Course Description Form	
Course Code and Name	CENG471 INTRODUCTION TO IMAGE PROCESSING (TECH.ELECT.)
Course Semester	7
Catalog Content	Basics of image processing, image sensing and image capturing, image quality enhancing, noise reduction, image blurring and sharpening, image compression
Textbook	Digital Image Processing, 2nd Edition, R.C. Gonzalez, R.E. Woods, Prentice Hall 2002.
Supplementary Textbooks	Computer Vision and Image Processing, by Scott Umbaugh, Prentice-Hall, Inc., Upper Saddle River, New Jersey, 1998. Goodman, J.W., Introduction to Fourier Optics, McGraw-Hill, New York, 1968. Pratt, W.K., Digital Image Processing, John Wiley and Sons, New York, 1978. Lillesand and Kiefer, Remote Sensing and Image Interpretation, Third Edition, Wiley, New York, 1994.
Credit	6
Prerequisites of the Course **(** *Attendance Requirements***)**	-
Type of the Course	Elective
Instruction Language	English
Course Objectives	Teaching to understand the basic concepts of image processing, to learn the properties of image processing algorithms to be able to solve image processing problems.
Course Learning Outcomes	At the end of the course, the students will have basic knowledge about; 1) Basics of image processing and analysis techniques, 2) Deterministic image processing, 3) Image transformations, 4) Image filtering, 5) Image restoration, 6) Image flattening
Instruction Methods	The mode of delivery of this course is Face to face

Weekly Schedule

1. Week: Basics of Image Processing
2. Week: Sampling and quantization
3. Week: numeric display images
4. Week: Resolution
5. Week: Image magnification and reduction
6. Week: Neighborhood, contiguity, connectivity
7. Week: Neighborhood, contiguity, connectivity
8. Week: Regions, borders
9. Week: Image on the navigation
10. Week: simple image processing algorithms
11. Week: simple filters and applications
12. Week: Color models
13. Week: Image file formats
14. Week: Image file formats

Teaching and Learning Methods

(These are examples. Please fill which activities you use in the course)

Weekly theoretical course hours: 3
Internet browsing, library work
Report Preparing
Preparing a Presentation
Presentations
Preparation of Midterm and Midterm Exam
Final Exam and Preparation for Final Exam

Assessment Criteria

	Numbers	**Total Weighting (%)**
Midterm Exams	1	30
Assignment	1	30
Application		
Projects		
Practice		
Quiz		
Percent of In-term Studies (%)		60
Percentage of Final Exam to Total Score (%)		40
Attendance		

Workload

Activity	**Total Number of Weeks**	**Duration (weekly hour)**	**Total Period Work Load**
Weekly Theoretical Course Hours	14	3	42
Weekly Tutorial Hours			
Reading Tasks			
Studies	9	3	27
Material Design and Implementation			
Report Preparing	3	10	30
Preparing a Presentation	2	10	20
Presentations	2	10	20
Midterm Exam and Preparation for Midterm Exam	1	5	5
Final Exam and Preparation for Final Exam	1	6	6
Other (should be emphasized)			
Total Workload			150

Total Workload / 25				6		
Course Credit (ECTS)				6		

Contribution Level Between Course Learning Outcomes and Program Outcomes

No	Program Outcomes	1	2	3	4	5
1	Sufficient knowledge on mathematics, science and computer engineering; ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems				X	
2	Ability to identify, define, formulate and solve complex engineering problems; ability to choose and apply appropriate analysis and modelling methods for these purposes					X
3	Ability to design a complex system, process, device, software, algorithm, or product under realistic constraints and circumstances to meet certain requirements; ability to apply modern design techniques for this purpose			X		
4	Ability to choose, develop and use modern techniques and tools necessary for engineering applications; ability to effectively use computing technologies				X	
5	Ability to design and implement systems or experiments to solve engineering problems, collect and interpret data to evaluate and analyze the results of solutions				X	
6	Ability to work effectively in intradisciplinary and interdisciplinary teams or individually	X				
7	Ability to efficiently prepare, evaluate and interpret reports			X		
8	Ability to make presentations and conduct effective verbal and written communication in Turkish and English			X		
9	Awareness of the necessity of lifelong learning; ability to access information, follow scientific and technological developments; ability to perpetually renew oneself		X			
10	Awareness of professional and ethical responsibility, ability to act in accordance with ethical principles				X	
11	Ability to apply knowledge on project management, risk management and change management			X		
12	Awareness of entrepreneurship and innovation, ability to design and build sustainable systems	X				
13	Ability to devise local and global solutions to contemporary issues considering the effects of engineering applications on health, environment and security	X				
14	Awareness of the legal consequences of engineering solutions	X				
15	Ability to apply knowledge on software development process and documentation rules		X			
16	Knowledge on standards used in engineering applications				X	
17	Awareness of occupational health and security, information security and privacy	X				

The Course's Lecturer(s) and Contact Information

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