

## Master Syllabus

### EGR 1212 - Measurement & Signal Intelligence

**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 1202

**Other Prerequisite(s):** AND Approval of Department , AND Other Secret Clearance

**Date Revised:** February 2014

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### Course Description:

Overview of Measurement and Signature Intelligence (MASINT) and Advanced Geospatial Intelligence (AGI) disciplines including the science behind geophysical signatures such as Chemical, Biological, Radiological and Nuclear Weapons. MASINT as it relates to Seismic and Acoustic phenomena, Geophysical Materials and Radio Frequency Spectrum. Different technologies used in lethal and nonlethal Directed Energy Weapons identifying strengths and vulnerabilities of electromagnetic and chemically powered artillery. Students will apply MASINT/AGI collection and processing techniques and capabilities to develop a collection and analysis plan targeting one of today's challenging intelligence problems. Two classroom, two lab hours per week.

### General Education Outcomes:

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

### Course Outcomes:

#### Directed energy weapons

Describe types of technologies that are considered directed energy weapons.

**Assessment Method:** Focus groups

**Performance Criteria:** Score 17.5 or higher on five by five rubric

#### Geophysical MASINT

Apply MASINT principles to signature intelligence.

**Assessment Method:** Focus groups

**Performance Criteria:** Identify and describe at least seven types of MASINT weapons

#### Synthetic aperture radar

Explain the concept of a synthetic aperture and recognize various images.

**Assessment Method:** Focus groups

**Performance Criteria:** Score 17.5 or higher on five by five rubric

### Outline:

Magnetic signatures and geophysical MASINT relationship  
Synthetic aperture, radar directed energy weapons  
Seismic, sonar, acoustic sensing for MASINT  
Radiological and nuclear weapons  
Chemical and biological weapons  
Directed energy weapons  
Weapons of Mass Destruction  
Methods used to identify chemical compounds collected by remote sensing