

Introduction to Remote Sensing/ GISG 130

Course Syllabus, Fall 2012 CRN 95166

Instructor: Michelle Kinzel

E-Mail: mkinzel@sdccd.edu

Class Meets: Sat 9:00AM – 12:00 PM, K303 Office Hours: 12:00 – 1:00PM Sat, K303, or by appointment

2.50 Lecture Hours, 0.50 Lab Hours, 3.00 Units, Letter Grade or Pass/No Pass Option

Course Description: This course introduces students to the basics of remote sensing, characteristics of remote sensors, and remote sensing applications in academic disciplines and professional industries. Emphasis is placed on image acquisition and data collection in the electromagnetic spectrum and data set manipulations. This course is designed for geographic information systems (GIS) students interested in imagery analysis.

Course Requirements and Expectations: Remote sensing instruction techniques used in this course will require extensive practice and laboratory time to master the software. Students should plan to attend all classes and stay for the entire portion of the laboratory hours. In addition, adequate time outside of class must be invested for learning the material and completing an independent student project demonstrating mastery of the concepts and topics covered in the course.

Course Prerequisites: Advisory: GISG 111 with a grade of "C" or better, or equivalent.

The Student Learning Outcomes for this course are as follows:

The students will be able to convert images from raster to vector format.

The students will be able to choose appropriate rendering and optimization techniques to display raster data.

The students will be able to communicate to others the applications of remote sensing.

Learning Objectives for this course:

Upon successful completion of the course the student will be able to:

1. Define and describe remote sensing and explain its applications and history.
2. Define and describe basics of electromagnetic spectrum and interactions with various types of media.
3. Describe sensors and image acquisition methods.
4. Analyze and explain remote sensing purposes, advantages, and limitations.
5. Describe basic characteristics of remote sensing imagery.
6. Describe industry-specific image sources, select appropriate collection methods, platforms and sensors.
7. Assess remote sensing in a variety of academic and applied fields.

Course Structure: This course consists of hands on training using ArcGIS Desktop and ENVI-EX software, selected readings and exercises that demonstrate the methodology and theoretical foundation of Remote Sensing and GIS principles and a final student project. Approximately 50% of class time will be allocated for working on laboratory exercises, including lab write ups and working on student projects.

E-mail and Communication Policy: Please use Blackboard email to contact me throughout the semester mkinzel@sdccd.edu. If you email me directly, I will respond to you within 48 hours.

Netiquette Guidelines

Respectful behavior is expected of you in our online learning environment. Please read the District Netiquette Guidelines available at the following link:

<http://www.sdccdonline.net/students/resources/NetiquetteGuidelines.pdf>

Technical Requirements

The suggested hardware and software for online classes can be found at:

<http://www.sdccdonline.net/techreq.htm>

The minimum requirements for running ArcGIS 10 software can be found at

<http://resources.arcgis.com/content/arcgisdesktop/10.0/arcgis-desktop-system-requirements>

Blackboard Orientation Material

You are expected to know how to use the Blackboard system. Some orientation material can be found in our Blackboard course shell after logging in. For additional training material, login instructions, student orientations, and support information please visit <http://www.sdccdonline.net/students/training/>. You can also call the 24/7 HelpDesk at 1-866-271-8794 or visit them online at <https://www.sdccdonline.net/help> for assistance with any technical issue that you experience with Blackboard.

Accessibility of Course Material

I have made every effort to make this course accessible to all students, including students with disabilities. If you encounter a problem accessing anything in this course, please contact me immediately. Students with disabilities should email me and also contact the college's Disabled Students Programs and Services (DSPS) office:

Mesa College DSPS webpage: <http://www.sdmesa.edu/dsps/>

Grades Your final letter grades are based on the total points that you earn in the course. Student grades will be recorded and posed in the “My Grades” tool in Blackboard.

Labs = 50%, Midterm = 25% and Project – 25%

A = 360 – 400 pts, B = 320 – 359 pts, C = 280 – 319 pts, D = 240 – 279 pts, F = below 240 pts

Labs: The laboratory exercises are designed to introduce you to advanced tools and topics of Remote Sensing and Using Imagery in a GIS. These labs will consist of tutorials designed to introduce the ArcGIS 10 and ENVI software. Assignments submitted after the due date may be subject to reduced credit.

Midterm: The midterm examination will cover materials from course lectures and readings. This will be an open book, open notes midterm made available online via the Blackboard Vista course system.

Final Project: The final project for this course is intended to demonstrate competence in remote sensing concepts as described in the Student Learning Outcomes, using satellite imagery within the ArcGIS or ENVI software. The course will introduce you to the basics remote sensing concepts, and then it is up to you to choose a topic, tool and process for your final project. This project is an opportunity for you to delve deeper into your specific area of interest or field of study related to satellite or aerial imagery. A draft proposal of your topic is due on Nov 17, 2012. Students will present their projects in conference style format (10 minutes using PowerPoint Slides) to the class on the final 2 class periods, December 8 and December 15, 2012.

Cheating/Plagiarism: Students are expected to be honest and ethical at all times in the pursuit of academic goals. Students who are found to be in violation of Administrative Procedure 3100.3, Honest Academic Conduct, will receive a grade of zero on the assignment, quiz, or exam in question and may be referred for disciplinary action in accordance with Administrative Procedure 3100.2, Student Disciplinary Procedures.

Textbook and Materials

Required Textbook: Remote Sensing for GIS Managers. Stan Aronoff. ISBN: 1-58948-081-3

Mesa College Bookstore – New \$70, Used \$53

Optional Online Tutorial: Online Resource – [Fundamentals of Remote Sensing](#)

Additional Materials & Software:

Flash Drive or External Hard Drive, minimum 4GB, ArcGIS 10 Student Version.

Reading and Lab Schedule - Schedule is subject to change

WEEK	LECTURE TOPIC	Reading Assignment Chapter in Aronoff text	LAB TOPIC *Assignment Due – Submit all assignments via Blackboard
1 – 8/25	Introduction to Remote Sensing	Syllabus	Blackboard Orientation Displaying Raster Data – VC Course
2 – 9/1	Remote Sensing Basics	1,3	Displaying Raster Data – VC Course *Course Certificate of Completion
3 – 9/8	History of Remote Sensing	2	Starting Image Analysis ArcGIS Tutorial Exercise 1 *Map Layout – True Color
4 – 9/15	Characteristics of Imagery	4	Enhancing the Image ArcGIS Tutorial Exercise 2 *Map Layout – Enhancement
5 – 9/22	Frame Capture and Line Scanners	5,6	Image Analysis Window ArcGIS Tutorial Exercise 3 *Mosaics and Images – Word Document
6 – 9/29	Sensors in Visible and Infrared Wavelengths	7	Classification of an Image ArcGIS Tutorial Exercise 4 *Land Cover Map and Write Up
7 – 10/6	Active Sensors – RADAR, LiDAR, Sonar	8,9	Managing LiDAR Data – VC Course
8 – 10/13	Active Sensors – RADAR, LiDAR, Sonar - continued	8,9	Managing LiDAR Data – VC Course *Course Certificate of Completion

9 – 10/20	Review for Midterm	<i>All reading to date</i>	ENVI Tutorial – Quick Start *Screen Shot in Word Document
10 – 10/27	Midterm		ENVI Tutorial – Intro ENVI Screen Shot in Word Document
11 – 11/3	Visual Interpretation of Aerial Imagery	10	ENVI Tutorial – Vector Overlay and GIS Analysis *Screen Shot in Word Document
12- 11/10	Applications of Remote Sensing		Student Projects IGETT Lessons Continued
13 – 11/17	Applications of Remote Sensing	12	Student Projects *Project Proposals Due – 1 page summary
14 – 11/24	<i>No class –</i>		<i>Happy Thanksgiving!!</i>
15 – 12/1	Applications of Remote Sensing		ENVI Tutorial – Vegetation Analysis *Screen Shot in Word Document
16 – 12/8	Presentation of Student Projects		Student Projects
17 – 12/15	Presentation of Student Projects		Student Projects

IMPORTANT DATES/DEADLINES Fall 2012

Start Date:	08-20-2012	Drop with Refund:	09-04-2012
Add Deadline:	08-31-2012	Withdrawal Deadline:	10-26-2012
Drop without "W":	09-04-2012	End Date:	12-17-2012

Note- The final grade in class will be affected by participation and attendance. Class participation is strongly encouraged and students will be evaluated based on attendance and participation, as well as willingness to assist other students, work together on group projects. This is a hybrid course and students will be expected to submit assignments via the Blackboard website, and may be asked to participate in group assignments and/or Discussion Boards.