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## ERE 622: DIGITAL IMAGE ANALYSIS SPRING 2021 - COURSE SYLLABUS

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### INSTRUCTOR

Giorgos Mountrakis

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Office hours: TBD

**TA:** TBD

**CLASS TIME:** Tuesday/Thursday 9:30am - 10:50am **Fully ONLINE**

### REQUIRED TEXT

Digital Image Processing (3rd Edition) by Rafael C. Gonzalez, Richard E. Woods  
Publisher: Prentice Hall, ISBN-10: 013168728X, ISBN-13: 978-0131687288.

### COURSE DESCRIPTION

Topics covered in this class include elements of digital image processing and analysis systems: Digital image representation, visual perception, sampling and quantization, pixel connectivity, Fourier transforms, image enhancement, filtering, image segmentation, edge detection, thresholding, representation schemes, descriptors, morphology, recognition and interpretation, elements of video processing. General programming experience and quantitative background are required. All assignments will use programming in Matlab, though no prior knowledge of Matlab is required.

### COURSE OBJECTIVES

The class aims to provide understanding of:

- The basic principles and concepts in digital image processing
- The application of digital image analysis moving towards image interpretation
- Customization of taught methods as applied to student-chosen problems

### COURSE OUTCOMES

Upon successful completion of the course students should be able to:

- Describe the fundamental concepts and process flow of digital image analysis
- Appropriately apply digital image analysis techniques to their research
- Enhance their critical thinking skills

Note: Becoming an expert in Matlab or any other software is NOT an expected outcome.

### ATTENDANCE POLICY

Attendance will not be taken but keep in mind that in class discussions are part of the examination material. Also, occasionally clarifications will be offered during class time.

### STUDENTS WITH LEARNING AND PHYSICAL DISABILITIES

SUNY-ESF works with the Office of Disability Services (ODS) at Syracuse University, who is responsible for coordinating disability-related accommodations. Students can contact ODS at 804 University Avenue- Room 309, 315-443-4498 to schedule an appointment and discuss their needs and the process for requesting accommodations. Students may also contact the ESF Office of Student Affairs, 110 Bray Hall, 315-470-6660 for assistance with the process. To learn more about ODS, visit <http://disabilityservices.syr.edu>. Authorized accommodation forms must be in the instructor's possession one week prior to any anticipated accommodation. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

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## GRADING

In group activities you are expected to contribute equally. Failure to do so may result in different grading for each group member.

COMPONENT	CONTRIBUTION
Project	40%
Synthesis Assignment I – OCR	10%
Synthesis Assignment II - Video	10%
Homeworks	35%
Paper	5%

Letter grades will be assigned based on the scale shown below. The grade cutoffs may be adjusted up or down by up to one point when actually assigning final grades at the end of the semester.

Letter Grade	Range of Numerical Grade
A	93 and above
A-	90 to just less than 93
B+	87.5 to just less than 90
B	85 to just less than 87.5
B-	82.5 to just less than 85
C+	80 to just less than 82.5
C	77.5 to just less than 80
C-	75 to just less than 77.5
D	70 to just less than 75
F	less than 70

## COMPUTER USE

E-mail will be used as a common means of communicating outside class times. All students have access to an e-mail account through the Syracuse University system. The internet will be used for providing information throughout the course. Computer clusters at ESF and at SU provide access for those who do not have home access.

**It is the students responsibility to check daily their email syr accounts.**

The class will also use BlackBoard software. Make sure you can log-in using this web address:  
blackboard.syr.edu

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**ACADEMIC INTEGRITY**

Academic dishonesty is unacceptable and every incident will be reported according to ESF's policy found here: <http://www.esf.edu/facgov/integrity.pdf>.

Students are NOT allowed to:

- share their own code
- use a current or former student's code
- check other student's code and provide coding help

**COVID-19 REQUIREMENTS**

Per SUNY ESF requirements, students must wear face masks or coverings while on campus. Failure to comply with this requirement will result in removal from the classroom for that in-person class session and an absence being recorded. Repeated failure to comply may result in a referral to the Division of Student Affairs. Individuals unable to wear a mask for medical reasons should contact the Syracuse University Center for Disability Resources.