

**Vocational School / Computer Programming**

**2024 - 2025 Academic Year**

**MATHEMATICS in PROGRAMMING**

**Syllabus**

<b>Course Description</b>					
<b>Name</b>	<b>Code</b>	<b>Semester</b>	<b>T+A Hour</b>	<b>Credit</b>	<b>ECTS</b>
MATHEMATICS in PROGRAMMING	BPR1210944	Spring Semester	3+0	3	5
<b>Prerequisites Courses</b>					
<b>Recommended Elective Courses</b>	General Mathematics				
<b>Language of Instruction</b>	Turkish				
<b>Course Level</b>	Short Cycle (Associate's Degree)				
<b>Course Type</b>	Required				
<b>Course Coordinator</b>	Lect. Hatice ÇAY				
<b>Name of Lecturer(s)</b>	Lect. Hatice ÇAY				
<b>Assistant(s)</b>					
<b>Aim</b>	The aim of this course is to explain fundamental math for programming contents, methods, techniques and show how to use these methods in solving certain types of problems which might possibly be encountered in many branches of science.				
<b>Course Content</b>	This course contains; Matrices,Rotation, transposition,Row Echelon Form, Determinant,Linear Equation Systems,Vectors, Dot product, Norm,Matrix Transition,Basic statistical information for Digital Image Processing ,Basic statistical information for Digital Image Processing.,The Operators that are using in Digital Image Processing ,The operators that are using in Digital Image Processing ,Algorithms,Graphs,Trees,Cryptography.				
<b>Course Learning Outcomes</b>			<b>Teaching Methods</b>	<b>Assessment Methods</b>	
1. Calculate vectoral operations.			12, 16, 6, 9	A, D, E, G	
2. Calculate matrix and determinants.			12, 16, 6, 9	A, D, E, G	
3. Recognise and apply the operations that are using in Digital Image Processing.			12, 16, 6, 9	A, D, E, G	
4. Graph histogram.			12, 16, 6, 9	A, D, E, G	
5. Explain trees.			12, 16, 6, 9	A, D, E, G	
6. Solve division algoritms.			12, 16, 6, 9	A, D, E, G	
<b>Teaching Methods</b>	12: Problem Solving Method, 16: Question - Answer Technique, 6: Experiential Learning, 9: Lecture Method				
<b>Assessment Methods</b>	A: Traditional Written Exam, D: Oral Exam, E: Homework, G: Quiz				
<b>Lecture Schedule</b>					
<b>Sequenc e</b>	<b>Topics</b>	<b>Preliminary Preparation</b>			
1	Matrices				
2	Rotation, transposition				
3	Row Echelon Form, Determinant				
4	Linear Equation Systems				
5	Vectors, Dot product, Norm				
6	Matrix Transition				
7	Basic statistical information for Digital Image Processing				
8	Basic statistical information for Digital Image Processing.				
9	The Operators that are using in Digital Image Processing				
10	The operators that are using in Digital Image Processing				
11	Algorithms				
12	Graphs				
13	Trees				
14	Cryptography				
<b>Evaluation Methods</b>		<b>Weight(%)</b>			
Midterm Exam		40			
General Exam		60			

<b>Resources</b>
1. Linear Algebra, Schaums Outline.
2. tutorialspoint.com (Digital Image Processing)
3. Discrete Mathematics and Its Applications, Kenneth H. Rosen, McGraw-Hill, (Chapter 3,4,10,11)
4. Lecture notes.Çözümlü Lineer Cebir Problemleri, Fethi Çallıalp, Birsen Yayınevi
Çözümlü Lineer Cebir Alıştırmaları, Arif Sabuncuoğlu, Nobel Yayınevi