
 FLORIDA ATLANTIC UNIVERSITY	COURSE CHANGE REQUEST Undergraduate Programs	UUPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	Department Geosciences College Charles E. Schmidt College of Science	
Current Course Prefix and Number GIS 4035C	Current Course Title Remote Sensing of the Environment	
<i>Syllabus must be attached for ANY changes to current course details. See Checklist. Please consult and list departments that may be affected by the changes; attach documentation.</i>		
Change title to: Change prefix From: _____ To: _____ Change course number From: _____ To: _____ Change credits* From: _____ To: _____ Change grading From: _____ To: _____ Change WAC/Gordon Rule status** Add <input type="checkbox"/> Remove <input type="checkbox"/> Change General Education Requirements*** Add <input type="checkbox"/> Remove <input type="checkbox"/> <small>*Review Provost memorandum</small> <small>**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.</small> <small>***General Education criteria must be indicated in syllabus and approval attached to this form. See GE Guidelines.</small>	Change description to: Change prerequisites/minimum grades to: Change corequisites to: GIS 3015C Introduction to Mapping and GIS Change registration controls to: Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).	
Effective Term/Year for Changes: Fall 2021	Terminate course? Effective Term/Year for Termination:	
Faculty Contact/Email/Phone James Gammack-Clark /jgammack@fau.edu/70314		
Approved by Department Chair _____  College Curriculum Chair _____ College Dean _____ UUPC Chair _____ Undergraduate Studies Dean _____ UFS President _____ Provost _____	Date 01/25/2021 _____ _____ _____ _____ _____	

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.



GIS 4035C: REMOTE SENSING OF THE ENVIRONMENT

Department of Geosciences

Spring 2020

3 Credit Hours

Instructor: Dr. Caiyun Zhang

Office Location: Boca Raton campus, SE 488

Office Hours: Thursday, 2:00 PM– 4:00 PM, or by appointment

Phone Number: (561) 297 - 2648

Email: czhang3@fau.edu

Teaching Assistant (TA): Md Atiqur Rahman

TA Email: rahmanm2019@fau.edu

TA Office Location: Boca Raton campus, SE 486

TA Office Hours: Tuesday 11:00 AM-2:00 PM; Thursday 5-8 PM; or by appointment

COURSE DESCRIPTION

Principles of photographic and electromagnetic remote sensing systems that detect, record and measure distributions of natural and cultural phenomena. Interpretation of aerial and orbital imagery for urban and environmental research and planning.

COURSE COREQUISITES

GIS 3015C Introduction of Mapping and GIS

COURSE OBJECTIVES

Upon successful completion of this course, students will be able to:

1. Examine basic concepts, theories, and common applications for remote sensing of the Earth. (CO#1)
2. Demonstrate a sequence of hands-on remote sensing procedures and projects with a variety of common remote sensing data sets. (CO#2)
3. Explore exposure to digital image analysis procedures which will prepare students for the second course, Digital Image Analysis. (CO#3)

(CO = Course Objective)

COURSE DELIVERY MODE

This is a **fully online course** accessible only through FAU's learning management system, Canvas. You must log into Canvas with your FAU ID and Password to access the materials and assignments in this course. If you do not know your FAU ID or Password, [contact OIT for help](#).

The course is organized into modules with due dates. Unless otherwise specified, each module begins on Monday at 12:00 AM, Eastern Time, and ends on Sunday at 11:59 PM, Eastern Time. The course begins with the Start Here module, which will familiarize you with the organization and navigation of the course. You will open a new learning module to access the assigned reading materials, videos, presentations, and other relevant materials for each subsequent module.

TIME COMMITMENT PER CREDIT HOUR

This course has three (3) credit hours. For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out-of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

REQUIRED TEXTS & MATERIALS

Required Texts/Materials

In this course, you will need the following texts and/or materials.

Jensen, John, (2007). *Remote Sensing of the Environment: An Earth Resource Perspective*, 2nd Edition, Pearson [ISBN-10: 0131889508] [ISBN-13: 978-0131889507]

Optional Texts/Materials: N/A

MINIMUM TECHNOLOGY & COMPUTER REQUIREMENTS

HARDWARE & SOFTWARE REQUIREMENTS

Hardware

- Dependable computer Computer speakers • Headset with microphone
- Webcam

Software

- [Microsoft 365 Suite](#)
- Reliable web browser (recommended [Chrome](#) or [Firefox](#))
- Canvas mobile app: Download instructions for [iOS device](#) or [Android device](#)
- [Adobe Reader](#)
- [Adobe Flash Player](#)

Internet Connection

- Recommended: Broadband Internet connection with a speed of 4 Mbps or higher.
- To function properly, Canvas requires a high-speed Internet connection (cable modem, DSL, satellite broadband, T1, etc.). The minimum Internet connection speed to access Canvas is a consistent 1.5 Mbps (megabits per second) or higher. [Check your Internet speed here.](#)

Other Technologies

COMPUTER REQUIREMENTS

Basic Computer Specifications for Canvas

- Operating system: Windows 10 or macOS Sierra (or higher).

[Specifications](#)

Peripherals

- A backup option should be available to minimize the loss of work. This can be an external hard drive, a USB drive, cloud storage, or your folder on the FAU servers.

Software

- Once logged in to Canvas make sure your Internet browser is compatible.
- Other software may be required for specific learning modules. If so, the necessary links to download and install will be provided within the applicable module.

MINIMUM TECHNICAL SKILLS REQUIREMENTS

The general and course-specific technical skills you must have to succeed in the course include but are not limited to:

Accessing Internet.

- Using Canvas (including taking tests, attaching documents, etc.).
- Using email with attachments.
- Creating and submitting files in commonly used word processing program formats such as Microsoft Office Tools.
- Copying and pasting functions.
- Downloading and installing software.
- Using presentation, graphics, and other programs.
- Posting and commenting in an online discussion. □ Searching the FAU library and websites.

TECHNICAL SUPPORT

In the online environment, technical issues are always possible (e.g., lost connection, hardware or software failure). Many of these can be resolved relatively quickly, but if you wait until the last minute before due dates, the chances of these glitches affecting your success are greatly increased. Please plan appropriately. If a problem occurs, it is essential you take immediate action to document the issue so your instructor can verify and take appropriate action to resolve the problem. Most issues in Canvas can be resolved by clicking on the “Help” tab located on the menu bar.

When a problem occurs, click “Help” to:

- Report a Problem
- Live Chat with Canvas Support
- Search Canvas Guides

FAU Geosciences Computer Resources

The Geosciences Lab is located at the FAU Boca Raton Campus in the Science Building Room 457, and is available to students taking this course. Systems are available on a first come first serve basis when a scheduled class does not occupy the room. The Geoscience Lab is staffed with Graduate Teaching Assistants and instructors to assist students taking this course. Check the schedule posted outside the lab for lab hours. Each Monday through Thursday from 5:00 PM to 8:00 PM, GIS help is available in the lab, Room 457, with GIS course instructors available to assist and meet with students. Also during this time, you will be able to connect to a Teaching Assistant on Adobe Connect. These sessions will permit not only video conferencing a la Skype, but will also permit both the Teaching Assistants (the ‘Host’) and the student (the ‘Guest’) to share your computer screens to demonstrate how to complete certain tasks/where the student is having a problem.

Moreover, the TA/Instructor will be able to take control of the student’s computer to walk them through their issues.

Online Lab URL: <http://geosciences.adobeconnect.com/GISLab> Students should enter as a guest.

- **Geosciences Computer Lab:** <http://www.geosciences.fau.edu/> Click on the Computer Resources link.
- **FAU’s Geosciences Help Desk** provides support for the Geosciences remote applications as well as the department’s network drives (e.g., student G: drive). Submit your help request via e-mail to GeoHelpDesk@fau.edu.
- **Note:** Students should contact the course instructor for assistance with course-related software questions.

Additional Technical Support

1. Contact the eLearning Success Advisor for assistance: (561) 297-3590
2. If you can, make a Print Screen of the monitor when the problem occurs. Save the Print Screen as a .jpg file. If you are unfamiliar with creating a Print Screen file, see [Print Screen instructions](#).

3. Complete a [Help Desk ticket](#). Make sure you complete the form entirely and give a full description of your problem so the Help Desk staff will have the pertinent information in order to assist you properly. This includes:
 - a. Select “Canvas (Student)” for the Ticket Type.
 - b. Input the Course ID.
 - c. In the Summary/Additional Details section, include your operating system, Internet browser, and Internet service provider (ISP).
 - d. Attach the Print Screen file, if available.
4. Send a message within Canvas to your instructor to notify him/her of the problem. Include all pertinent information of the incident (2b-d above).
5. If you do not have access to Canvas, send an email to your instructor with all pertinent information of the incident (2b-d above).
6. If you do not have access to a computer, call your instructor with all pertinent information of the incident. If he/she is not available, make sure you leave a detailed message.
7. If you do not hear back from the Help Desk or your instructor within a timely manner (48 hours), it is your responsibility to follow up with the appropriate person until you obtain a resolution.

TENTATIVE SCHEDULE

Unit / Week	Date	Lectures and assignments Each week you need to watch lecture videos, read lecture notes and relevant chapters in the textbook.
1	1/13	Introduction of Remote Sensing (Chapter 1) <i>Lab 1 RS image/data acquisition and display</i>
2	1/20	Electromagnetic radiation principles (Chapter 2) <i>Lab 2 Introduction of ERDAS Imagine Lab 1 is due at 11:59PM</i>
3	1/27	Aerial photography and image interpretation (Chapters 3-5) <i>Lab 3 Image interpretation using ArcGIS Lab 2 is due at 11:59PM</i>
4	2/03	Photogrammetry (Chapter 6) <i>Lab 4 scale calculation and measurement Lab 3 is due at 11:59 PM</i>
5	2/10	Multispectral system and image analysis (Chapter 7) <i>Lab 5 Multispectral imagery composition Lab 4 is due at 11:59 PM</i>
6	2/17	Thermal remote sensing and land cover mapping (Chapter 8) <i>Lab 6 Estimating surface temperature Lab 5 is due at 11:59 PM</i>

7	2/24	Radar and microwave remote sensing (Chapter 9) <i>Lab 7 Radar data preprocessing Lab 6 is due at 11:59PM</i>
8	3/02	Lidar remote sensing (Chapter 10) <i>Lab 8 DSM and DTM generation Lab 7 is due at 11:59PM</i>
9	3/09	Spring Break
10	3/16	Remote sensing of vegetation (Chapter 11) <i>Lab 9 Vegetation mapping Lab 8 is due at 11:59PM</i>
11	3/23	Remote sensing of water (Chapter 12) <i>Lab 10 Lab Mapping water bodies Lab 9 is due at 11:59 PM</i>
12	3/30	Urban remote sensing (Chapter 13) <i>Lab 11 Urban land use land cover mapping Lab 10 is due at 11:59 PM</i>
13	4/06	AAG Conference
14	4/13	Remote sensing of soils and minerals (Chapter 14) <i>Lab 11 is due at 11:59PM</i>
15	4/20	In-situ remote sensing (Chapter 15)
16	4/27	<i>Final/reading week and wrap up</i>
Schedule and contents are subject to change. Each lab is due on Monday at 11:59PM.		

COURSE ASSESSMENTS, ASSIGNMENTS & GRADING POLICY

GRADING CRITERIA

Student Introduction and Syllabus & Course Agreement

You will post an introduction in the student introduction discussion forum (and reply to at least two others' posts) and complete a syllabus and course agreement.

Labs 11 Lab Assignments worth 25 points each, 1 Lab Quiz worth 25 points = 300 points

In Modules 1-11, you will follow the instructor tutorial videos, practice the skills demonstrated, and show your results via Lab assignments. Detailed instructions, resources, and grading rubrics for each assignment are provided in the Canvas course.

Quizzes 12 Quizzes worth 10 points each, 1 Quiz worth 8 points = 128 points

Quiz questions will be based on module content. Having a firm grasp on these concepts will enhance your ability to apply them to future course content and do well in this course. Each quiz consists of 5 true-false and multiple choice - style questions. You will use [Respondus Lockdown Browser with Webcam](#) to ensure security of your quizzes. Instructions for downloading and using Respondus Lockdown Browser are provided in the Canvas course.

You will have limited time to complete each quiz. Once the quiz starts, the timer cannot be paused. The quiz will automatically submit at the end of the stated time. Quizzes will close at the stated due date and time. Late submissions will not be possible.

Optional Discussion Boards 8 Discussions worth 1 point extra credit each = 8 extra credit points

Learner-to-learner interaction with course content via online discussion increases understanding of concepts, helps identify learning needs, and builds valuable connections for students. To help you successfully complete this course, I have created 8 discussions prompts that provide opportunities for you to share your thinking, ask questions and deepen your understanding of the course content.

For each discussion, please post an original response to the topic, supporting your statements with course content or additional research wherever possible. When you have posted an original response, you will be able to see and respond to the threads of your classmates. A grading rubric is provided for each assignment. Each discussion will close at the end of the corresponding module, Sunday, 11:59pm Eastern Time. Late submissions will not be possible.

The instructor will calculate your grade based on the following weighted distribution:

Assessment	Total Points	Percentage (%)
Labs □ 11 Lab Assignments worth up to 25 points each □ 1 Lab Quiz worth up to 25 points.	300	70%
Quizzes <ul style="list-style-type: none"> • 12 Quizzes worth up to 10 points each • 1 Quiz worth up to 8 points 	128	30%
Optional Discussions □ 8 Discussions worth up to 10 extra points each.	0 (up to 80 extra)	0 (Up to 18% extra credit)
TOTAL:	428	100%

GRADE SCALE

Grade	Percentage (%)
A	100% - 94.0%
A-	< 94.0% – 90.0%
B+	< 90.0% - 87.0%
B	< 87.0% - 84.0%
B-	< 84.0% - 80.0%
C+	< 80.0% - 77.0%
C	< 77.0% - 74.0%
C-	< 74.0% - 70.0%
D+	< 70.0% - 67.0%
D	< 67.0% - 63.0%
D-	< 63.0% - 60.0%

F	< 60.0% - 0.0%
---	----------------

LATE ASSIGNMENTS POLICY

Each assignment has a clearly stated due date and time. All assignments are listed in the Course Summary, located in the Canvas course, under the Syllabus Tab. You can also see assignment due dates and time in the Canvas Calendar and in the course modules. Each assignment and quiz will close at the stated due date and time. Late submissions will not be possible. Assignments and quizzes which are not submitted by the stated due date and time will be automatically scored "0".

MAKE-UP POLICY FOR TESTS

As stated above, assignments and quizzes which are not submitted by the stated due date and time will be automatically scored "0." Exceptions may be made if you have a documented, University-approved excuse, and if you contact me as soon as you are aware of the problem.

INCOMPLETE GRADE POLICY

The University policy states that a student who is passing a course but has not completed all work due to exceptional circumstances, may, with consent of the instructor, temporarily receive a grade of incomplete ("I"). The assignment of the "I" grade is at the discretion of the instructor but is allowed only if the student is passing the course.

COURSE POLICIES

CODE OF ACADEMIC INTEGRITY POLICY STATEMENT

Students at Florida Atlantic University should endeavor to maintain the highest ethical standards. Academic dishonesty is a serious breach of these ethical standards because it interferes with the University mission to provide a high-quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive to the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

PLAGIARISM

[Plagiarism](#) is unacceptable in the University community. Academic work must be an original work of your own thought, research, or self-expression. When students borrow ideas, wording,

or organization from another source, they must acknowledge that fact in an appropriate manner. Plagiarism is the deliberate use and appropriation of another's work without identifying the source and trying to pass off such work as one's own. Any student who fails to give full credit for ideas or materials taken from another has plagiarized. This includes all discussion board posts, journal entries, wikis, and other written and oral presentation assignments. If in doubt, cite your source. **ONLINE ATTENDANCE POLICY**

Since the course is online, you should access the course **at least three times per week** to ensure you do not miss pertinent postings, messages, or announcements. It is imperative that you meet course deadlines and stay active in discussion boards, group projects, etc. If you are experiencing major illness, absences due to University duties, or other large-scale issues, contact the instructor immediately to formulate a resolution.

SPECIAL COURSE REQUIREMENTS: N/A

NETIQUETTE

Due to the casual communication common in the online environment, students are sometimes tempted to relax their grammar, spelling, and/or professionalism. Please remember that you are adult students and professionals—your communication should be appropriate. For more in-depth information, please see the [FAU Netiquette Statement](#).

CLASSROOM ETIQUETTE/DISRUPTIVE BEHAVIOR POLICY STATEMENT

Disruptive behavior is defined in the FAU Student Code of Conduct as "... activities which interfere with the educational mission within classroom." Students who disrupt the educational experiences of other students and/or the instructor's course objectives in a face-to-face or online course are subject to disciplinary action. Such behavior impedes students' ability to learn or an instructor's ability to teach. Disruptive behavior may include but is not limited to nonapproved use of electronic devices (including cellular telephones); cursing or shouting at others in such a way as to be disruptive; or, other violations of an instructor's expectations for classroom conduct.

For more information, please see the [FAU Office of Student Conduct](#).

COMMUNICATION POLICY

EXPECTATIONS FOR STUDENTS

Announcements

You are responsible for reading all announcements posted by the instructor. Check the course announcements each time you log in.

Email

You are responsible for reading all your course email and responding in a timely manner.

Course-Related Questions

Post course-related questions to the FAQ Discussion forum. This allows other participants with the same question to benefit from the responses. Also, make sure you review this forum prior to posting a question. Someone may have already asked and answered the question in previous posts.

INSTRUCTOR'S PLAN FOR CLASSROOM RESPONSE TIME & FEEDBACK

Email Policy

Except for weekends and holidays, the instructor will typically respond to email (Canvas inbox or FAU email) within 48 hours. You should ask course-related questions in the FAQ discussion board. If you have questions of a personal nature, you should email the instructor.

Assignment Feedback Policy

The instructor will provide feedback on submitted assignments within one week of the submission date. Some assignments may require a longer review period, which the instructor will communicate to you.

Course-Related Questions Policy

Except weekends and holidays, the instructor will generally answer questions within 48 hours.

Electronic Communication Policy

In addition to the University's policy, please consider the following:

- Privacy, confidentiality, and security in all electronic communications.
- All electronic communication resources must be used for the course and in alignment with to the University mission.
- Prohibited use of false identity, false identity pseudonyms, or anonymous (sender's name or electronic identification is hidden).
- Access without consent.
- Disruption of services including introducing computer contaminants (viruses). □
Harassment of any kind.

Please see the Office of Information Technology's policies on [Cyber Security Awareness](#).

SUPPORT SERVICES & ONLINE RESOURCES

- [Center for eLearning and Student Success](#)
- [Counseling and Psychological Services](#) [FAU Libraries](#)
- [Freshmen Academic Advising Services](#)
- [Math Learning Center](#)
- [Office of Information Technology Helpdesk](#)
- [Office of International Programs and Study Abroad](#)
- [Office of Undergraduate Research and Inquiry](#)
- [Student Accessibility Services](#)
- [University Center for Excellence in Writing](#)

See also: [Geosciences Computer Resources](#)

FACULTY RIGHTS & RESPONSIBILITIES

Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise.

To ensure these rights, faculty members have the prerogative to:

- Establish and implement academic standards.
- Establish and enforce reasonable behavior standards in each class.
- Recommend disciplinary action for students whose behavior may be judged as disruptive under the *Student Code of Conduct*.

SELECTED UNIVERSITY & COLLEGE POLICIES

ACCESSIBILITY POLICY STATEMENT

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations to properly execute coursework due to a disability, must register with Student Accessibility Services (SAS) located in the Boca Raton, Davie, and Jupiter campuses and follow all SAS procedures. For additional information, please consult [Student Accessibility Services](#).

Contact

- **Boca Raton:** (561) 297-3880 Fax:
(561) 297-2184, TTY: 711
- **Davie:** (954) 236-1222 Fax:
(954) 236-1123, TTY: 711
- **Jupiter:** (561) 799-8721 Fax:
(561) 799-8721, TTY: 711

GRADE APPEAL PROCESS

You may request a review of the final course grade when you believe that one of the following conditions apply:

- There was a computational or recording error in the grading.
- The grading process used non-academic criteria.
- There was a gross violation of the instructor's own grading system.

[Chapter 4 of the University Regulations](#) contains information on the grade appeals process.

RELIGIOUS ACCOMMODATION POLICY STATEMENT

In accordance with rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. For further information, please see [Academic Policies and Regulations](#).

UNIVERSITY APPROVED ABSENCE POLICY STATEMENT

In accordance with rules of the Florida Atlantic University, students have the right to reasonable accommodations to participate in University approved activities, including athletic or scholastics teams, musical and theatrical performances and debate activities. It is your responsibility to notify the instructor at least one week prior to missing any course assignment.

ATTENDANCE POLICY STATEMENT

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is

determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance.

Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS) CENTER

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

DROPS/WITHDRAWALS

You are responsible for completing the process of dropping or withdrawing from a course. Please click on the following link for more information on dropping and/or withdrawing from a course. Please consult the [FAU Registrar Office](#) for more information.

* * *

The instructor reserves the right to adjust this syllabus as necessary.