Master of Science in Geographic Information Systems
College of Arts and Sciences

University of Redlands

GIS 625 – Introduction to Image Data

Spring 2018

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Course Description:

This course introduces the fundamentals of image processing from a remote sensing perspective. It covers image data structure and format, metadata, image interpretation, geometric processing, and image processing principles. Using commercial software *Imagine*, the students work on a progression of assignments focusing on data evaluation, image spectral and geometric transformation, and image processing.

Lab exercises will come from the Earth Imagery at Work MOOC which is offered through Esri. Students are expected to contribute to the discussion forums of the Earth Imagery at Work MOOC by posing questions relevant to the exercises and assisting other students to better understand the material.

Course Objectives:

The goal of this course is to ensure that all students have a solid foundation of the basic image analysis theory and skills that will be used throughout the MS GIS program, including the development of their major individual project. By the conclusion of this course, students are expected to be able to understand the raster image format, assess image data quality, use different elements to interpret images, geo-reference image data, understand the principles of spatial and spectral enhancement, and perform.

Recommended Texts:

- Green, Kass; Congalton, Russ; and Tukman, Mark (2017). Imagery and GIS: Best Practices for Extracting Information from Imagery, published by Esri Press
- https://learn.arcgis.com/en/arcgis-imagery-book/
- Class materials: ***Learn*** class site

Required Software:

- ArcGIS Pro

Prerequisites:
This course does not have a prerequisite. However, it does assume that the student has a basic level of competency using GIS software, such as Esri ArcGIS.

Accommodations:

Should you require academic accommodations, please consult with Amy Wilms, Assistant Dean of Academics and Student Life: http://www.redlands.edu/DisabilityServices.asp

Policy Statements Regarding Discrimination, Harassment, Sexual Misconduct and Retaliation:

These policy statements support the University's commitments to equality of opportunity and maintaining an academic environment and workplace that is free from unlawful discrimination, harassment, sexual misconduct, and retaliation. Each person to whom this policy applies shares a responsibility for upholding and enforcing this policy.

A. No Discrimination. The University prohibits and will not tolerate unlawful discrimination on the basis of age, color, race, ethnicity, national origin, ancestry, sex, marital status, pregnancy, status as a complaining party of domestic violence, sexual orientation, gender, gender identity or expression, physical or mental disability, genetic information, religion/creed, citizenship status (except to comply with legal requirements for employment), military/veteran status, or any other characteristic protected by law.

B. No Harassment. The University prohibits and will not tolerate unlawful harassment on the basis of the characteristics identified above.

C. No Sexual Misconduct. The University prohibits and will not tolerate sexual misconduct. Redlands is committed to fostering a safe, productive learning environment. Title IX and our school policy prohibit discrimination on the basis of sex, which regards sexual misconduct — including harassment, domestic and dating violence, sexual assault, and stalking. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. Confidential support may be obtained from the Chaplain's Office and Counseling Center. Reporting should be done through the Title IX Office – contact listed below.

D. No Retaliation. The University prohibits and will not tolerate any retaliation against any person who, in good faith, complains about discrimination, harassment, or sexual misconduct. Similarly, the University prohibits and will not tolerate any retaliation against any person who, in good faith, demonstrates opposition to, or participates in an investigation of, alleged discrimination, harassment, or sexual misconduct.

Preferred first contact for Title IX Complaints from College of Arts & Sciences Students:
Amy Wilms, Deputy Title IX Coordinator
Assistant Dean of Academics & Student Life
Academic Success & Disability Services
Phone: (909) 748-8069

Assignments:

Each student will complete a series of assignments that complement the lecture presentations. The focus of the assignments will be to reinforce the theoretical concepts introduced through lectures and discussions. The assignments will include exercises in image data structure, image quality assessment, spectral and geometric transformation, as well as customizing image analysis within the *Imagine* software platform.

Assessment:

In addition to the assignments, there will be a final exam. Depending on the progress of the class, there might be "pop" quizzes. The quizzes will assess whether you have read the assigned reading materials before class, and whether you're paying attention in class.

Academic Honesty:

The University policy on academic honesty (University of Redlands Catalog, pp. 13-20) will be strictly enforced.

Grades:

Course grades will be based upon the following breakdown.

Assignments 45%
Final Exam 45%
Participation 10%

Grading scale

0-60	60-63	63-67	67-70	70-73	73-77	77-80	80-83	83-87	87-90	90-95	95-100
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A
	0.7	1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0

Class Schedule

Meeting	Subject	Reading
1	Discovering Imagery	Imagery and GIS Section 1
	Lab: EIAW Section 1	**Register for Earth Imagery at Work**
2	Using Imagery	Imagery and GIS Section 2
	Lab: EIAW Section 2	
3	Extracting information from Imagery	Imagery and GIS Section 3 (Chapters 7 – 9)
	Lab: EIAW Section 3	**Earth Imagery at Work opens**
4	Extracting information from Imagery	Imagery and GIS Section 3 (Chapters 10 and 11)
	Lab: EIAW Section 4	
5	Managing Imagery	Imagery and GIS Section 4
	Lab: EIAW Section 5	
6	Review	
	Lab: EIAW Section 6	
7	Final Exam	