DIGITAL IMAGE PROCESSING

1	Course Title:	DIGITAL IMAGE PROCESSING	
2	Course Code:	BMB4013	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	7	
7	ECTS Credits Allocated:	5.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. Ahmet Emir DİRİK	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:		
17	Website:		
18	Objective of the Course:	The main objectives of the course are as follows: To provide essential knowledge of image processing fundamentals. To develop advanced practical skills and competency in image processing. To apply these skills to the full spectrum of image processing applications, through independent research and investigation.	
19	Contribution of the Course to Professional Development:	To be able to follow innovations and apply them in the field by using the competence of collecting information, researching and analyzing them.	
20	Learning Outcomes:		
		1	Gain sufficient knowledge on image processing; the ability to model and solve computer vision application problems using theoretical and practical knowledge. ;
		2	Gain the ability to identify, model, and solve complex problems; the ability to select and apply appropriate analysis and modeling methods for these problems. ;
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21	Course Content:		
	Course Content:		
Week	Theoretical		Practice

1	Overview, Computer imaging systems	
2	Image analysis, preprocessing	
3	Human visual system, image model	
4	Image enhancement, gray scale mods, histogram mod	
5	Discrete transforms, Fourier	
6	discrete cosine, Walsh-Hadamard, Haar, PCT, filtering	
7	filtering, wavelet transform, pseudocolor	
8	Image enhancement, sharpening, smoothing	
9	Image restoration, overview, system model, noise removal: order filters	
10	Image restoration: noise removal: mean & adaptive filters, degradation model, inverse filter	
11	Freq. filters	
12	geometric transforms	
13	image compression: system model, lossless methods	
14	image compression: lossy methods	

22	Textbooks, References and/or Other Materials:	Digital Image Processing, Rafael Gonzalez, 2nd edition Addison-Wesley

Activites	Number	Duration (hour)	Total Work Load (hour)
Midterm Exam	1	3.00	3.00
Practicals/Labs	0	0.00	0.00
Home work-project	14	2.00	28.00
Homeworks	0	0.00	0.00
Projects	1	30.00	30.00
Field Studies	0	0.00	0.00
Midterm exams	1	18.00	18.00
Others	0	0.00	0.00
Final Exams	1	32.00	32.00
Total Work Load			168.00
Total work load/ 30 hr			5.00
ECTS Credit of the Course			5.00

Theoretical
Self study and preperation
Total
Success Grade
Total
Course

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24 ECTS / WORK LOAD TABLE

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**