Sinclair Community College
444 E. Third St.
Dayton, OH 45402

Master Syllabus

EGR 1202 - Introduction to Radar

Division: Science, Mathematics and Engineering

Department: Automation and Control Technology

Credit Hour Total: 3.0 **Lecture Hrs:** 2.0 **Lab Hrs:** 2.0

Prerequisite(s): EGR 1122 AND MAT 1280

Other Prerequisite(s): AND Approval of Department

Date Revised: March 2014

Course Description:

Capabilities and limitations of radar, the performance and implementation of its critical sub-systems and the requirements particular radars must meet in order to perform common Measurement and Signature Intelligence (MASINT) and Advanced Geospatial Intelligence (AGI) missions (e.g. Synthetic Aperture Radar (SAR), Line of Sight and Over the Horizon). Students will become conversant in Radar and able to exploit its use in a variety of potential intelligence tasks with a basic knowledge enabling them to predict the expected performance of a radar system. Two classroom, two lab hours per week.

General Education Outcomes:

- Written Communication Competency
- Critical Thinking/Problem Solving Competency
- Computer Literacy Competency
- Information Literacy Competency

Course Outcomes:

Radar cross section and antennas
Describe functions of an antenna and directivity, gain, area, aperture efficiency, and resistive losses.

Assessment Method: Locally developed exams
Performance Criteria: 70% or higher correct responses

Types of radar
Describe various types and characteristics of radars.

Assessment Method: Locally developed exams
Performance Criteria: 70% or higher correct responses

Radar basics
Describe the underlying phenomenology of a target as regards radar energy reflected from it and its key characteristics.

Assessment Method: Locally developed exams
Performance Criteria: 70% or higher correct responses

Outline:

History and mathematical foundations of radar
Radar cross section and antennas
Radar range equation and propagation
Clutter and doppler
Pulse doppler radar
Over-the-horizon radar
Integration for Measurement and Signature Intelligence (MASINT)
MASINT Applications