

**ITEM 114-301-R0102 ATTACHMENT**

**Expected Program Contributions:**

Flathead Valley Community College is committed to enhancing the educational, cultural, social and economic well-being of the people of Northwest Montana . The College provides affordable opportunities for anyone to gain college-level skills, to complete a two-year college program, to complete the first two years of a four-year college program, to gain or upgrade job skills, and to learn for personal growth and enrichment.

*Goal/Objective #5 To maintain a curriculum that is responsive to the needs of students and the community by...*

- Continuing a close articulation of courses and programs with other colleges and universities,
- Compiling and evaluating student retention, graduation, transfer and employment statistics for all of the college's programs,
- Developing new instructional programs that respond to local, regional and national economic needs and job markets,
- Regularly reviewing all programs and courses to ensure that content and teaching techniques are current and relevant.

The addition of a Certificate in Heavy Equipment Maintenance will assist FVCC to fulfill its mission and goal of providing current and relevant programs while continuing to develop and broaden occupational programs.

**Program Need**

Flathead Valley Community College is interested in developing programs to offer our local citizens career alternatives. The development of the Certificate in Heavy Equipment Maintenance allows the College to continue expanding opportunities to our constituents and the citizens of Montana.

Flathead County is experiencing rapid population growth, projecting a 2% growth rate into the 21<sup>st</sup> Century. This expansion is complicated by a shift from a resource-based economy toward a trend of tourism. These two factors make it imperative that FVCC explore and provide alternative quality training and educational opportunities to area residents.

The Heavy Equipment Maintenance Program was initiated in response to a local labor shortage for entry-level heavy equipment maintenance personnel. Currently, Flathead County has over 35 businesses that employ heavy equipment maintenance personnel. There is an average of four to five valid employment listings on a monthly basis. Many of these requirements go unfilled in excess of 90 days.

**Program Description**

The Heavy Equipment Maintenance Program was initiated in response to a local labor shortage for entry-level heavy equipment maintenance personnel. Developed as a "Total Community Partnership" initiative, the active participants include four secondary school districts, Flathead Valley Community College, Montana State University – Northern, local business and Montana labor organizations. One part-time instructor teaches the five technically related required courses. FVCC faculty teaches the remaining five course requirements for the Certificate. The program prepares students for entry-level positions in Heavy Equipment Maintenance and for advanced placement into the Montana State University – Northern (MSU-N) Associate and Bachelor programs in Automotive and Diesel Maintenance.

**Impact on Administrative Structure**

No revision of the current administration structure is required.

**Similar Programs in Montana**

- Montana State University – Northern
- Miles City Community College
- Montana State University – Billings College of Technology
- Helena College of Technology of the UM

**Program Accreditation**

The proposal meets the standards for accreditation by the Northwest Association of Schools and Colleges.

**Proposed Curriculum: Certificate in Heavy Equipment Maintenance**

<u>Course Number</u>	<u>Course Title</u>	<u>Credits</u>
AD 200	Introduction to Engines (gas/diesel)	4
AD 210	Diesel Technology	4
AD 220	Auto/Diesel Electrical Systems	4
AD 230	Hydraulics and Pneumatics	4
AD 275	Cooperative Education	9

CMPA	100	Introduction to Microcomputers	1
SP	120	Interpersonal Relations/Communications	3
MATH	103	Intermediate Algebra	4
OR			
BUS	120	Business Math	4
IT	175	Introduction to AutoCAD	3
WLD	110	Basic Oxyacetylene/Arc Welding	4
		Elective – Technology	3
<b>Total Credits</b>			<b>43</b>

Individual course descriptions are included at the end of this proposal.

### Faculty

Mr. William Roope, BA, MED, is a full-time program director at FVCC. He will actively be involved in the advising, and supervision of the students and instructors involved in the Heavy Equipment Maintenance program. It is anticipated he will devote approximately 10% of his time to the program

Mr. Robert Hunter, BA, MA, is a part-time instructor at FVCC. He has a Masters Certification from the National Institute for Automotive Service Excellence. Mr. Hunter will actively teach all AD courses offered as part of the Heavy Equipment program.

### Support Personnel

The present level of support personnel will meet program needs. As an instructional offering, the program will be administered under the general supervision of the Dean of Instruction. Approximately 3 percent of the Deans time will be devoted to the program during early implementation and approximately one percent thereafter.

### Operating Expenditure Needs

It is anticipated that no additional operating expenses will be needed.

### Library Resources

Library resources are available to support this program.

### Facilities and Space

The program will utilize the Flathead High School Automotive Facility. This facility is adequate to meet program needs.

### Program Quality and Assessment

Flathead Valley Community College has implemented an Outcomes Based Assessment Program that will require periodic program review and evaluation. Student placement and employee satisfaction will also be evaluated. Lastly, statistics on job placement and salary ranges will be reviewed. An active advisory board, made up of members of the community, will play a pivotal role in the on-going community assessment of the program.

## COURSE DESCRIPTIONS

### CMPA 100 Introduction to Microcomputers

Credits: 1

Prerequisites or co-requisite: *OT 100 may be taken at the same time as CMPA 100.*

An Introduction to computers and their capabilities for those people with no prior experience. A straightforward hands-on approach to provide people with basic skills to pursue additional computer courses. Basic concepts of word processing, spreadsheets and database are presented.

### SP 120 Interpersonal Relations/Communications

Credits: 3

Prerequisites: None

Study of and practice in communication skills in professional life and daily relationships. This course is cross-referenced with HS 120.

### Math 103 Intermediate Algebra

Credits: 4

Prerequisites: *A grade of "C" or better in MATH 78 or instructor's consent.*

Intermediate Algebra reviews the topics of real numbers, solving equations and inequalities, and polynomials. The course covers the topics of graphs of equations and inequalities, system of equations and inequalities, rational expressions and equations, radical expressions and equations, and quadratic equations.

### BUS 120 Business Math

Credits: 4

Prerequisites: *Satisfactory score on Math placement tests.*

Use of basic mathematical concepts as they apply to business including a review of basic mathematical concepts and application of these concepts and application of these concepts in cash reconciliation, payroll, discounts, interest taxes, depreciation, inventory and the time value of money.

**IT 175 Introduction to AutoCAD**

Credits: 3

Prerequisites: None

A systems-oriented class designed to introduce students to the concepts, techniques, and applications of PC-based computer aided drafting. The course will provide students with the competencies required to create, edit and output drawings in both digital and printed format. Command structures, coordinate drawing text dimensions, and fill structures will be covered.

**WLD 110 Basic Oxyacetylene/Arc Welding**

Credits: 4

Prerequisites: None

An introduction to oxyacetylene welding, cutting and brazing practices on steel of varying thickness.

**AD 200 Introduction to Engines Gas/Diesel**

Credits: 4

Prerequisites: None

An overview of the design, operation, diagnosis and service procedures of automotive/commercial engines.

Students participate in the disassembly and re-assembly of gas and diesel units. Service and technical data are presented to prepare the student for practical experience in engine servicing.

**AD 210 Diesel Technology**

Credits: 4

Prerequisites: None

Construction, operation and repair of diesel engines, logical steps of procedures for engine reconditioning, installing and timing of fuel injector components. Emphasis will be placed on engine component reconditioning, engine tune-ups, and use of special diagnostic tools.

**AD 200 Auto/Diesel Electrical/Electronic Systems**

Credits: 4

Prerequisite: None

A study of electrical/electronic fundamentals applied to automotive and commercial vehicle systems. Includes theory, design, diagnosis, and repair of wiring and circuits, batteries, alternators, and starters. The use of test instruments and electrical troubleshooting procedures currently recommended by industry standards will be emphasized.

**AD 230 Hydraulics and Pneumatics**

Credits: 4

Prerequisite: None

Theory and application of hydraulics and pneumatics used in automotive and heavy equipment industries. Students will demonstrate hydraulic principles at live workstations through diagnosis, disassembly and re-assembly of sub-component systems. This will include an open and closed center system, fixed and variable displacement pumps, linear and rotary actuators, pressure and flow controls, and directional valves.

**AD 275 Cooperative Education**

Credits: 9

Prerequisite: None

A planned and supervised work learning experience extending the student's academic background into the Heavy Equipment Maintenance Industry.

**Elective(s) – Technology**

Credits: 3

See advisor for suggested courses.