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

Course Outline Cover Page

Soldering and Mechanical Termination Techniques — Course Title
VEE 100 — Department and Number

Course Description: Students will learn how to produce solder connections and identify and rectify inferior solder joints. Students will select and prepare the correct soldering tools. In addition the student will master PC component insertion/extraction techniques, basic connector termination techniques and wire wrapping.

Prepared by: Brent Villiers **State:** National Campus

	Hours per Week	No. Of Weeks	Total Hours	Semester Credits
Lecture	3/6	8/4	24	1.5
Laboratory				
		Total Semester Credits:		1.5

Purpose of Course

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

Prerequisite Course(s): Admission

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

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

General Objective:

This course aims to provide the student with the necessary hand skills to produce both reliable solder joints and reliable mechanical terminations. At the completion of the course the student will be able to identify faulty connections and terminations and repair them to an acceptable industry standard.

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

1. Identify and perform the techniques for printed circuit track and pad repair as well as component insertion and extraction.
2. Select the correct connection type and create reliable solder joints using basic hand soldering techniques.
3. Demonstrate the correct method of terminating the following basic connectors.
    - Banana Plugs
    - Crimp Connectors
    - BNC Connectors
4. Describe the characteristics of, and the procedures for making good wire wrap connections. Recognize common wire wrapping faults and correctly terminate wire wrap connections.
5. By measurement perform basic wiring and connector troubleshooting.

NOTE.

SAFETY GLASSES MUST BE WORN AT ALL TIMES DURING PRACTICAL EXERCISES.

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.

Outline of Content: The course content is as follows:

1. Printed Circuit Board (PCB) track and pad repair and PCB component repair techniques.

2. Basic Soldering Techniques for the following joints:
   - Rigid
   - Clinch
   - Double Clinch

3. Basic Connector Termination Techniques for
   - banana plugs
   - crimping
   - BNC Connectors

4. Basic Wire Wrapping.

5. Basic Wiring and Connector Troubleshooting.

Learning Outcomes: On completion of this course the learner will be able to:

Learning Outcome 1 **Identify and perform the techniques for printed circuit track and pad repair as well as component insertion and extraction.**

Assessment Criteria

a. Identify the general characteristics of PCB's.
b. Identify connection methods used on PCB's.
c. Identify the general techniques for insertion and extraction of PCB components.
d. Identify the general techniques for repairing PCB tracks and pads.
e. To industry standards insert and extract PCB components.
f. Repair tracks and pads to a serviceable condition.

Assessment Method

Multiple choice questions
Short answer questions
Practical exercises/tests

Learning Outcome 2	**Select the correct connection type and create reliable solder joints using basic hand soldering techniques.**
Assessment Criteria	a. Identify different types of solder. b. Identify different types of flux. c. Select the correct soldering iron for a particular task. d. State the proper method of wire preparation for soldering. e. Identify different types of wire terminations and their connection methods. f. Make reliable solder connections and identify and repair poor ones.
Assessment Method	Multiple choice questions Short answer questions Practical exercises/tests
Learning Outcome 3	**Demonstrate the correct method of terminating the following basic connectors.** • **Banana Plugs** • **Crimp Connectors** • **BNC Connectors**
Assessment Criteria	a. Identify and name uses for common wire and cable types. b. Describe basic connector termination techniques. c. Correctly terminate banana plugs, crimps and BNC connectors.
Assessment Method	Multiple choice questions Short answer questions Practical exercises/tests
Learning Outcome 4	**Describe the characteristics of and the procedures for making good wire wrap connections. Recognize common wire wrapping faults and correctly terminate wire wrap connections.**
Assessment Criteria	a. Describe common types of wire wraps. b. Describe the characteristics of good wire wrap connections and the procedure for making them. c. Correctly wire wrap connections. d. Recognize and rectify wire wrapping faults.

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

Learning Outcome 5 **By measurement perform basic wiring and connector troubleshooting.**

Assessment Criteria

a. Follow logical troubleshooting procedures.
b. Describe open, short and changed value circuit measurements.
c. Describe different cable and connector labeling methods.
d. Perform continuity checks on shielded and unshielded cables.

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

Required Course Materials:

1. Instructor:

a. CAI Classroom with whiteboard or chalkboard
b. Practical laboratory equipped with tools of the trade
c. Overhead projector, transparencies

2. Student:

a. Text(s), handouts provided by instructor
b. Ring binder
c. College ruled note sheet, pencil or pen
d. Combo Tool Kit provided by instructor

Reference Materials:

Basic Electronics, *Eighth Edition*
Bernard Grob, 1997

Method of Instruction:

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

Evaluation:

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

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

Attendance:

The COM-FSM attendance policy will apply