

# Advanced Topics in Remote Sensing George Mason University, Spring 2017

## GGG 760 – 002, (CRN 18125), Remote Sensing for GEOINT

*SPRING SEMESTER 2017 - Credit Hours: 3*

**Description:** Remote sensing seeks to observe, measure, and record spatial and compositional information about the Earth and extraterrestrial objects without coming into direct contact with them. This course has two objectives: 1) provide an understanding of the components, functionality, and use of radar, optical, lidar, and spectral remote sensing; and 2) discuss strategies for the fusion of data and information from these modalities; specifically radar + spectral fusion and lidar + spectral fusion. The curriculum will also cover: 1) non-literal image chain for airborne and spaceborne remote sensing systems and sensors; and 2) strategies for interactive, semi-automated, and fully automated extraction of information, such as target detection, from remote sensing imagery. The course will provide students with in-depth knowledge of the concepts, theories, principles, technologies, and methods of interpreting remotely sensed imagery of the Earth with a variety of different sensing modalities—individually and in combination. The course will consist of lecture, class discussion, and hands-on data examination, analysis, and fusion.

**Additional Objectives:** The course will: (1) prepare the student to undertake graduate research in advanced remote sensing and data fusion; (2) prepare the student to participate in professional activities in multi-modal remote sensing technology; (3) broaden the student's background in the general field of remote sensing and image processing; and (4) prepare the student to independently discover applications of multi-modal remote sensing and data fusion to areas of interest to potential end users.

**Prerequisites:** GGS 579 or GGS 680, an introductory course in remote sensing or digital image processing; other academic or industrial/professional experience in remote sensing; or permission of instructors.

**Textbook:** *The Phenomenology of Intelligence-focused Remote Sensing – Volume 1: Electro-optical Remote Sensing,* 2015, by H. Evans, J. Lange, and J. Schmitz, published by Riverside Research.

**Grading:** Mid-Term Take-Home Exam – 20%; Semester project – 40%  
Homework Assignments – 30%  
Class Participation and Group Discussion – 10%

**Instructors:** Dr. Stan Grossman, Mr. Tim Hosek, and Dr. Ron Resmini  
Office Hours: By appointment

e-mail: [thosek@masonlive.gmu.edu](mailto:thosek@masonlive.gmu.edu), [sgrossm2@masonlive.gmu.edu](mailto:sgrossm2@masonlive.gmu.edu), [rresmini@gmu.edu](mailto:rresmini@gmu.edu)

**Class:** Fairfax campus, Exploratory Hall, room 2310, Wednesdays, 4:30 p.m. to 7:10 p.m.  
First day of class: 23<sup>rd</sup> of January and last day of class: 17<sup>th</sup> of May, 2017.

# Advanced Topics in Remote Sensing George Mason University, Spring 2017