

## 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

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### 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