College of Micronesia – FSM
P.O. Box 159
Kolonia, Pohnpei

Course Outline Cover Page

Fuel, Lubrication, Carburetor & Ignition — Course Title

VSM 102 — Department and Number

Course Description: This course introduces students to the basic design, function and operation of the small engine's fuel, lubrication, carburetor and ignition systems. It is aimed at providing students with enough information and guidance to enable them to understand the fundamentals of these related subjects as they have progressed through the years. The major expense in the repair and maintenance of small engines are attributed to these systems and a thorough understanding of these subjects is an added advantage for the would-be technician or enthusiast.

Prepared by: Pablo H. Lamsis, Jr. **State:** Pohnpei Campus

	Hours per Week	No. Of Weeks	Total Hours	Semester Credits
Lecture	3	16	48	3
Laboratory	3	16	48	1
		Total Semester Credits:		4

Purpose of Course

Degree Requirement	_____
Degree Elective	_____
Advanced Certificate	_____
Certificate	_____XX_____
Remedial	_____
Other (Workshop)	_____

Prerequisite Course(s): VSM 101 or concurrently.

_____ _____
Signature, Chairman, Curriculum Committee **Date Approved by Committee**

_____ _____
Signature, President, COM-FSM **Date Approved by the President**

I. LEARNING OUTCOMES:

A. General Learning Outcomes: Upon successful completion of this course the student will be able to:

1. Explain the types of fuel systems used in small engines.
2. Explain what is a gasoline and the other fuels used in small engine operation.
3. Describe the function of the lubricating system in a small engine.
4. Identify main parts of the carburetor and explain their function.
5. Identify ignition components, explain their functions and demonstrate how to perform basic maintenance.

B. Specific Learning Outcomes: Learning Outcomes: On completion of this course the student will be able to:

Learning Outcome 1: Explain the types of fuel systems used in small engines.

Assessment Criteria: a. Explain and fuel system types of the following:
- Gravity fuel system
- Suction fuel system
- Fuel pump system
- Pressurized fuel system

Assessment Method: Multiple choice questions
Short answer questions
Practical exercises/tests

Learning Outcome 2: Explain what is a gasoline and the other fuels used in small engine operation.

Assessment Criteria:
a. Explain the properties of gasoline fuel, storage life, anti-knock value and its additives.
b. Differentiate between leaded and unleaded gasoline.
c. Discuss how engine emissions are controlled.
d. Identify other types of fuel used in small engines.

Assessment Method: Multiple choice questions
Short answer questions
Practical exercises/tests

Learning Outcome 3: Describe the function of the lubricating system in a small engine.

Assessment Criteria: a. Describe the role and function of the lubrication

system.

b. Explain what are fossil and synthetic-based lubricants.
c. Explain the purpose of additives in a lubricant.
d. Identify some oil grade types.
e. Describe oil demands in a small engine.

Assessment Method: Multiple choice questions
Short answer questions
Practical exercises/tests

Learning Outcome 4: Identify main parts of the carburetor / fuel injection system and explain their function.

Assessment Criteria
a. Identify carburetor parts and describe functions of the major parts.
b. Demonstrate an understanding how to perform basic maintenance and troubleshooting of a carburetor.
c. Explain and discuss the difference between a diaphragm-type and a variable-venturi carburetor type.
d. Explain fuel injection system
e. Demonstrate how to dismantle and rebuild a basic type of small engine carburetor.

Assessment Method Multiple choice questions
Short answer questions
Practical exercises/tests

Learning Outcome 5: Identify ignition components, explain their functions and demonstrate how to perform basic maintenance.

Assessment Criteria
a. Describe ignition electrical concepts and components.
b. Explain the difference between a magneto ignition and a battery ignition.
c. Explain what is electronic ignition.
d. Explain what is a sparkplug and demonstrate how to repair a damaged sparkplug thread.
e. Perform ignition maintenance.

Assessment Method Multiple choice questions
Short answer questions
Practical exercises/tests

STUDENTS SHOULD BE MADE AWARE OF OCCUPATIONAL HEALTH AND SAFETY ISSUES IN ALL SITUATIONS AND BE EXPECTED TO DEMONSTRATE SAFE WORKING PRACTICES AT ALL TIMES.

II. COURSE CONTENTS:

A. Fuel and lubrication system
- Types of fuel systems
- Gasoline and other fuels
- Lubrication system
- Oil grades
- Recommended lubrication
- Lubrication problems
- Two-cycle oil

B. Carburetors
- Carburetor construction
- Carburetor functions
- Maintenance and troubleshooting
- Various carburetor types
- Diaphragm carburetor with fuel pump
- Variable venturi carburetor
- Fuel injection system
- Carburetor rebuild

C. Ignition system
- Electrical concepts and components
- Simple alternator
- Magneto and battery ignition
- Electronic ignition
- Sparkplugs
- Ignition system maintenance

III. TEXTBOOK:

Small Engine Technology, (Workbook) by William Schuster ISBN: 0-8273-7701-0

IV. REQUIRED COURSE MATERIALS:

1. Instructor:

a. Classroom with whiteboard
b. Laboratory equipment with tools of the trade
c. Text, Teacher's Resource Guide, workbook
d. Computer, Overhead projector, transparencies

2. Student:

a. Text(s), handouts provided when deemed necessary by the Instructor
b. Ring binder
c. College ruled note sheet, pencil or pen

V. REFERENCE MATERIALS:

Small Engine Technology by William Schuster (ISBN: 0-8273-7700-2)
Small Engine Technology by William Schuster (0827377789)
Small Engine Care & Repair by Briggs & Stratton
Small Engines Fundamentals and Service, Eugene W. Stagner, 1998
How Stuff Works, www.howstuffworks.com
Manufacturer's Service Manuals
Selected Films and Charts from Various Sources

VI. METHODS OF INSTRUCTION:

1. Computer Aided Instruction
2. Practical/Experimentation
3. Lecture/Demonstration

VII. EVALUATION:

Final Grade for this course will be based on meeting the course requirements at the following percentage rates:

90% - 100%	A – Excellent
80% - 89%	B – Above Average
70% - 79%	C – Average
60% - 69%	D – Below Average
0 % - 59%	F – Failure

Credit by Examination is allowed

VIII. ATTENDANCE POLICY:

The COM-FSM attendance policy will apply.

IX. ACADEMIC HONESTY POLICY:

The COM-FSM academic honesty policy will apply.