

## Master Syllabus

### EGR 1201 - Introduction to Spectral Sensing with Applications in 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 1121

**Other Prerequisite(s):** AND Approval of Department

**Date Revised:** March 2014

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#### Course Description:

Concepts of spectral remote sensing as they are applied to military / intelligence applications with special emphasis on commercial sensors and solutions. Advantages and disadvantages of special remote sensors. Content will cover available unclassified spectral instruments (both hyper-spectral and multi-spectral sensors), their characteristics and how to best employ them. Topics include Basic Spectral Phenomenology, the Spectral Signature, Sensor Analysis, Data Products and Data Fusion. 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:

##### Typical image processing and analysis

Identify and list major ground-based, airborne, and spaceborne remote sensing instruments.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 70% or higher correct responses

##### Spectral signature

Identify and characterize spectral signatures.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 70% or higher correct responses

##### Tenets of spectral remote sensing

Summarize typical pre and post processing of spectral data.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 70% or higher correct responses

#### Outline:

Interaction of light with both the atmosphere and surface of the earth

Identification and characterization of specific spectral signatures

Identification and definition of primary instrument characteristics and design criteria

Identification and listing of major ground-based, airborne and spaceborne spectral remote sensing instruments

Important stages and decisions made during mission planning; trade-offs and the advantages and disadvantages of each choice

Pre and post processing of spectral data

Typical types of data products and applications: characteristic spatial and temporal, forestry, urban and land-use mapping

General analysis procedures applied to spectral data

Military applications