FAU

FLORIDA ATLANTIC UNIVERSITY

NEW COURSE PROPOSAL
Graduate Programs

Department Civil, Environmental and Geomatics Egnineering

College College of Engineering and Computer Science

(To obtain a course number, contact erudolph@fau.edu)

UGPC Approval _____
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner Posted _____
Catalog _____

Prefix SUR **Number** 6502	*(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)* **Lab Code**	**Type of Course** Lecture	**Course Title** Foundations of UAS Mapping
Credits *(Review Provost Memorandum)* 3	**Grading** *(Select One Option)* **Regular** ◉ **Sat/UnSat** ○	**Course Description** *(Syllabus must be attached; see Guidelines)* COVERS THE FUNDAMENTAL COMPONENTS OF SMALL UNMANNED AERIAL SYSTEMS (sUAS) AND HOW THEY ARE USED TO PRODUCE HIGH RESOLUTION, SPATIALLY ACCURATE, PLANIMETRIC MAPS AND 3-D MODELS OF THE TERAIN.	
Effective Date *(TERM & YEAR)* Spring 2021			

Prerequisites	**Corequisites**	**Registration Controls** *(Major, College, Level)*
none		Graduate Level

Prerequisites, Corequisites and Registration Controls are enforced for all sections of course

Minimum qualifications needed to teach course: Member of the FAU graduate faculty and has a terminal degree in the subject area (or a closely related field.)	**List textbook information in syllabus or here** Introduction to UAV Systems 4th Edition by Paul Fahlstrom, Thomas Gleason ISBN-13: 978-1119978664
Faculty Contact/Email/Phone Hongbo Su/suh@fau.edu/7-3936	**List/Attach comments from departments affected by new course**

Approved by		***Date***
Department Chair	Ramesh Teegavarapu Digitally signed by Ramesh Teegavarapu DN: cn=Ramesh Teegavarapu, o=Florida Atlantic University, ou=Civil, Environmental and Geomatics Engineering, email=teegavar@fau.edu, c=US Date: 2020.03.06 12:47:05 -05'00'	2-14-2020
College Curriculum Chair		3/5/2020
College Dean	Mihaela Cardei Digitally signed by Mihaela Cardei DN: cn=Mihaela Cardei, o=Florida Atlantic University, ou, email=mcardei@fau.edu, c=US Date: 2020.03.06 13:10:54 -05'00'	3/6/2020
UGPC Chair	Paul R. Poluso	03/27/2020
UGC Chair	Paul R. Poluso	03/27/2020
Graduate College Dean	Digitally signed by member: 8ED423C9-A9FA-4DA0-B0B9-C422E945C5E7 7852D92B-2334-43D3-B364-BB8C8A5BEE19 Date: 2020.03.30 16:41:15 -04'00'	
UFS President		
Provost		

Email this form and syllabus to UGPC@fau.edu one week before the UGPC meeting.

GRADUATE COLLEGE
MAR 06 2020

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

1. Course title/number, number of credit hours	
Foundations of UAS Mapping (SUR 6502)	3 credit hours

2. Course prerequisites, corequisites, and where the course fits in the program of study

Prerequisite: none

3. Course logistics

Term: Spring 2021
This is an on-line course with 2 lab demonstrations
Class location: CM130
Class time: Wednesday, 7:10 –10:00 PM
Office Hour: Wednesday and Thursday 9am-12pm in Room 223

4. Instructor contact information

Instructor's name	Dr. Hongbo Su.
Office address	Building: 36, Room: 223
Office Hours	Boca Raton, FL
Contact telephone number	Phone: (561) 297 3936
Email address	E-mail: suh@fau.edu

5. TA contact information

TA's name	
Office address	
Office Hours	
Contact telephone number	
Email address	

6. Course description

COVERS THE FUNDAMENTAL COMPONENTS OF SMALL UNMANNED AERIAL SYSTEMS (sUAS) AND HOW THEY ARE USED TO PRODUCE HIGH RESOLUTION, SPATIALLY ACCURATE, PLANIMETRIC MAPS AND 3-D MODELS OF THE TERRAIN.

7. Course objectives/student learning outcomes/program outcomes

Course objectives	Students will learn to identify the essential hardware components of sUAS and Understand rules and regulations governing operating a UAS in the United States of America. Students will apply the fundamental concepts of sUAS mapping and develop new applications of geospatial mapping based on new sensors on sUAS.

8. Course evaluation method

Course attendance:	5%	*Note*: The minimum grade required to pass the course is C.
Assignments:	35%	• Attendance for Lab session is required.
Midterm:	20%	• **No make-up exams or quizzes will be conducted.**
Midterm:	40%	• Exam dates will be re-confirmed if required.

9. Course grading scale

There is not any fix criteria for the grading scale. The overall performance as related to course objectives and outcomes is evaluated and considered during grading.

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

- Assignments will be submitted on Canvas by the due date.
- Late submission will carry penalty of 10% per day.
- Incomplete grades will not be given unless there is documented evidence of medical or otherwise serious emergency.

11. Special course requirements

Computer Lab hours are required.

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 class sessions.

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-approve d 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. Honor code policy

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 unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are

associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

16. 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/

17. Required or Recommended texts/reading

1 OpenDroneMap: The Missing Guide
Author: Piero Toffanin
Publisher: Independently published (July 28, 2019)
Language: English
ISBN-10: 1086027566
ISBN-13: 978-1086027563

2 Introduction to UAV Systems 4th Edition
by Paul Fahlstrom (Author), Thomas Gleason (Author)
Publisher: Wiley; 4 edition (September 17, 2012)
Language: English
ISBN-10: 1119978661
ISBN-13: 978-1119978664

3 Handouts/lecture notes provided by instructor.

18. Supplementary/recommended readings

Remote Pilot Test Prep 2019: Study & Prepare
Author: ASA Test Prep Board
Publisher: Aviation Supplies and Academics, Inc.; 2019 edition (August 21, 2018)
Language: English
ISBN-10: 1619546663
ISBN-13: 978-1619546660

Journal papers distributed in the class

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

Date	Topic
Week 1	Introduction; history and evolution of UAS
Week 2	Regulations and safety / FAA Part 107 intro Meteorology for flight dynamics
Week 3	Federal Aviation Regulations, Air Traffic Control and airspace operations
Week 4	Unmanned Aerial System (UAS) components and sensors, Applications of UAS
Week 5	UAS photogrammetry
Week 6	Safety of UAS Operations (guest lecture by Traci Johnson with an indoor UAV flight Demo on Feb. 19, 2020)
Week 7	Flight Planning for UAS, Establish ground control and ground truth
Week 8	Commercial software (PhotoScan) for UAS

Week 9	**Mid-term exam**
Week 10	Spatial Data Sharing using Google Earth
Week 11	Flight setup practical (Lab Demonstration)
Week 12	Mini-project
Week 13	Societal issues, future of UAS
Week 14	Project Presentations
Week 15	Course review
Exams	**Final Exam (Date is to be determined by the University official Exam Schedule)**