

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

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

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