0	4,043	-112
Total FTES for the year	12.36	0	3.46	7.77	2.93	9.1
Cost per FTES (district funds only)	n/a			0	1,379.9	(12.3)
Program Success						
Degrees Awarded						
Certificates Awarded						
Skill Awards						
Licenses						
Career Technical Education Programs						
VTEA Grant						
Industry Contributions to Program Resources						
Available Jobs						
Attach one copy of the three most recent College Core Indicator Information forms for each of the appropriate TOP codes						
Please include "Student Satisfaction" and "Employer Satisfaction" in the program review write-up.						

Appendix IV—*Program Core Indicators*

Core Indicators for Motorcycle Technology were unavailable from the Systems Office at the time of this printing

Appendix V—*Labor Market Information*

Motorcycle Mechanics

in Los Angeles County Motorcycle Mech

Diagnose, adjust, repair, or overhaul motorcycles, scooters, mopeds, dirt bikes, or similar motorized vehicles.

Occupational Wages

[Top]

Area	Year	Period	Hourly Mean	Hourly by Percentile 25th	Median	75th
Los Angeles-Long Beach-Glendale Metro Div	2008	1st Qtr	$17.50	$12.28	$15.57	$21.37

California Employment

When analyzing both public and private data sources (not just the state's Labor Market Information), California is currently home to an estimated 3,117 Motorcycle Mechanics. A 7.43% increase is projected between 2006- 2010 resulting in 232 additional jobs.

From the 3,117 jobs in 2006, the **largest concentration of jobs are located within Los Angeles County (766)**, followed by San Diego (305), and Orange Counties (326)..
Source: Occupational Profile Report for Riverside and San Bernardino Counties Motorcycle Mechanics (June 2007). p. 11-12. Center of Excellence, San Bernardino Community College District. Full report available at:
http://www.coeccc.net/Environmental_Scans/MotorMech_AtAG_IE_07.pdf

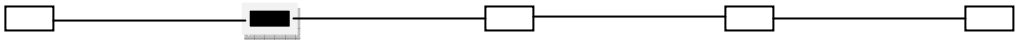
Appendix VI—*Two-Year Program Review (one page)*

CAREER EDUCATION PROGRAM TWO-YEAR REVIEW

Date: 14 November 2008 **College: Citrus College** **Program: Motorcycle Technology**

1. Purpose of this Program

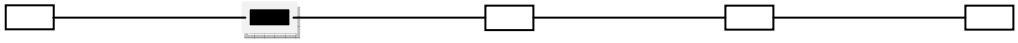
Significantly Changed Purpose in the Last Two Years | Minor Changes in Purpose in the Last Two Years | No Changes in Purpose in the Last Two Years



Program currently undergoing significant revisions to target career-oriented students.

2. Demand for this Program

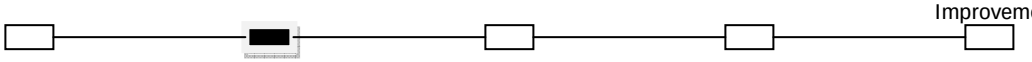
High Demand | Adequate Demand for our students | Low Demand



Advisory committee reports the only acceptable source of entry-level technicians to be MMI (private institution). Labor market information (Center for Excellence Environmental scans data) shows strongest potential for job growth in Los Angeles County. Current course offerings repeatedly fill, with students showing significant interest in future offerings.

3. Quality of this Program

Highest Quality | Meets Student Needs | Needs Significant Improvement



Partnerships with industry are beginning to bear fruit as several students have been placed in a local Harley-Davidson dealership. Certificates and degree options are being proposed and an articulation agreement with CSULA is in the works. VTEA funds have made equipment and late-model motorcycles available.

4. External Issues

Benefits From and Contributes to External Issues | Complies with External Issues | Not Consistent with External Issues

The program has received VTEA funding to help build the laboratory facility. No other external issues are known to exist.

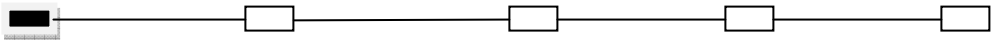
5. Cost of this Program

Income Exceeds Expenditures | Income Covers Expenditures | Expenditures Exceed Income

The program currently has a budget of $4,000 to cover supplies and equipment. VTEA funding has been granted in the past to equip the laboratory facility. The program has also received donations from industry.

6. Two-Year Plan

Significant Growth Anticipated | On Track for Next Two Years | Need Significant Changes and/or Increased Resources to Continue



Enrollment and FTES expected to grow. Initially, program will "piggy-back" on Auto-Tech program with concurrent-enrollment scheme in evening courses. This will allow growth in both the AUTO and MOTO evening programs and minimize the instructional cost. As the program grows, so will equipment and supply needs, as well as the need for qualified instructors and/or lab assistants. Six new classes and a new certificate have either been approved or are in the process of local approval. The letter of intent has been filled with the LA/OC regional consortia regarding our certificate development. Additionally, the department will be seeking a corporate partnership.

Signatures:

_____ _____

Administrator Date

_____ _____

Faculty Date

To Board of Trustees on _____

Date