



## I. Course Learning Outcomes

A. General Objective: This course is designed to provide students with the opportunity to apply the principles of operation for video system products including service and repair procedures of various products. Students will experience hands-on activities such as fault diagnosis, cost estimates, parts testing and replacement, reassembling and testing of repaired video systems and products following manufacturer and industry standards.

B. Specific Objectives: Upon successful completion of this course students will be able to service and repair:

1. Television (TV) systems and computer monitors
2. Video cassette recorders (VCR)
3. Compact disc (CD) player and recorders (eg. Discman, CD MP3 player, CD ROM drive, CD R/RW).
4. Digital video disc (DVD) players and recorders

## II. Outline of Course Content

### 1. *Television (TV) System /Computer Monitor*

1. TV / Computer Monitor Principles of operation.
2. Stages and its function
3. Voltage and waveforms
4. Diagramming and circuit tracing
5. Service position
6. Electrical and signal adjustments
7. Maintenance procedure
8. Data gathering and costing
9. Symptoms analysis and diagnosis
10. Troubleshooting procedure
11. Safety precaution in TV/Computer Monitor troubleshooting

### 2. *Video Cassette Recorder (VCR)*

1. VCR Principles of operation.
2. Stages and its function
3. Voltage and waveforms
4. Diagramming and circuit tracing
5. Service position
6. Electrical and signal adjustments
7. Maintenance procedure
8. Data gathering and costing
9. Symptoms analysis and diagnosis
10. Troubleshooting procedure

11. Safety precaution in VCR troubleshooting

3. *Compact Disc (CD)*

1. CD Principles of operation
2. Basic configuration and function of pulse coded modulation (PCM) recording and reproduction,
3. Configuration of compact disc
4. Stages and its function
5. Voltage and waveforms
6. Diagramming and circuit tracing
7. Service position
8. Electrical and signal adjustments
9. Maintenance procedure
10. Data gathering and costing
11. Symptoms analysis and diagnosis
12. Troubleshooting procedure
13. Safety precaution in CD troubleshooting

4. *Digital Video Disc (DVD)*

1. DVD Principles of operation
2. Basic configuration and function of pulse coded modulation (PCM) recording and reproduction,
3. Configuration of compact disc
4. Stages and its function
5. Voltage and waveforms
6. Diagramming and circuit tracing
7. Service position
8. Electrical and signal adjustments
9. Maintenance procedure
10. Data gathering and costing
11. Symptoms analysis and diagnosis
12. Troubleshooting procedure
13. Safety precaution in DVD troubleshooting

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

### III. Textbook

- ❖ Servicing TV, Satellite and Video Equipment by Eugene Trundle, ISBN 0-7506-55070
- ❖ Complete Guide to Modern VCR Troubleshooting and Repair by Howard W. Sams, ISBN: 0131603590
- ❖ Troubleshooting and Repairing Consumer electronics without schematics by Homer L. Davidson, ISBN 0-07-142181-5
- ❖ Computer Monitor Troubleshooting and Repair by Howard W. Sams & Company,

### IV. Required Course Materials

#### Instructor:

- a. CAI Classroom with whiteboard or chalkboard
- b. Laboratory equipment with tools of the trade
- c. Text, Teacher's Resource Guide, workbook
- d. Overhead projector, transparencies
- e. TV, VCR, CD, and DVD player and recorder
- f. Cables and connectors for hook-ups

#### Student:

- a. Text(s), handouts provided by instructor
- b. Ring binder
- c. College ruled note sheet, pencil or pen
- d. Scientific calculator
- e. Tool box and complete set of tool kits

### V. Reference Materials

- ❖ Service manuals of TV, VCR, CD and DVD of any brand
- ❖ PANADOC instructional CD by Panasonic
- ❖ Sony Discman Service Manual D141/D143 by Sony Corporation
- ❖ Aiwa VCR Service Manual HV-FX770 by Aiwa Corporation

### VI. Instructional Cost

Refer to attached list of materials and equipment.

### VII. Methods of Instruction

1. Computer Aided Instruction
2. Practical/Experimentation
3. Lecture/Demonstration
4. Troubleshooting of Video system and products

## VIII. Evaluation

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

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

Credit-by-examination is not available for this course.

## IX. Attendance Policy

The COM-FSM attendance policy will apply.

## X. Academic Honesty

The COM-FSM academic honesty policy will apply.

## XI. Assessment Criteria

Learning Outcome 1: Service and Repair Television (TV) Systems/Computer Monitors

- Assessment Criteria:
- a. explain the principles and operations of a TV/ Computer monitor system
  - b. identify the stages and circuits of a TV / Computer monitor system
  - c. adjust TV / Computer Monitors controls and service mode settings (operator and service control)
  - d. hook-up MATV and CATV
  - e. trace block and schematic diagram of the TV System / Computer Monitor circuits
  - f. check and measure voltage and waveform on each test points
  - g. position TV / Computer system properly for servicing
  - h. demonstrate maintenance procedure accurately
  - i. identify the symptoms and effect of TV/ Computer system circuit stages failures
  - j. perform actual troubleshooting
  - k. check and replace passive and active components embedded in TV / Computer System circuits
  - l. perform burn testing for repaired TV / Computer monitor system
  - m. discuss data gathering procedure on pre-service and post-service of TV / computer monitor system and follow safety precaution in TV / computer monitor servicing

Assessment Methods: Multiple Choice Questions  
Short answer Questions  
Observation  
Performance test

Learning Outcome 2: Service and Repair Video Cassette Recorder (VCR)

Assessment Criteria:

- a. explain the principles of operation of VCR (playback and recording)
- b. identify the stages and circuits of VCR
- c. identify and adjust VCR operator and service controls,
- d. hook-up VCR in playback recording and tuner mode,
- e. trace the block and schematic diagram of VCR (Power supply, System control, Audio Video and Servo circuit),
- f. check and verify the voltages and signal waveform of each test points set on service manuals set the VCR on service position,
- g. check and replace defective passive,
- h. active and mechanical components or parts,
- i. perform maintenance procedure according to service manual,
- j. perform testing procedure for the repaired VCR,
- k. discuss data gathering procedure on pre-service and post-service of VCR system and follow safety precaution in TV servicing.

Assessment Methods: Multiple Choice Questions  
Short answer Questions  
Observation  
Performance test

Learning Outcome 3: Service and Repair Compact Disc (CD)

Assessment Criteria:

- a. Explain the principles of operation of CD (playback and recorder)
- b. discuss the basic configuration and function of pulse coded modulation (PCM) recording and reproduction
- c. identify the configuration of CD
- d. identify the stages and circuits of CD
- e. identify and adjust CD operator and service controls
- f. trace the block and schematic diagram of CD (Power supply, System control, Audio and Servo circuit)
- g. check and verify the voltages and signal waveform of each test points set on service manuals
- h. set the CD on service position
- i. check and replace defective passive
- j. active and mechanical components or parts

- k. perform maintenance procedure according to service manual
- l. perform testing procedure for the repaired CD
- m. discuss data gathering procedure on pre-service and post-service of CD system follow safety precaution in CD servicing

Assessment Methods: Multiple Choice Questions  
 Short answer Questions  
 Observation  
 Performance test

Learning Outcome 4: Service and Repair Digital Video Disc (DVD)

- Assessment Criteria:
- a. explain the principles of operation of DVD (playback and recorder)
  - b. discuss the basic configuration and function of pulse coded modulation (PCM) recording and reproduction
  - c. identify the configuration of DVD
  - d. identify the stages and circuits of DVD
  - e. identify and adjust DVD operator and service controls
  - f. trace the block and schematic diagram of DVD (Power supply, System control, Audio, Video and Servo circuit)
  - g. check and verify the voltages and signal waveform of each test points set on service manuals
  - h. set the DVD on service position
  - i. check and replace defective passive
  - j. active and mechanical components or parts
  - k. perform maintenance procedure according to service manual
  - l. perform testing procedure for the repaired DVD
  - m. discuss data gathering procedure on pre-service and post-service of DVD system
  - n. demonstrate safety precaution in DVD servicing

Assessment Methods: Multiple Choice Questions  
 Short answer Questions  
 Observation  
 Performance test