



West Virginia State Community and Technical College



West Virginia State Community and Technical College is regionally accredited with the North Central Association and is a Servicemembers Opportunity College.

RADAR

CATALOG DESCRIPTION:

A 30 hour course designed for those working in either Avionics or Telecommunications. The course covers the Federal Communication Commission's rules and regulations as well as the theory of RADAR. The course provides the knowledge base for legally operating and maintaining fixed land based and mobile air, sea, and land based RADAR transmitters.

COURSE OBJECTIVE:

To prepare students working in either Avionics or Telecommunications to legally operate and maintain fixed land based and mobile air, sea, and land based RADAR transmitters.

COURSE LEARNING OUTCOMES:

Upon completion of this course the students should be able to pass element eight of the Federal Communication Commission examination, as well as understand and or do the following:

- Draw a block diagram of a basic RADAR transceiver
- Describe the basic components used in a RADAR system
- Identify the common electronics components used in the RADAR system
- Name the components utilized in RADAR antennas, drives and positioning units
- Describe the usage of ATR and TR tubes
- Compare the different types of RADAR displays
- Explain the uses for various oscillators and timing circuits in a RADAR system
- Perform calculations to solve wavelength and frequency problems
- Discuss the differences between coaxial cables RG-6; RG-58 and RG-59
- Discuss the usage of Fiber Optics cabling as well as telephone wiring such as twisted pair and CAT-5
- Explain reason for using wave guides, rather than cables, for RADAR transmission hardware
- Describe the use of cavity type traps in wave guides
- List possible causes of problems in wave guides
- Explain the mechanical dangers when working around RADAR movable antenna systems
- Explain the radiation dangers when working around RADAR systems
- List the special purposes of various types of amplifiers used in RADAR transceivers
- Describe some of the differences between audio amplifiers; video amplifiers, RF and IF amplifiers and amplifiers used at RADAR transceiver frequencies
- Explain bandwidth and estimate the minimum bandwidth needed for the amplifiers
- Explain safety precautions required when working around high powered amplifiers
- Draw a diagram of an operational amplifier
- Measure the gain of various op-amps
- Demonstrate proper use of signal generators, oscilloscopes and power meters used with amplifiers
- Describe how radio frequency electromagnetic waves are propagated
- Draw a block diagram of a RADAR transceiver