FLORIDA ATLANTIC UNIVERSITY

COURSE CHANGE REQUEST
Undergraduate Programs

Department Civil, Environmental and Geomatics Engineering

College Engineering and Computer Science

UUPC Approval 1/30/23
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner Posted _____
Catalog _____

***Current* Course Prefix and Number**	SUR 4331	***Current* Course Title**	Digital Photogrammetry principles and applications

*Syllabus must be attached for **ANY** changes to current course details. See Template. Please consult and list departments that may be affected by the changes; attach documentation.*

Change title to:

Change prefix

From: **To:**

Change course number

From: 4331 **To:** 4331 C

Change credits*

From: 2 **To:** 3

Change grading

From: **To:**

Change WAC/Gordon Rule status**

Add ☐ **Remove** ☐

Change General Education Requirements***

Add ☐ **Remove** ☐

*See Definition of a Credit Hour.

**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.

***GE criteria must be indicated in syllabus and approval attached to this form. See Intellectual Foundations Guidelines.

Change description to:

Use of aerial photographs for mapping, geometry of single photo and stereographic models, scale and relief displacement, vertical and titled photos, parallax, photo mosaics, ground control, stereoplotters, resection, orthophotos, oblique photos. This course also provides an overview of digital photogrammetric principles and its applications in low altitude and close range mapping. Lab exercises are included in the course.

Change prerequisites/minimum grades to:

Prerequisites: SUR 3103/3103L; minimum grade C
No changes.

Change corequisites to:

None

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 2023	**Terminate course? Effective Term/Year for Termination:**	

Faculty Contact/Email/Phone Sudhagar Nagarajan, snagarajan@fau.edu/7-3104

Approved by		***Date***
Department Chair	ekaisar	01/06/2023
College Curriculum Chair	Hongbo Su (Digitally signed by Hongbo Su, DN: CN=Hongbo Su, C=FAU, OU=FAU, E=suh@fau.edu, C=US, Reason: I am the author of this document, Location: your signing location here, Date: 2023.01.09 12:19:19-05'00', Foxit Reader Version: 10.1.1)	01/09/2023
College Dean		1/9/23
UUPC Chair	Ethlyn Williams	1/30/23
Undergraduate Studies Dean	Dan Moeroff	1/30/23
UFS President		
Provost		

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

Department of Civil Environmental and Geomatics Engineering
Florida Atlantic University
Course Syllabus

1. Course title/number, number of credit hours	
Digital Photogrammetry principles and applications SUR 4331C	3 credit hours
2. Course prerequisites, corequisites, and where the course fits in the program of study	
Prerequisites: SUR 3103/3103L; The course provides an emphasis on using digital images for mapping principles and applications and Lab Corequisite: None	
3. Course logistics	
Semester: Fall 2021 Classroom: Boca Raton Campus: Fleming Hall Boca, Room: 427 Class time: M 7:10-9:00 pm	
4. Instructor contact information	
Instructor's name *Office address* *Office Hours* *Contact telephone number* *Email address*	Dr. Sudhagar Nagarajan Building 36, Room 222, Boca Raton, FL, 33431 Office hours: M 2:00 PM –4:00 PM Virtual Office Room: https://fau.webex.com/meet/snagarajan Phone: (561) 297 3104 E-mail: snagarajan@fau.edu
5. TA contact information	
TA's name *Office address* *Office Hours* *Contact telephone number* *Email address*	Not Applicable
6. Course description	
Use of aerial photographs for mapping, geometry of single photo and stereographic models, scale and relief displacement, vertical and titled photos, parallax, photo mosaics, ground control, stereoplotters, resection, orthophotos, oblique photos. This course also provides an overview of digital photogrammetric principles and its applications in low altitude and close range mapping. Lab exercises are included in the course.	
7. Course objectives/student learning outcomes/program outcomes	
Course objectives	To provide a fundamental level of understanding of using aerial images for surveying and mapping
Student learning outcomes & relationship to ABET 1-7 outcomes	1. Ability to understand and apply image corrections. (1). 2. Ability to measure horizontal and vertical positions of objects visible in photographs using simplified mathematical models of vertical photography (1) 3. Ability to measure horizontal and vertical positions of objects visible in photographs using rigorous mathematical models of stereo photogrammetry (1). 4. Ability to understand and perform flight planning. (1, 6).

	5. Ability to understand and perform basic photogrammetric image processing techniques (1 , 6).

8. Course evaluation method

Midterm: 25% (Lockdown Respondus Screen that requires a computer with webcam and microphone)
Final Exam : 30% (Lockdown Respondus Screen that requires a computer with webcam and microphone)
Class Assignments, Laboratories 45%
Attendance to class is required. You are expected to participate in all class sessions and keep up with the material. Three (3) unexcused absences (as determined by the instructor) will reduce your grade by one full letter. Participation in University-approved activities or religious observances, with prior notice, will not be penalized.

9. Course grading scale

93-100 = A
90-92 = A-
87-89 = B+
83-86 = B
80-82 = B-
77-79 = C+
73-76 = C
70-72 = C-
67-69 = D+
63-66 = D
60-62 = D-
0 – 59 = F

10. Policy on makeup tests, late work, and incompletes

1. Exams will be given only at the scheduled times and places, unless previous arrangements have been made no less than one (1) full week in advance. No one is exempt from exams.
2. Makeups are given only if there is solid evidence of a medical or otherwise serious emergency that prevented the student of participating in the exam. Makeup exams will be administered and proctored by department personnel unless there are other pre-approved arrangements.
3. Late work is not acceptable.
4. Incomplete grades are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation, incomplete grades will not be given. Note: Incomplete grades are only reserved for those students who were passing but could not complete the required work due to exceptional circumstances.

11. Special course requirements

- Due to the surge in COVID-19 cases and the delta variant, all students regardless of vaccination status are expected to wear masks while indoors in any FAU facilities, including classrooms and laboratories. Students experiencing flu-like symptoms (fever, cough, shortness of breath), or students who have come in contact with confirmed positive cases of COVID-19, should immediately contact FAU Student Health Services (561-297-3512). Symptomatic students will be asked to leave the classroom to support the safety and protection of the university community. For additional information visit https://www.fau.edu/coronavirus/. In classes with face-to-face components, quarantined or isolated students should notify me immediately as you will not be able to attend class. I will not be able to offer an online version of the class but will make reasonable efforts to assist students in making up the work. Vaccinated students have much lower chances of needing to quarantine and a much lower chance of missing class time.

- By registering for this class, the students hereby consent to recording of the class and potential use of the class material for other purposes.
- In-person office visits will be accommodated on request per the Provost's guidance: https://www.fau.edu/provost/covid-19.php.

The goal of integrating writing in this course is to improve students' ability to produce professional quality engineering reports. Contact the University Center for Excellence in Writing at 561-297-3498 or www.fau.edu/UCEW for assistance.

If you need help finding appropriate research or background information for reports, try the libguide: http://libguides.fau.edu/basic_engineering - boca

Report all technical problems in canvas to the IRM helpdesk (http://www.fau.edu/helpdesk)

12. Classroom etiquette policy

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in face - to - face class sessions. Please review the university Netiquette policy guidelines at http://www.fau.edu/irm/about/netiquette.php.

Remember you are an adult—your communication with the professor and your classmates should be appropriate. You are responsible for reading all announcements posted by the instructor. Check the announcements each time you login to be sure you have read all of them since your last login session.

13. 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.

14. Disability policy statement

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

15. 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/

16. Code of academic Integrity policy statement

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered 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 of 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.

17. Required texts/reading

Wolf, Dewitt and Wilkinson, Elements of Photogrammetry with Applications in GIS, 4th ed.

18. Supplementary/recommended readings

1. Manual of Photogrammetry by J. Chris McGlone, Edward M. Mikhail, James S. Bethel, Roy Mullen, Fifth Edition 2004, American Society of Photogrammetry
2. Toni Schenk, Digital Photogrammetry, Volume 1, Terra Science, 1st Edition

19. Course topical outline, including dates for exams/quizzes, papers, completion of reading

Week 1: Course introduction; introduction to photogrammetry and its applications
Week 2: Image acquisition
Week 3: Labor Day- Holiday. No Class
Week 4: Measurement of position in images
Week 5: Ground coordinate systems; geometry of vertical images
Week 6: Single vertical photo measurements lab
Week 7: Tilted vertical images
Week 8: Mid-Term Test: 10/11
Week 9: Analytical photogrammetry, Parallax measurements lab
Week 10: Aerotriangulation, Analytical photogrammetry lab
Week 11: Introduction to Digital Photogrammetry
Week 12: Project and flight planning, Digital Photogrammetry lab
Week 13: Close range photogrammetry & lab
Week 14: LIDAR
Week 15: Course Review
Final Exam: M (Dec 13) 7:00pm - 9:30pm