GAZI UNIVERSITY
FACULTY OF ENGINEERING
DEPARTMENT OF COMPUTER ENGINEERING

EUROPEAN CREDIT TRANSFER SYSTEM
INFORMATION PACKAGE
FOR UNDERGRADUATE PROGRAM

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DEPARTMENT OF COMPUTER ENGINEERING

Gazi University
Faculty of Engineering
Eti Mah. Yükseliş Sok. No:5 Kat: 1
06570 Maltepe/ANKARA
Tel: + 90 312 2306503 and 5823130
Fax: + 90 312 2308434
Web: http://mf-bm.gazi.edu.tr/
E-mail: bmbb@gazi.edu.tr

DEPARTMENT

Chairman: Prof. Dr. M. Ali AKCAYOL

Tel: + 90 312 5823130
Fax: + 90 312 2306503
E-mail: akcayol@gazi.edu.tr

Vice Chairman: Assoc.Prof.Dr. Hasan Şakir BİLGE

Tel: + 90 312 5823132
Fax: + 90 312 2306503
E-mail: bilge@gazi.edu.tr

Vice Chairman: Assoc.Prof.Dr. Suat ÖZDEMİR

Tel: + 90 312 5824133
Fax: + 90 312 2306503
E-mail: suatozdemir@gazi.edu.tr

ECTS COORDINATION

ECTS Coordinator: Assoc.Prof.Dr. Hasan Şakir BİLGE

Tel: + 90 312 5823132
Fax: + 90 312 2306503
E-mail: bilge@gazi.edu.tr

GENERAL INFORMATION

Computer engineering is a branch of engineering concerned with design, development, and application of computer systems. The mission of the program of the Department of Computer Engineering is to produce and disseminate theory, principles, practice, design, evaluation, and improvement of computing systems in the contexts of computers, computers and the society, computers and the industry and services. The Computer Engineering program aims to provide each of its graduates a solid educational foundation leading to successful and sustainable career in computer engineering.

In order to gain a bachelors degree in Computer Engineering, students need to complete all classes listed in the curriculum within 14 semesters at the most. All graduates of the Computer Engineering program should have:

- the analysis, design, and documentation skills to qualify them for employment in technical areas of Computer Engineering.
- Communications and interpersonal skills to enable them to participate in interdisciplinary engineering teams.
- the skills, confidence, and experience to enable them to assume positions of technical leadership.
- a solid foundation in basic mathematics, science, and computer engineering that will enable them to continue their professional development for a life-long career in computer engineering.

Computer engineers work in all these industries listed below.

- Internet technology: network routers, switches and hubs, embedded Web servers and client.
- Computer hardware and/or software: desktop computers, graphics and network adapters, modems, sound cards, disk controllers, printers, scanners.
- Control and monitoring: control and monitoring systems for automated manufacturing.

There are three laboratories that are used in education and research:

Computer Laboratory:
The laboratory has 30 computers linked to each other with Local Area Network (LAN) and to the university main server for students‘ usage. Computer aided education is introduced in the first year of the program with Basic Information Technology and Basic Computers and Programming courses. Besides, students are able to utilize the computer laboratory of the Faculty of Engineering and Architecture.

Undergraduate Program

The undergraduate curriculum of the Computer Engineering Department is presented in detail below. In order to gain a bachelors degree in Computer Engineering, students need to complete all classes listed the curriculum within 14 semesters at the most. Some of the classes are offered in summer so that the students can spread the total load of the courses easily. The summer classes also provide opportunities to catch up with the regular program. In the first year of the undergraduate program, mathematics, physics, chemistry, and linear algebra courses are offered, in the second year basic electronics and basic computer courses are offered. In the last two-years of the undergraduate program advanced computer software and hardware courses are offered. Besides to these theoretical courses, students are required to carry out two summer practices at the end of the second and third year of the program.

Assessment

The evaluation is implemented based on the principles set forth in the Article 28 of Gazi University Statute of Teaching-Learning and Examination. Grading principles for courses with special evaluation are announced to the students and the department in the beginning of the semester by faculty member(s).

Article 28. 100 is the full point in the assessment of exams. The relative weights of midterm examinations, assignments and other requirements, and final examination are submitted to the Presidents Office. Based on grades and associated weights final points are determined. Considering the average and statistical distribution of the final points, and general class performance final grades, as featured in the table below, are given.

Grade	Weight
AA	**4,00**
BA	**3,50**
BB	**3,00**
CB	**2,50**
CC	**2,00**
DC	**1,50**
DD	**1,00**
FD	**0,5**
FF	**0,0**

B = Satisfactory for Non-Credit Courses
K = Unsatisfactory for Non-Credit Courses,
D = Did not Attend the Course
G = Did not Enter the Exam
M = Exempt ,
S = Ongoing Study
E = Incomplete (E grades are finalized as FF, unless revised until beginning of the following semester.)

A student who holds either grades (**AA**), (**BA**), (**BB**), (**CB**), (**CC**) is considered successful in that course. Furthermore, a student with a GPA of 2.00 or higher for a semester is also considered successful in a course with a DC grade in that semester.

The grades of B, K, and M are not included in the calculation of GPA. Attendance to the final examination is mandatory for successful completion of a course. The grade M is granted for courses that a transfer student has taken earlier and the course's equivalency with the program is approved by the Faculty Executive Board upon the request of the department.

ECTS grades are awarded considering the typical distributions defined by ECTS, as featured below.

ECTS Grade	% of successful students normally achieving the grade	Definition
A	10	EXCELLENT - outstanding performance with only minor errors
B	25	VERY GOOD - above the average standard but with some errors
C	30	GOOD - generally sound work with a number of notable errors
D	25	SATISFACTORY - fair but with significant shortcomings
E	10	SUFFICIENT - performance meets the minimum criteria
FX	-	FAIL - some more work required before the credit can be awarded
F	-	FAIL - considerable further work is required

Degrees Granted

Bachelor of Science in Computer Engineering	4 years*	(8 semesters)
Master of Science in Computer Engineering	2 years**	(4 semesters)
Philosophy of Doctorate in Computer Engineering	4 years***	(8 semesters)

* The course of study may be extended to 7 years or 14 semesters

** The course of study may be extended another 2 semesters for students who meet the requirements of the Institute of Science and Technology.

*** The course of study may be extended another 4 semesters for students who meet the requirements of the Institute of Science and Technology.

UNDERGRADUATE CURRICULUM

FIRST YEAR

First Semester

Course Code	Course Title	Prerequisite	Weekly Course Hours				Course Hours per Semester*				Local Credit	ECTS Credit
			Theory	Recit.	Lab.	Total	Theory	Recit.	Lab.	Total		
BM101	COMPUTER PROGRAMMING I		2	2	0	4	28	28	0	56	**3**	**5** §
BM103	INTRODUCTION TO COMPUTER ENGINEERING		1	2	0	3	14	28	0	42	**2**	**3** §
FIZ103	PHYSICS I (ENG)		4	0	0	4	56	0	0	56	**4**	**5** §
YAD-ING-103	ENGLISH		3	0	0	3	42	0	0	42	**3**	**4** §
MAT101	MATHEMATICS I (ENG)		4	0	0	4	56	0	0	56	**4**	**6** §
MAT103	LINEAR ALGEBRA		3	0	0	3	42	0	0	42	**3**	**5** §
TAR111	PRINCIPLES OF ATATÜRK AND REVOLUTION HIST.I		2	0	0	2	28	0	0	28	**0**	**2** §
	SEMESTER TOTAL		19	4	0	23	266	70	0	322	**19**	**30**

Second Semester

Course Code	Course Title	Prerequisite	Weekly Course Hours				Course Hours per Semester*				Local Credit	ECTS Credit
			Theory	Recit.	Lab.	Total	Theory	Recit.	Lab.	Total		
BM102	COMPUTER PROGRAMMING II	BM101	2	2	0	4	28	28	0	56	**3**	**5** §
BM104	DISCRETE MATHEMATICS		3	0	0	3	42	0	0	42	**3**	**5** §
FIZ104	PHYSICS II (ENG)		4	0	0	4	56	0	0	56	**4**	**5** §
FIZ156	PHYSICS LABARATORY(ENG)		0	2	0	2	0	28	0	28	**1**	**2** §
YAD-ING-104	ENGLISH		3	0	0	3	42	0	0	42	**3**	**4** §
MAT102	MATHEMATICS II		4	0	0	4	56	0	0	56	**4**	**5** §
TAR112	PRINCIPLES OF ATATÜRK AND REVOLUTION HIST.II		2	0	0	2	28	0	0	28	**0**	**2** §
	SOCIAL ELECTIVE COURSE I		2	0	0	2	28	0	0	28	**2**	**2** §
	SEMESTER TOTAL		20	4	0	24	280	56	0	336	**20**	**30**
	ACADEMIC YEAR TOTAL		39	8	0	47	546	112	0	658	**39**	**60**

* It is assumed that one semester is 14 weeks.

† Recitation consists of applying theoretical knowledge in solving practical problems, developing necessary skills to use relevant instruments, and deriving, observing and utilizing theoretical knowledge through experiments and demonstrations.

§ According to ECTS principles, every type of study has to have a credit, therefore, 2 ECTS credit is assigned for every non-credit course in the local credit system.

SECOND YEAR												
Third Semester												
Course Code	Course Title	Prerequisite	*Weekly Course Hours*				*Course Hours per Semester**				*Local Credit*	*ECTS Credit*
			Theory	Recit.†	Lab.	Total	Theory	Recit.	Lab.	Total		
BM203	ELECTRICAL CIRCUITS		3	0	0	3	42	0	0	42	**3**	**5** §
BM205	DATA STRUCTURES (ENG)	BM102	3	0	0	3	42	0	0	42	**3**	**4** §
BM207	PROBABILITY AND STATISTICS		3	0	0	3	42	0	0	42	**3**	**5** §
BM209	DIGITAL DESIGN		3	2	0	5	42	28	0	70	**4**	**6** §
YAD-ING-203	ENGLISH		3	0	0	3	42	0	0	42	**3**	**3** §
MAT213	DIFFERENTIAL EQUATIONS		3	0	0	3	42	0	0	42	**3**	**5** §
TUR211	TURKISH I		2	0	0	2	28	0	0	28	**0**	**2** §
SEMESTER TOTAL			20	2	0	22	280	28	0	308	**19**	**30**
Fourth Semester												
Course Code	Course Title	Prerequisite	*Weekly Course Hours*				*Course Hours per Semester**				*Local Credit*	*ECTS Credit*
			Theory	Recit.†	Lab.	Total	Theory	Recit.	Lab.	Total		
BM206	NUMERICAL ANALYSIS		3	0	0	3	42	0	0	42	**3**	**5** §
BM212	COMPUTER DESIGN	BM209	3	2	0	5	42	28	0	70	**4**	**6** §
BM214	OBJECT ORIENTED PROGRAMMING		3	0	0	3	42	0	0	42	**3**	**5** §
BM216	DIGITAL ELECTRONICS		3	0	0	3	42	0	0	42	**3**	**4** §
BM218	ALGORITHMS	BM205	3	0	0	3	42	0	0	42	**3**	**5** §
YAD-ING-204	ENGLISH		3	0	0	3	42	0	0	42	**3**	**3** §
TUR212	TURKISH II		2	0	0	2	28	0	0	28	**0**	**2** §
SEMESTER TOTAL			20	2	0	22	280	28	0	308	**19**	**30**
ACADEMIC YEAR TOTAL			40	4	0	44	560	56	0	616	**38**	**60**

* It is assumed that one semester is 14 weeks.

† Recitation consists of applying theoretical knowledge in solving practical problems, developing necessary skills to use relevant instruments, and deriving, observing and utilizing theoretical knowledge through experiments and demonstrations.

§ According to ECTS principles, every type of study has to have a credit, therefore, 2 ECTS credit is assigned for every non-credit course in the local credit system.

THIRD YEAR												
Fifth Semester												
Course Code	Course Title	Prerequisite	*Weekly Course Hours*				*Course Hours per Semester**				*Local Credit*	*ECTS Credit*
			Theory	Recit.†	Lab.	Total	Theory	Recit.	Lab.	Total		
BM300	SUMMER PRACTICE I		0	0	0	0	0	0	0	0	**0**	**2** §
BM307	FILE ORGANIZATION (ENG)		3	0	0	3	42	0	0	42	**3**	**5** §
BM309	OPERATING SYSTEMS		3	0	0	3	42	0	0	42	**3**	**5** §
BM311	COMPUTER ARCHITECTURE		3	0	0	3	42	0	0	42	**3**	**5** §
	SOCIAL ELECTIVE COURSE II		3	0	0	3	42	0	0	42	**3**	**5** §
	TECHNICAL ELECTIVE COURSE I		3	0	0	3	42	0	0	42	**3**	**5** §
SEMESTER TOTAL			15	0	0	15	210	0	0	210	**15**	**30**
Sixth Semester												
Course Code	Course Title	Prerequisite	*Weekly Course Hours*				*Course Hours per Semester**				*Local Credit*	*ECTS Credit*
			Theory	Recit.†	Lab.	Total	Theory	Recit.	Lab.	Total		
BM310	MICROPROCESSORS		3	2	0	5	42	28	0	70	**4**	**6** §
BM312	FORMAL LANGUAGES AND AUTOMATA		3	0	0	3	42	0	0	42	**3**	**5** §
BM314	SOFTWARE ENGINEERING		3	0	0	3	42	0	0	42	**3**	**5** §
BM316	DATABASE SYSTEMS (ENG)		3	0	0	3	42	0	0	42	**3**	**5** §
	TECHNICAL ELECTIVE COURSE II		3	0	0	3	42	0	0	42	**3**	**5** §
SEMESTER TOTAL			15	2	0	17	210	28	0	238	**16**	**30**
ACADEMIC YEAR TOTAL			30	2	0	32	420	28	0	448	**31**	**60**

* It is assumed that one semester is 14 weeks.

† Recitation consists of applying theoretical knowledge in solving practical problems, developing necessary skills to use relevant instruments, and deriving, observing and utilizing theoretical knowledge through experiments and demonstrations.

§ According to ECTS principles, every type of study has to have a credit, therefore, 2 ECTS credit is assigned for every non-credit course in the local credit system.

FOURTH YEAR												
Seventh Semester												
Course Code	Course Title	Prerequisite	*Weekly Course Hours*				*Course Hours per Semester**				*Local Credit*	*ECTS Credit*
			Theory	Recit.†	Lab.	Total	Theory	Recit.	Lab.	Total		
BM400	SUMMER PRACTICE II		0	0	0	0	0	0	0	0	**0**	**2** §
BM403	DATA COMMUNICATIONS		3	0	0	3	42	0	0	42	**3**	**6** §
BM495	COMPUTER PROJECT I		2	2	0	4	28	28	0	56	**3**	**6** §
	TECHNICAL ELECTIVE COURSE III (ENG)		3	0	0	3	42	0	0	42	**3**	**6** §
	TECHNICAL ELECTIVE COURSE IV (ENG)		3	0	0	3	42	0	0	42	**3**	**6** §
	TECHNICAL ELECTIVE COURSE V		3	0	0	3	42	0	0	42	**3**	**6** §
SEMESTER TOTAL			14	2	0	16	196	28	0	224	**15**	**32**
Eighth Semester												
Course Code	Course Title	Prerequisite	*Weekly Course Hours*				*Course Hours per Semester**				*Local Credit*	*ECTS Credit*
			Theory	Recit.†	Lab.	Total	Theory	Recit.	Lab.	Total		
BM402	COMPUTER NETWORKS		3	0	0	3	42	0	0	42	**3**	**6** §
BM496	COMPUTER PROJECT II		2	2	0	4	28	28	0	56	**3**	**6** §
	TECHNICAL ELECTIVE COURSE VI (ENG)		3	0	0	3	42	0	0	42	**3**	**6** §
	TECHNICAL ELECTIVE COURSE VII (ENG)		3	0	0	3	42	0	0	42	**3**	**6** §
	TECHNICAL ELECTIVE COURSE VIII		3	0	0	3	42	0	0	42	**3**	**6** §
SEMESTER TOTAL			14	2	0	16	196	28	0	224	**15**	**30**
ACADEMIC YEAR TOTAL			28	4	0	32	392	56	0	448	**30**	**62**

* It is assumed that one semester is 14 weeks.

† Recitation consists of applying theoretical knowledge in solving practical problems, developing necessary skills to use relevant instruments, and deriving, observing and utilizing theoretical knowledge through experiments and demonstrations.

§ According to ECTS principles, every type of study has to have a credit, therefore, 2 ECTS credit is assigned for every non-credit course in the local credit system.

UNDERGRADUATE COURSE DEFINITION FORMS

Course Title-Code:	Program Name:
COMPUTER PROGRAMMING I - BM101	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	28	43	-	40	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Problem solving, algorithm design and flowcharts. Fundamentals of programming. Variables, data types, processing, decision mechanisms, loops, functions, variable transition methods, pointers, single and multi dimensional strings, user defined data types, text and binary files, structures.
Course Objectives	Problem solving, algorithm design and flowcharts. Fundamentals of programming. Variables, data types, processing, decision mechanisms, loops, functions, variable transition methods, pointers, single and multi dimensional strings, user defined data types, text and binary files, structures.
Learning Outcomes and Competences	Problem solving, algorithm design and flowcharts. Fundamentals of programming. Variables, data types, processing, decision mechanisms, loops, functions, variable transition methods, pointers, single and multi dimensional strings, user defined data types, text and binary files, structures.
Textbook and /or References	Walter Savitch, JAVA: An Introduction to Computer Science + Programming, 3rd. Ed., Pearson Education, International Edition, 2004, ISBN:0-13-121727-5

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Problem solving
2	Algorithm development and flow diagrams
3	Programming basics concepts
4	Variables, data types
5	Assignment statements, transactions
6	Decision-making structures
7	Loops
8	Functions, parameter transfer methods demonstrators (pointers)
9	Single and multi-dimensional arrays
10	Array operations
11	user-defined data types
12	text and binary files
13	Buildings
14	

Course Title-Code:	Program Name:
INTRODUCTION TO COMPUTER ENGINEERING - BM103	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	14	43	-	4	14	-	-	75	2	3

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Computers, data processing, history of computers, engineering, computer engineering and computer science concepts, data processing and representation in digital systems, hierarchical structure of computer systems, computer engineering course descriptions, operating systems, programming languages and algorithms, web technologies, Internet, data structures, file organization, system analysis, introduction to computer labs of the department, application programs, web page design, term project.
Course Objectives	Computers, data processing, history of computers, engineering, computer engineering and computer science concepts, data processing and representation in digital systems, hierarchical structure of computer systems, computer engineering course descriptions, operating systems, programming languages and algorithms, web technologies, Internet, data structures, file organization, system analysis, introduction to computer labs of the department, application programs, web page design, term project.
Learning Outcomes and Competences	Computers, data processing, history of computers, engineering, computer engineering and computer science concepts, data processing and representation in digital systems, hierarchical structure of computer systems, computer engineering course descriptions, operating systems, programming languages and algorithms, web technologies, Internet, data structures, file organization, system analysis, introduction to computer labs of the department, application programs, web page design, term project.
Textbook and /or References	Seref Sagiroglu, Etkin Teknoloji Kullanimi, Ufuk Yayinevi, 2001. Gary B. Shelly, Microsoft Office 2000 Introductory Concepts and Techniques, Course Technology Incorporated R. E. Haskell, Introduction to computer engineering: Logic design, ISBN: 0134894367, Prentice Hall

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-

	Other	-	-
	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	Subject		
1	Computers, computers and information processing		
2	Computer history, engineering		
3	computer engineering and computer science engineering basic concepts		
4	Digital systems, information processing and display		
5	computer system hierarchical structure		
6	Computer Engineering Course Descriptions		
7	Operating systems		
8	Programming languages and algorithms		
9	Web technologies, Internet		
10	Data structures, File management		
11	System Analysis, Department laboratories presentation		
12	Operating systems, application programs, desktop publishing		
13	Web page design,		
14	Term Paper		

Course Title-Code:					Program Name:					
PHYSICS I (ENG) - FIZ103					COMPUTER ENGINEERING DEPARTMENT					
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	29	-	40	14	-	-	125	4	5
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	No									
Course Contents	Measurement and metrics, single dimension motion, vectors, 2-dimensional and 3-dimensional motion, energy and work, potential energy and conservation of energy, rolling motion, oscillatory motion, linear momentum and collisions, periodic motion.									
Course Objectives	Measurement and metrics, single dimension motion, vectors, 2-dimensional and 3-dimensional motion, energy and work, potential energy and conservation of energy, rolling motion, oscillatory motion, linear momentum and collisions, periodic motion.									
Learning Outcomes and Competences	Measurement and metrics, single dimension motion, vectors, 2-dimensional and 3-dimensional motion, energy and work, potential energy and conservation of energy, rolling motion, oscillatory motion, linear momentum and collisions, periodic motion.									
Textbook and /or References	Raymond A. S., Physics For Scientist and Engineers, 3rd Edition, Saunders College Publishing, Florida (Textbook), 1992. Halliday D. ve Resnick, Fundementals of Physics, 3rd Edition, John Wiley Inc. New York, 1974.									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Measurement and units
2	One-dimensional motion, vectors
3	Two and three-dimensional motion
4	Two and three-dimensional motion
5	force and movement
6	Kinetic energy and work
7	Potential energy and conservation of energy Potential energy and conservation of energy
8	particle systems, collisions, rotation
9	particle systems, collisions, rotation
10	Rolling, balance and moment
11	Rolling, balance and moment
12	Location shooting and periodic movements Gravitation and periodic motion
13	
14	

YAD-ING 103 English				COMPUTER ENGINEERING DEPARTMENT					
Semester	**Methods of Education**							**Credits**	
	Lecture	**Recit.**	**Lab.**	**Project/Field Study**	**Homework**	**Other**	**Total**	**Credit**	**ECTS**
Fall	45	-	-	-	-	-	45	3	3

Language	English
Compulsory / Elective	Compulsory
Prerequisites	No
Catalog Description	YAD-ING 103 aims to equip the students with the major language skills (reading, writing, listening, speaking) along with the grammar presentation that consolidates and expands on students' existing knowledge.
Course Objectives	To take the students from intermediate to upper intermediate level.
Course Outcomes	Students will incresae their ability to understand what they read, what they listen and respond verbally or in written form at the intermediate level,
Textbook and /or References	"Build Up To Countdown" by Jenny Quintana (Oxford University Press)

Assessment Criteria		**Quantity**	**Percentage**
	Midterm Exams	1	40
	Quizzes	-	-
	Homework	-	-
	Projects	-	-
	Term Paper	-	-
	Laboratory Work / Site Survey	-	-
	Other	-	-
	Final Exam	1	60

Instructors	English Instructors from Modern Languages Department (School of Foreign Languages)

COURSE PLAN

Week	**Topics**
1	Orientation
2	Unit 1
3	Unit 1 continued
4	Unit 2
5	Unit 2 continued
6	Unit 3
7	Unit 3 continued
8	Unit 4

9	Unit 4 continued
10	Unit 5 ----- **MIDTERM**
11	Unit 5 continued
12	Unit 6
13	Unit 6 continued
14	Unit 7
15	Unit 7 continued

Course Title-Code:					Program Name:					
MATHEMATICS I (ENG) - MAT101					**COMPUTER ENGINEERING DEPARTMENT**					
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	56	15	-	65	14	-	-	150	4	6
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	No									
Course Contents	Number sentences, absolute value, inequalities that cover absolute value function, induction, coordinates, complex numbers, functions, product function, trigonometric functions, series, limits, Continuous Functions, derivation, max, min functions and applications, graphic representation, differentials and applications, integral, functions defined by integrals, integration techniques. Space, volume and arc length computation. Cartesian coordinates									
Course Objectives	Number sentences, absolute value, inequalities that cover absolute value function, induction, coordinates, complex numbers, functions, product function, trigonometric functions, series, limits, Continuous Functions, derivation, max, min functions and applications, graphic representation, differentials and applications, integral, functions defined by integrals, integration techniques. Space, volume and arc length computation. Cartesian coordinates									
Learning Outcomes and Competences	Number sentences, absolute value, inequalities that cover absolute value function, induction, coordinates, complex numbers, functions, product function, trigonometric functions, series, limits, Continuous Functions, derivation, max, min functions and applications, graphic representation, differentials and applications, integral, functions defined by integrals, integration techniques. Space, volume and arc length computation. Cartesian coordinates									
Textbook and /or References	Prof.Dr.H.H. Hacisalihoglu, Fundamental and General Mathematics, Vol 1, 1998. Prof.Dr.M. Balci, General Mathematics, Vol 1, 1999. Edwards, C.H. and Penney, D.E., Calculus and Analytic Geometry; Prentice Hall, Inc., (Translation: Prof.Dr.Ö. Akin , Palme Press), 2002.									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Number sentences, absolute value, absolute value function inequalities involving
2	Induction, coordinates, complex numbers
3	Functions, junction function
4	trigonometric functions
5	Arrays
6	limits of functions, continuity, continuous functions features Derivative
7	Change rate, mean value theorem, applications
8	Maximum and minimum finding, applications
9	graph drawing, differential and applications
10	integral, fundamental theorem
11	integral defined by functions
12	integral formulas, integration techniques
13	area, volume calculations, and arc length, polar coordinates
14	

Course Title-Code:	Program Name:
LINEAR ALGEBRA - MAT103	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Matrices, determinants and linear equations. Vector spaces, Euclidean space, linear transformations. Diagonalization, three dimensional space. Basic surfaces in space, cylinders, quadratic surfaces, surface of revolutions.
Course Objectives	Matrices, determinants and linear equations. Vector spaces, Euclidean space, linear transformations. Diagonalization, three dimensional space. Basic surfaces in space, cylinders, quadratic surfaces, surface of revolutions.
Learning Outcomes and Competences	Matrices, determinants and linear equations. Vector spaces, Euclidean space, linear transformations. Diagonalization, three dimensional space. Basic surfaces in space, cylinders, quadratic surfaces, surface of revolutions.
Textbook and /or References	Kolman, B., Hill, D.R. Elementary Linear Algebra, 7th ed., Prentice Hall. (Textbook), 2000. Nicholson, W.K., Elementary Linear Algebra, 1tst ed., McGraw Hill, 2002. Ross L. Finney, Dale T. Hoffman, Judah L. Schwartz, Carroll O. Wilde, Calculus and Analytic Geometry; Addison-Wesley Publ. Comp, 1984.

Assessment Criteria	If any, mark as (X)	Percentage (%)
Midterm Exams	X	30
Quizzes	-	-
Homeworks	X	30
Projects	-	-
Term Paper	-	-
Laboratory Work	-	-
Other	-	-
Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Matrices
2	Determinants and linear equations system
3	Determinants and linear equations system
4	Vector spaces
5	Euclidian space
6	Linear transformations
7	Eigenvalues
8	Diagonalization
9	Three-dimensional space correctly and planes Lines and planes in three-dimensional space
10	
11	Basic surfaces in space
12	Cylindrical Surfaces
13	Rotating surfaces
14	quadratic surfaces

Course Title-Code: **PRINCIPLES OF ATATÜRK AND THE REVOLUTION HISTORY I - TAR 111**	Program Name: **COMPUTER ENGINEERING DEPARTMENT**

Semester	**Teaching Methods**							**Credits**	
	Lecture	**Recit.**	**Lab.**		**Homeworks**	**Other**	**Total**	**Credit**	**ECTS Credit**
1	28	-	-		-	22	50	0	2

Language	Turkish
Compulsory/Elective	Compulsory
Prerequisites	None
Course Contents	Ideas about sharing Ottoman Empire. Paris Conference. Military occupation of Izmir. Minorities. Cerkez Ethem Event. First and second Inonu Battles. Eskisehir and Kutahya Battles. Sakarya War and its results. Kars and Ankara Treaties. Mudanya Cease-fire Treaty and its importance. Lousanne Conference and its importance. Turkish Revolutions. Political, juridical, social, cultural, educational revolutions. Economical growth of Turkey. Turkish foreign policy. Armenian problem. Second World War and Turkey. Principles of Atatürk.
Course Objectives	To educate Turkish youth as members of society who protect the unity of nation and who are devoted to the principles and revolutions of Ataturk and who are respectful to the human rights.
Learning Outcomes and Competences	To give the consciousness of the principles of the Republic of Turkey (Republicanism, nationalism, populism, laicism, statism, revolutionalism) which is indivisible with its using of country and nation.
Text books and/or References	Publication of Higher Education Council, Gazi University, İş Bankası

Assessment Criteria		***If any, mark as (X)***	**Percent (%)**
	Midterm Exams	2	25
	Quizzes	-	-
	Homeworks	1	25
	Projects	1	-
	Term Paper	1	-
	Laboratory Work	-	-

	Other	-	-
	Final Exam	1	50
Instructors			
Week	Subject		
1	Definition of History; similar concepts about revolution		
2	Revolution, Coup d'etat, Rebellion, Evolution and (description) explanation of each of these concepts with an example		
3	Turkish Revolution, French revolution (Renaissance, Reform, Humanism)		
4	Industry Revolution		
5	Collapse of Ottoman Empire and Independence War		
6	Ataturk and foundation of (state of) Republic of Turkey		
7	Mid-Term Exam		
8	Explanation of concepts of Populism, Nationalism		
9	Explanation of concepts of Statism, Republicanism		
10	Explanation of concepts of Revolutionalism, laicism		
11	Revolutions in education		
12	Revolutions in law		
13	Revolutions in social area (social revolutions)		
14	Revolutions in political area (political revolutions)		

Course Title-Code:	Program Name:
COMPUTER PROGRAMMING II - BM102	COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	28	43	-	40	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	BM101
Course Contents	Visual programming tools, object oriented programming environments. Class, object, homomorphism, abstract class definitions. Simple database applications.
Course Objectives	Visual programming tools, object oriented programming environments. Class, object, homomorphism, abstract class definitions. Simple database applications.
Learning Outcomes and Competences	Visual programming tools, object oriented programming environments. Class, object, homomorphism, abstract class definitions. Simple database applications.
Textbook and /or References	Walter Savitch, JAVA: An Introduction to Computer Science + Programming, 3rd. Ed., Pearson Education, International Edition, 2004, ISBN:0-13-121727-5

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Visual programming tools

2	visual programming tools
3	object-based programming environments
4	object-based programming environments
5	Class
6	Class
7	object
8	object
9	Inheritance
10	Inheritance
11	polymorphism
12	abstract class concepts
13	simple database applications
14	simple database applications

Course Title-Code:	Program Name:
DISCRETE MATHEMATICS - BM104	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Logic, sets, functions, algorithms, Propositions; methods of proving, relations; equivalence relations; partially ordered sets; totally ordered sets; order preserving functions; Boolean algebra, languages, language definitions, random number and function generation, Turing machines.
Course Objectives	Logic, sets, functions, algorithms, Propositions; methods of proving, relations; equivalence relations; partially ordered sets; totally ordered sets; order preserving functions; Boolean algebra, languages, language definitions, random number and function generation, Turing machines.
Learning Outcomes and Competences	Logic, sets, functions, algorithms, Propositions; methods of proving, relations; equivalence relations; partially ordered sets; totally ordered sets; order preserving functions; Boolean algebra, languages, language definitions, random number and function generation, Turing machines.
Textbook and /or References	Johnsonbaugh, Richard, Discrete Mathematics, Prentice-Hall, 2001. Grimaldi, Ralph.P., Discrete and Combinational Mathematics, An Applied Introduction, Addison-Wesley, 1998.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Logic, sets
2	Functions
3	Algorithms, of propositions and proves
4	Suggestion balances, mathematical inference
5	Calculation theory
6	Advanced calculation techniques
7	Relations, Graphs
8	CAGES
9	Plants Boolean algebra
10	Languages and language structure, language Description
11	functions and random numbers generation
12	functions and random numbers generation
13	Turing machine
14	

Course Title-Code:	Program Name:
PHYSICS II - FIZ104	COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	29	-	40	14	-	-	125	4	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Charges and electrical fields. Gauss' law , Electrical potential. Capacitor and capacitance. Current and resistance. Electromotive force, circuits and magnetic fields. Ampere's law and Faraday's induction law. Inductance and magnetic properties of materials. Electromagnetic waves.
Course Objectives	Charges and electrical fields. Gauss' law , Electrical potential. Capacitor and capacitance. Current and resistance. Electromotive force, circuits and magnetic fields. Ampere's law and Faraday's induction law. Inductance and magnetic properties of materials. Electromagnetic waves.
Learning Outcomes and Competences	Charges and electrical fields. Gauss' law , Electrical potential. Capacitor and capacitance. Current and resistance. Electromotive force, circuits and magnetic fields. Ampere's law and Faraday's induction law. Inductance and magnetic properties of materials. Electromagnetic waves.
Textbook and /or References	Serway-Beichner, Physics for Scientist and Engineers with Modern Physics, Fifth Edition, Saunders College Publishing, 2000

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Load material and electric field
2	Freight matter and electric field
3	Gauss's law, electric potential
4	Gauss's law, electric potential
5	Capacitors and capacitance, current and resistance
6	Capacitors and capacitance, current and resistance Electromotive force, circuits and magnetic fields
7	Electromotive force, circuits and magnetic fields
8	Ampere's law and Faraday's Law of Induction
9	Ampere's law and Faraday's Law of Induction
10	Inductance and magnetic properties of matter
11	Inductance and magnetic properties of matter
12	Electromagnetic waves.
13	Electromagnetic waves.
14	

YAD-ING 104 English					COMPUTER ENGINEERING DEPARTMENT				
Semester	**Methods of Education**								**Semester**
	Lecture		**Lecture**		**Lecture**		**Lecture**		**Lecture**
Spring	**45**	**Spring**	**45**	Spring	45	Spring	45	Spring	45
Language	English								
Compulsory / Elective	Compulsory								
Prerequisites	No								
Catalog Description	YAD-ING 104 aims to equip the students with the major language skills (reading, writing, listening, speaking) along with the grammar presentation that consolidates and expands on students' existing knowledge.								
Course Objectives	To take the students from intermediate to upper intermediate level.								
Course Outcomes	Students will incresae their ability to understand what they read, what they listen and respond verbally or in written form at the intermediate level,								
Textbook and /or References	"Build Up To Countdown" by Jenny Quintana (Oxford University Press)								

Assessment Criteria		**Quantity**	**Percentage**
	Midterm Exams	1	40
	Quizzes	-	-
	Homework	-	-
	Projects	-	-
	Term Paper	-	-
	Laboratory Work / Site Survey	-	-
	Other	-	-
	Final Exam	1	60

Instructors	English Instructors from Modern Languages Department (School of Foreign Languages)

COURSE PLAN

Week	**Topics**
1	Unit 8
2	Unit 8 continued
3	Unit 9
4	Unit 9 continued
5	Unit 10
6	Unit 10 continued
7	Unit 11
8	Unit 11 continued
9	Unit 12

10	Unit 12 continued	----- **MIDTERM**
11	Unit 13	
12	Unit 13 continued	
13	Unit 14	
14	Unit 14 continued	
15	Revision	

Course Title-Code:	Program Name:
MATHEMATICS II - MAT102	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	56	15	-	40	14	-	-	125	4	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Sequences and infinite series; polar coordinates, vectors, curves, linear, line, plane. The binomial theorem and binomial series; functions of several variables; limit and continuity, partial derivatives, the chain rule, linear approximations; gradients and directional derivatives; extreme values; absolute extreme; quadratic forms; Lagrange multipliers; double integrals; double integrals in polar coordinates; triple integrals; conservative fields; line integrals; path independence
Course Objectives	Sequences and infinite series; polar coordinates, vectors, curves, linear, line, plane. The binomial theorem and binomial series; functions of several variables; limit and continuity, partial derivatives, the chain rule, linear approximations; gradients and directional derivatives; extreme values; absolute extreme; quadratic forms; Lagrange multipliers; double integrals; double integrals in polar coordinates; triple integrals; conservative fields; line integrals; path independence
Learning Outcomes and Competences	Sequences and infinite series; polar coordinates, vectors, curves, linear, line, plane. The binomial theorem and binomial series; functions of several variables; limit and continuity, partial derivatives, the chain rule, linear approximations; gradients and directional derivatives; extreme values; absolute extreme; quadratic forms; Lagrange multipliers; double integrals; double integrals in polar coordinates; triple integrals; conservative fields; line integrals; path independence
Textbook and /or References	Prof.Dr.H.H. Hacisalihoglu, Fundamental and General Mathematics, Vol 1, 1998. Prof.Dr.M. Balci, General Mathematics, Vol 1, 1999. Edwards, C.H. and Penney, D.E., Calculus and Analytic Geometry; Prentice Hall, Inc., (Translation: Prof.Dr.Ö. Akin , Palme Press, 2002. Edwards, C.H. and Penney, D.E., Calculus and Analytic Geometry; Prentice Hall, Inc., (Translation: Prof.Dr.Ö. Akin , Palme Press), 2002.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-

	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	**Subject**		
1	Sequences, series, power series		
2	Polar coordinates		
3	R3'de vectors, curves		
4	Lines and planes in		
5	of functions of several variables, limits and continuity		
6	Partial derivatives		
7	Gradient vector		
8	Tangent plane		
9	Directional derivative		
10	Unrestricted and should restrict the maximum and minimum,		
11	Lagrange multipliers		
12	Multiple integrals		
13	linear integrals and path independence		
14	Surface integrals		

Course Title-Code: ATATURK REVOLUTIONS AND PRINCIPLES OF HISTORY II – TAR112	Program Name: COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods						Credits	
	Lecture	Recit.	Lab.	Homeworks	Other	Total	Credit	ECTS Credit
2	28	-	-	-	22	50	0	2

Language	Turkish
Compulsory/Elective	Compulsory
Prerequisites	None
Course Contents	Plans for disintegration Ottoman Empire. Paris Conference. Military occupation of Izmir. Internal affairs and minorities. Çerkez Ethem Revolt. First and second Inonu Battles. Eskisehir and Kutahya Battles. Sakarya War and its results. Kars and Ankara Treaties. Mudanya Armistice and its importance. Lousanne Conference and its importance. Politicial, juridical, social, cultural, educational revolutions. Transition to democracy. Economical development of the Republic of Turkey: the early years. Turkish foreign policy. Armenian problem. Second World War and Turkey. Principles of Atatürk.
Course Objectives	To educate Turkish youth as members of society who protect the unity of nation and who are devoted to the principles and revolutions of Ataturk and who are respectful to the human rights.
Learning Outcomes and Competences	To give the consciousness of the principles of the Republic of Turkey (Republicanism, nationalism, populism, laicism, statism, revolutionalism) which is indivisible with its using of country and nation.
Text books and/or References	Publication of Higher Education Council, Gazi University, İş Bankası

Assessment Criteria		*Ify any, mark as (X)*	**Percent (%)**
	Midterm Exams	2	25
	Quizzes	-	-
	Homeworks	1	25
	Projects	1	-

	Term Paper	1	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	1	50

Instructors	

Week	Subject
1	Republicanism
2	Republicanism
3	Nationalism
4	Nationalism
5	Populism
6	Populism
7	Mid-Term Exam
8	Laicism
9	Laicism
10	Statism
11	Statism
12	Revolutionalism
13	Revolutionalism
14	Presentations of Seminar Homework

Course Title-Code:	Program Name:
ELECTRICAL CIRCUITS - BM203	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Introduction (voltage, current, resistance, sources, power, energy). Units and standards. Kirchoff laws. Ideal circuit instruments, Modeling of physical circuit instruments. circuit theorems (superposition, Norton equivalent circuit, Thevenin equivalent circuit).
Course Objectives	Introduction (voltage, current, resistance, sources, power, energy). Units and standards. Kirchoff laws. Ideal circuit instruments, Modeling of physical circuit instruments. circuit theorems (superposition, Norton equivalent circuit, Thevenin equivalent circuit).
Learning Outcomes and Competences	Introduction (voltage, current, resistance, sources, power, energy). Units and standards. Kirchoff laws. Ideal circuit instruments, Modeling of physical circuit instruments. circuit theorems (superposition, Norton equivalent circuit, Thevenin equivalent circuit).
Textbook and /or References	Rizzoni, G., Principles and Applications of Electrical Engineering, Mc Graw Hill (Textbook), 2000. Aydemir, M.T., Nakiboglu, C., Elektrik Devreleri, (Translation), Schaum Books, 1999.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	**Subject**

1	Current, voltage, charge, flux, power and energy concepts
2	Kirchoff's laws
3	Ideal circuit elements
4	Ideal circuit elements
5	Physical modeling of circuit elements
6	Physical modeling of circuit elements
7	Circuit graphs and analysis
8	Circuit graphs and analysis
9	Environmental flows and node voltages and methods
10	Environmental flows and node voltages and methods
11	Thevenin and Norton theorems
12	Thevenin and Norton theorems
13	Status variables method
14	Status variables method

Course Title-Code:									Program Name:	
DATA STRUCTURES - BM205									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	BM102									
Course Contents	Algorithmic problem solving, basic data structures, queues, stacks, hash tables, searching and sorting techniques, utilizing different data structures. Dynamic memory allocation. Tree structures. Hash techniques.									
Course Objectives	Algorithmic problem solving, basic data structures, queues, stacks, hash tables, searching and sorting techniques, utilizing different data structures. Dynamic memory allocation. Tree structures. Hash techniques.									
Learning Outcomes and Competences	Algorithmic problem solving, basic data structures, queues, stacks, hash tables, searching and sorting techniques, utilizing different data structures. Dynamic memory allocation. Tree structures. Hash techniques.									
Textbook and /or References	Robert L. Kruse, Bruce P. Leung, Clovis L. Tondo, Data structures and program design in C, Prentice Hall, 1997. William Ford, William Topp, Data structures with C++ , Prentice Hall, 2002. Weiss Mark Allen, Data structures, and problem solving using C++, Addison-Wesley, 1999.									
Assessment Criteria									If any, mark as (X)	Percentage (%)
	Midterm Exams								X	30
	Quizzes								-	-
	Homeworks								X	30
	Projects								-	-
	Term Paper								-	-
	Laboratory Work								-	-
	Other								-	-
	Final Exam								X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr									
Week	Subject									

1	Stacks
2	Drives
3	Drives
4	Connected lists
5	Connected lists
6	Dynamic memory allocation
7	tree structures
8	B-trees and applications
9	Graphs
10	Graphs
11	Top short paths, topological sort
12	Sort and search techniques, and performance
13	static and dynamic clipping (hash) techniques
14	static and dynamic clipping (hash) techniques

Course Title-Code:	Program Name:
PROBABILITY AND STATISTICS - BM207	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Basic definitions of probability and statistics. Data analysis; probability theory; discrete random variables and their distribution functions; continuous random variables and their distribution functions; sampling distribution; point and interval estimation; inferences about population mean; inferences about population proportions.
Course Objectives	Basic definitions of probability and statistics. Data analysis; probability theory; discrete random variables and their distribution functions; continuous random variables and their distribution functions; sampling distribution; point and interval estimation; inferences about population mean; inferences about population proportions.
Learning Outcomes and Competences	Basic definitions of probability and statistics. Data analysis; probability theory; discrete random variables and their distribution functions; continuous random variables and their distribution functions; sampling distribution; point and interval estimation; inferences about population mean; inferences about population proportions.
Textbook and /or References	Walpole, R.E., Myers, R.H., Myers S.L., Ye, K., Probability and Statistics for Enginers and Scientists, Prentice Hall. (Textbook), 2002. Devore, J.L., Probability and Statistics for Enginers and the Scientists, Brooks/Cole Publishing Company, 1990. Hines, W.W., Montgomery, D.C., Probability and Statistics in Engineering and Management Scientists, John Wiley and Sons, 1990.

Assessment Criteria	If any, mark as (X)	Percentage (%)
Midterm Exams	X	30
Quizzes	-	-
Homeworks	X	30
Projects	-	-
Term Paper	-	-
Laboratory Work	-	-
Other	-	-
Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Probability and statistical basic concepts
2	Measures of central tendency and dispersion
3	Measures of central tendency and dispersion
4	Sampling distributions
5	Statistics estimates
6	Statistical hypotheses and hypothesis testing
7	Regression and correlation analysis Regression and correlation analysis
8	random variables and special functions
9	Multi-variable distributions and densities
10	Multi-variable distributions and densities
11	independent random variables
12	Correlation statistics for the engineering implementation of the system
13	Correlation statistics for the engineering systems implementation
14	

Course Title-Code:	Program Name:
DIGITAL DESIGN - BM209	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	43	-	51	14	-	-	150	4	6

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Digital systems, binary numbers, base transformations, binary digits. Boole algebra, Boole functions, canonical and standard forms, logic operations and gates. NAND and NOR applications. Logic circuits, adder, multiplexer, decoder, encoder. Serial circuits, flip-flops, registers, counters. Memory, programmable logic circuits. State machines. HDL applications of these topics.
Course Objectives	Digital systems, binary numbers, base transformations, binary digits. Boole algebra, Boole functions, canonical and standard forms, logic operations and gates. NAND and NOR applications. Logic circuits, adder, multiplexer, decoder, encoder. Serial circuits, flip-flops, registers, counters. Memory, programmable logic circuits. State machines. HDL applications of these topics.
Learning Outcomes and Competences	Digital systems, binary numbers, base transformations, binary digits. Boole algebra, Boole functions, canonical and standard forms, logic operations and gates. NAND and NOR applications. Logic circuits, adder, multiplexer, decoder, encoder. Serial circuits, flip-flops, registers, counters. Memory, programmable logic circuits. State machines. HDL applications of these topics.
Textbook and /or References	Mano, M. Morris, Digital Design, Prentice Hall, 2002. Kleitz, William, Digital Electronics A Practical Approach, Prentice-Hall, 2002.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1 2 3 4 5 6 7 8 9 10 11 12 13 14	Digital systems, binary numbers, base conversions, complement those marked with numbers, binary codes digital systems, binary numbers, base conversions, complement those marked with numbers, binary codes Boolean algebra, boolean functions, canonical and standard forms, logic operations and gates map by the method of simplification, not considering situations NAND and NOR applications United logic circuits, adder, amplitude comparator, decoder, encoder, multiplexer United logic circuits, adder, amplitude comparator, decoder, encoder, enhancer Sequential circuits, flip-flops, store users, counters Sequential circuits, flip-flops, store users, counters memory, programmable logic circuits memory, programmable logic circuits hide user transfer level, algorithmic state machines All topics HDL (hardware description language) and applications All topics HDL (hardware description language) and applications

YAD-ING 203 English				COMPUTER ENGINEERING DEPARTMENT					
Semester	**Methods of Education**							**Credits**	
	Lecture	**Recit.**	**Lab.**	**Project/Field Study**	**Homework**	**Other**	**Total**	**Credit**	**ECTS**
Fall	45	-	-	-	-	-	45	3	3

Language	English
Compulsory / Elective	Compulsory
Prerequisites	No
Catalog Description	YAD-ING 203 aims to equip the students with the skills they need to succeed in their future academic and professional careers.
Course Objectives	To teach extensive and intensive reading skills as well as vocabulary, grammar, and writing skills.
Course Outcomes	Students will gain a deeper knowledge of the material they are presented with, both in and out of the classroom. They will be able to apply the skills they have learned to new situations with materials they have never seen before.
Textbook and /or References	Q: Skills for Success 3'' by Jenni Currie Santamaria (Oxford University Press)

Assessment Criteria		**Quantity**	**Percentage**
	Midterm Exams	1	40
	Quizzes	-	-
	Homework	-	-
	Projects	-	-
	Term Paper	-	-
	Laboratory Work / Site Survey	-	-
	Other	-	-
	Final Exam	1	60

Instructors	English Instructors from Modern Languages Department (School of Foreign Languages)

COURSE PLAN

Week	**Topics**
1	Orientation
2	Unit 1
3	Unit 1 continued
4	Unit 2
5	Unit 2 continued
6	Units 1-2 Reading and Writing
7	Unit 3
8	Unit 3 continued
9	Unit 3 Reading and Writing

10	Unit 4 ----- **MIDTERM**
11	Unit 4 continued
12	Unit 4 Reading and Writing
13	Unit 5
14	Unit 5 continued
15	Unit 5 Reading and Writing

Course Title-Code: TURKISH I – TUR 211					Program Name: COMPUTER ENGINEERING DEPARTMENT		
Semester	**Teaching Methods**					**Credits**	
	Lecture	**Recit.**	**Lab.**	**Other**	**Total**	**Credit**	**ECTS Credit**
1	28	-	-	22	50	**0**	**2**
Language	Turkish						
Compulsory/Elective	Compulsory						
Prerequisites	None						
Course Contents	Definition of language and its characteristics, definition of culture and civilization. Place of Turkish language among all other languages. Charateristics of sounds and their changes in particular words. Writing rules. Punction marks.						
Course Objectives	Young person who has (finished) graduated from university shoduld know its native languges grammer structure, usage and characteristic. It should be taken attention on correct speaking and writing.						
Learning Outcomes and Competences	To understand logic of language. Teaching how to use native language correctly writing and speaking is one of the main purposes of this lesson						
Text books and/or References	1.Örnekli ve Uygulamalı Türk Dili ve Komp., Ertuğrul YAMAN Mehmet KÖSTEKÇİ IV. Baskı Gazi Kitabevi-ANKARA- 2000. 2.Kültür ve Dil, Mehmet KAPLAN, VII. Baskı Dergah Yayınları İSTANBUL-1992. 3. Türk Dili ve Komp. Bilgileri, Z. Korkmaz, A. Bican Ercilasun, H. Zülfikar, M. Akalın, T. Gülensoy, İ. Parlatır, N. Birinci, IV.Baskı, Ankara, 1997.						
Assessment Criteria					***If any, mark as (X)***		**Percent (%)**
	Midterm Exams				X		50
	Quizzes				-		-
	Homeworks				-		-
	Projects				-		-
	Term Paper				-		-
	Laboratory Work				-		-
	Other				-		-
	Final Exam				X		50
Instructors	Yunus ZEYBEK						
Week	Subject						

1	What is language? Importance of language in human society.
2	Relationship between language and culture.
3	Languages in the world.
4	Place of Turkish language among all other languages in the world.
5	Development of Turkish language and its historical periods.
6	Sounds in Turkish language and their classification.
7	Characteristics of sounds in Turkish language.
8	Study of sounds in Turkish language and reflected rules.
9	Study of syllables.
10	Writing rules and their usage.
11	Writing rules and their usage.
12	Function marks and their usage.
13	Suffixes in Turkish language.
14	Usage of suffixes in Turkish language.

Course Title-Code:										
DIFFERENTIAL EQUATIONS - MAT213										
Program Name:										
COMPUTER ENGINEERING DEPARTMENT										
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	No									
Course Contents	First order differential equations; exact and linear equations; second order linear differential equations; Cauchy Euler equation; series solutions; Laplace transforms; vector differential calculus; vector integral calculus; line integrals, surface integrals, Green's theorem, divergence and Stoke's theorems; Fourier series, Parseval's theorem; separation of variables; heat equation.									
Course Objectives	First order differential equations; exact and linear equations; second order linear differential equations; Cauchy Euler equation; series solutions; Laplace transforms; vector differential calculus; vector integral calculus; line integrals, surface integrals, Green's theorem, divergence and Stoke's theorems; Fourier series, Parseval's theorem; separation of variables; heat equation.									
Learning Outcomes and Competences	First order differential equations; exact and linear equations; second order linear differential equations; Cauchy Euler equation; series solutions; Laplace transforms; vector differential calculus; vector integral calculus; line integrals, surface integrals, Green's theorem, divergence and Stoke's theorems; Fourier series, Parseval's theorem; separation of variables; heat equation.									
Textbook and /or References	Boyce, W.E., DiPrima, R.C., Elementary Differential Equations, 6th Edition, Wiley (Textbook), 1996.									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	First order differential equations: Exact differential equations, integral multiplier linear differential equations, electrical circuits, curve families
2	about solutions, solutions, existence and uniqueness
3	linear differential equations: Homogeneous linear equations, constant coefficient
4	equations, initial value problems, differential operator free oscillation
5	Non-Homogeneous equations, uncertain coefficients method, electric circuits
6	parameters change method
7	Differential equation systems
8	Series solutions: Legendre and Bessel equations
9	Laplace transform
10	Introduction to Fourier Series Introduction to Fourier Series
11	Introduction to partial differential equations and separation of variables method
12	Introduction to partial differential equations and separation of variables method
13	
14	

Course Title-Code:	Program Name:
NUMERICAL ANALYSIS - BM206	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	The wiev of numerical analysis in engineering. Errors. Numerical discretization, integers and floating point numbers (IEEE notations) errors from this notations. Solution methods of simultaneous equations. Finite Differences. Generating the forward difference, backward difference, central difference tables and finding errors. Interpolation concept. Forward and backward differences interpolation equations. Curve Fitting and Least Squares Method. Numerical integral methods. Approximate solution methods of ordinary differential equation. Iteration methods. Newton-Raphson, Secant, Bisection methods. Runge-Kutta, Secant and Euler methods. Solution of differential equation with Taylor serial expansion method. Application examples. Homework.
Course Objectives	The wiev of numerical analysis in engineering. Errors. Numerical discretization, integers and floating point numbers (IEEE notations) errors from this notations. Solution methods of simultaneous equations. Finite Differences. Generating the forward difference, backward difference, central difference tables and finding errors. Interpolation concept. Forward and backward differences interpolation equations. Curve Fitting and Least Squares Method. Numerical integral methods. Approximate solution methods of ordinary differential equation. Iteration methods. Newton-Raphson, Secant, Bisection methods. Runge-Kutta, Secant and Euler methods. Solution of differential equation with Taylor serial expansion method. Application examples. Homework.
Learning Outcomes and Competences	The wiev of numerical analysis in engineering. Errors. Numerical discretization, integers and floating point numbers (IEEE notations) errors from this notations. Solution methods of simultaneous equations. Finite Differences. Generating the forward difference, backward difference, central difference tables and finding errors. Interpolation concept. Forward and backward differences interpolation equations. Curve Fitting and Least Squares Method. Numerical integral methods. Approximate solution methods of ordinary differential equation. Iteration methods. Newton-Raphson, Secant, Bisection methods. Runge-Kutta, Secant and Euler methods. Solution of differential equation with Taylor serial expansion method. Application examples. Homework.
Textbook and /or References	Curtis F. Gerald, Patrick O. Wheatley, Applied numerical analysis, Addison-Wesley, 1994. William H Press, Saul A Teukolsky, William T Vettering and Brian P Flannery Numerical Recipes in C++ : The Art of Scientific Computing, Cambridge University Press, 2002. Mathews, John, Fink Kurtis, Numerical Methods using MatLab, Prentice-Hall, 1999.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-

	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	**Subject**		
1	Numerical analysis of the engineering space, errors Number of computer representations of integers and floating point numbers (IEEE		
2	impressions)		
3	showing arising from errors, too unknown solution of equations with methods		
4	Finite difference procedures		
5	Next difference is that the difference back to the central difference creating tables		
6	and error to find		
7	The concept of interpolation		
8	Forward and backward difference interpolation formulas		
9	Curve fitting and least squares method		
10	Numerical integration methods		
11	Ordinary differential equations approximate solution methods		
12	Iteration methods , Newton-Raphson, Secant, Two Partitions methods		
13	Runge-Kutta, Euler and Secant methods		
14	Taylor series expansion method with the help of differential equations Application Examples, Assignments		

Course Title-Code:	Program Name:
COMPUTER DESIGN - BM212	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	43	-	51	14	-	-	150	4	6

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	BM209
Course Contents	Computer hardware processes, commands, operands, display of commands, logic processes, decision commands, function using in computer hardware, addressing modes, signed and unsigned numbers, addition, subtraction, multiplication, division, real numbers. Processor performance, factors of performance and evaluation. Internal structure of processor: data path and control. Data path design. Multi steps applications. Microprogramming. Design of arithmetic logic and control units with HDL.
Course Objectives	Computer hardware processes, commands, operands, display of commands, logic processes, decision commands, function using in computer hardware, addressing modes, signed and unsigned numbers, addition, subtraction, multiplication, division, real numbers. Processor performance, factors of performance and evaluation. Internal structure of processor: data path and control. Data path design. Multi steps applications. Microprogramming. Design of arithmetic logic and control units with HDL.
Learning Outcomes and Competences	Computer hardware processes, commands, operands, display of commands, logic processes, decision commands, function using in computer hardware, addressing modes, signed and unsigned numbers, addition, subtraction, multiplication, division, real numbers. Processor performance, factors of performance and evaluation. Internal structure of processor: data path and control. Data path design. Multi steps applications. Microprogramming. Design of arithmetic logic and control units with HDL.
Textbook and /or References	William Stallings, Computer Organization + Architecture, Prentice Hall, 2003. D. A. Patterson, J. L. Hennessy, Computer Organization and Design: The Hardware/Software Interface, Morgan Kaufmann, 1997. M. Morris Mano, Computer System Architecture, Prentice Hall, 1993.

Assessment Criteria	If any, mark as (X)	Percentage (%)
Midterm Exams	X	30
Quizzes	-	-
Homeworks	X	30
Projects	-	-
Term Paper	-	-
Laboratory Work	-	-
Other	-	-
Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Computer hardware operations, commands, operands
2	command of the representation, logical operations, decision-making commands
3	Computer hardware function usage, addressing modes
4	Computer hardware function usage, addressing modes
5	The marked and unmarked numbers, addition, subtraction , multiplication, division, real numbers
6	CPU performance, performance factors and evaluation
7	CPU performance, performance factors and evaluation
8	The processor's internal structure: bus (DataPath) and control
9	Bus design
10	Bus design
11	Multi-step application
12	Mikroprogramlama
13	Mikroprogramlama
14	HDL (hardware description language) and the arithmetic and control unit design

Course Title-Code:	Program Name:
OBJECT ORIENTED PROGRAMMING - BM214	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Introduction to object oriented programming, object oriented analysis and design, united modeling language (UML), basics of object oriented programming, absorbing features of type. Variables, flow control, classes and objects, indexes and carrier classes, interface structures. Classification and abstraction. Object definition and multi type objects. Object features encapsulation and storing. Object oriented software philosophy, object oriented software development duration, object oriented solution method and showing system, object oriented design method and showing system, object oriented implementation method and showing system, introduction to an object oriented language.
Course Objectives	Introduction to object oriented programming, object oriented analysis and design, united modeling language (UML), basics of object oriented programming, absorbing features of type. Variables, flow control, classes and objects, indexes and carrier classes, interface structures. Classification and abstraction. Object definition and multi type objects. Object features encapsulation and storing. Object oriented software philosophy, object oriented software development duration, object oriented solution method and showing system, object oriented design method and showing system, object oriented implementation method and showing system, introduction to an object oriented language.
Learning Outcomes and Competences	Introduction to object oriented programming, object oriented analysis and design, united modeling language (UML), basics of object oriented programming, absorbing features of type. Variables, flow control, classes and objects, indexes and carrier classes, interface structures. Classification and abstraction. Object definition and multi type objects. Object features encapsulation and storing. Object oriented software philosophy, object oriented software development duration, object oriented solution method and showing system, object oriented design method and showing system, object oriented implementation method and showing system, introduction to an object oriented language.
Textbook and /or References	Meyer, B., Object Oriented Software Construction, Prentice Hall, 1997. Kafura, D., Object-Oriented Software Design And Construction With Java, Prentice Hall, 2000.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-

	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	**Subject**		
1	Object-oriented programming input, object-oriented analysis and design		
2	United Modeling Language (UML)		
3	United Modeling Language (UML)		
4	Object-oriented programming basics, such acquisition of property		
5	Variables, Flow Control, Classes and Objects ,		
6	Indexes and Structural Classes, Interface Structures		
7	Classification and Abstraction		
8	Object definition and many kinds of objects		
9	Object properties appointment (encapsulation) and storage		
10	Object-oriented software philosophy, Object-oriented software development processes		
11	Object-oriented analysis method and notation system		
12	Object-oriented design method and notation system		
13	Object-oriented implementation and notation system		
14	Object-oriented programming language input		

Course Title-Code:	Program Name:
DIGITAL ELECTRONICS - BM216	COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Basic semi conductor concept. Semi conductor materials. Diodes. Transistors. Kinds of transistors. Diode and transistor equivalences, feed and small signal models. Amplifiers. Circuit designs. Electronic circuit analysis with SPICE.
Course Objectives	Basic semi conductor concept. Semi conductor materials. Diodes. Transistors. Kinds of transistors. Diode and transistor equivalences, feed and small signal models. Amplifiers. Circuit designs. Electronic circuit analysis with SPICE.
Learning Outcomes and Competences	Basic semi conductor concept. Semi conductor materials. Diodes. Transistors. Kinds of transistors. Diode and transistor equivalences, feed and small signal models. Amplifiers. Circuit designs. Electronic circuit analysis with SPICE.
Textbook and /or References	Mustafa Yagimli , Feyzi Akar (2000) Dijital Elektronik. Kirklareli:Betam basim A.S

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Concept of basic semiconductor
2	Semi-conductor equipment
3	Semi-conductor equipment
4	Diodes
5	Diodes
6	Transistorlar
7	Transistor varieties
8	esdegerlikleri diode and transistor, feeding and small signal models
9	Amplifiers
10	Amplifiers
11	Circuit designs
12	Circuit designs
13	Analysis of electronic circuits using SPICE
14	Analysis of electronic circuits using SPICE

Course Title-Code:	Program Name:
ALGORITHMS - BM218	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	BM205
Course Contents	Introduction to algorithms, algorithm analysis. Sorting algorithms (selection sort, insertion sort, bubble sort, shell sort, merge sort, quick sort, heap sort), linear time sorting (count sort, radix sort, bucket sort). Dynamic programming (matrix-chain multiplication, longest common subsequence). Basic graph algorithms (BFS, DFS, Topological sort). Greedy algorithms, minimum spanning trees (kruskal algorithm, prim algorithm), shortest path (bellman-ford algorithm, dijkstra algorithm). Data compression (Huffman algorithm).
Course Objectives	Introduction to algorithms, algorithm analysis. Sorting algorithms (selection sort, insertion sort, bubble sort, shell sort, merge sort, quick sort, heap sort), linear time sorting (count sort, radix sort, bucket sort). Dynamic programming (matrix-chain multiplication, longest common subsequence). Basic graph algorithms (BFS, DFS, Topological sort). Greedy algorithms, minimum spanning trees (kruskal algorithm, prim algorithm), shortest path (bellman-ford algorithm, dijkstra algorithm). Data compression (Huffman algorithm).
Learning Outcomes and Competences	Introduction to algorithms, algorithm analysis. Sorting algorithms (selection sort, insertion sort, bubble sort, shell sort, merge sort, quick sort, heap sort), linear time sorting (count sort, radix sort, bucket sort). Dynamic programming (matrix-chain multiplication, longest common subsequence). Basic graph algorithms (BFS, DFS, Topological sort). Greedy algorithms, minimum spanning trees (kruskal algorithm, prim algorithm), shortest path (bellman-ford algorithm, dijkstra algorithm). Data compression (Huffman algorithm).
Textbook and /or References	Introduction to Algorithms, Cormen,Leiseison,Rivest, The MIT Press,1990

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Introduction to algorithms, algorithm analysis
2	Sorting algorithms (selection sort, insertion sort, bubble sort)
3	Sorting algorithms (shell sort, merge sort, quick sort, heap sort)
4	Sorting in linear time (count sort, radix sort , bucket sort)
5	Dynamic programming (matrix-chain multiplication, longest common subsequence)
6	Dynamic programming (matrix-chain multiplication, longest common subsequence)
7	Basic graph algorithms (BFS, DFS, Topological sort) Basic graph algorithms (BFS,
8	DFS, Topological sort)
9	Greedy algoritmlari, minimum spanning trees (Kruskal algorithm, prime algorithm)
10	Greedy algoritmlari, minimum spanning trees (Kruskal algorithm, prime algorithm)
11	Shortest path (Bellman-Ford algorithm, Dijkstra's algorithm)
12	Shortest path (Bellman-Ford algorithm, Dijkstra's algorithm)
13	data compression (Huffman algorithm)
14	data compression (Huffman algorithm)

YAD-ING 204 English	COMPUTER ENGINEERING DEPARTMENT

Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project/Field Study	Homework	Other	Total	Credit	ECTS
Spring	45	-	-	-	-	-	45	3	3

Language	English
Compulsory / Elective	Compulsory
Prerequisites	No
Catalog Description	YAD-ING 204 aims to equip the students with the skills they need to succeed in their future academic and professional careers.
Course Objectives	To teach extensive and intensive reading skills as well as vocabulary, grammar, and writing skills.
Course Outcomes	Students will gain a deeper knowledge of the material they are presented with, both in and out of the classroom. They will be able to apply the skills they have learned to new situations with materials they have never seen before.
Textbook and /or References	"Q: Skills for Success 3'' by Jenni Currie Santamaria (Oxford University Press)

Assessment Criteria		Quantity	Percentage
	Midterm Exams	1	40
	Quizzes	-	-
	Homework	-	-
	Projects	-	-
	Term Paper	-	-
	Laboratory Work / Site Survey	-	-
	Other	-	-
	Final Exam	1	60

Instructors	English Instructors from Modern Languages Department (School of Foreign Languages)

COURSE PLAN

Week	Topics
1	Unit 6
2	Unit 6 continued
3	Units 6 Reading and Writing
4	Unit 7
5	Unit 7 continued
6	Units 7 Reading and Writing
7	Unit 8
8	Unit 8 continued
9	Unit 8 Reading and Writing

10	Unit 9 ----- **MIDTERM**
11	Unit 9 continued
12	Unit 9 Reading and Writing
13	Unit 10
14	Unit 10 continued
15	Unit 10 Reading and Writing

TUR 212 TURKISH II					INDUSTRIAL ENGINEERING DEPARTMENT		
Semester	**Teaching Methods**					**Credits**	
	Lecture	**Recit.**	**Lab.**	**Other**	**Total**	**Credit**	**ECTS Credit**
4	28	-	-	22	50	**0**	**2**

Language	Turkish
Compulsory/ Elective	Compulsory
Prerequisites	None
Course Contents	Turkish affixes and their applications. Composition writing rules. Planning of composition writing and its applications. Turkish nouns and verbs. Composition expression and its applications. Turkish adverbs and prepositions.
Course Objectives	Young person who has (finished) graduated from university shoduld know its native languges grammer structure, usage and characteristic. It should be taken attention on correct speaking and writing.
Learning Outcomes and Competences	To understand logic of language. Teaching how to use native language correctly writing and speaking is one of the main purposes of this lesson
Text books and/or References	1.Örnekli ve Uygulamalı Türk Dili ve Komp., Ertuğrul YAMAN Mehmet KÖSTEKÇİ IV. Baskı Gazi Kitabevi-ANKARA- 2000. 2.Kültür ve Dil, Mehmet KAPLAN, VII. Baskı Dergah Yayınları İSTANBUL-1992. 3**.** Türk Dili ve Komp. Bilgileri, Z. Korkmaz, A. Bican Ercilasun, H. Zülfikar, M. Akalın, T. Gülensoy, İ. Parlatır, N. Birinci, IV.Baskı, Ankara, 1997.

Assessment Criteria		***If any, mark as (X)***	**Percent (%)**
	Midterm Exams	X	50
	Quizzes	-	-
	Homeworks	-	-
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	50

Instructors	
Week	Subject

1	Elements of sentences, analysis of sentence,
2	Element of a sentence.
3	Kinds of sentences.
4	Analyses of sentences.
5	General knowledge concern with composition.
6	Plan used in writing a composition.
7	Kinds of expressions.
8	The common expressing mistakes in Turkish.
9	Mistakes in using sentences.
10	Expression and various expression mistakes.
11	Kinds of writing composition.
12	Kinds of writing composition.
13	Rules applied when preparing scientific writings.
14	Studies on texts selected from Turkish and world-famous literature and thought history.

Course Title-Code:	Program Name:
FILE ORGANIZATION - BM307	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Structures, organization and processing of files. Physical features of storage environment. Sequential file generation and improvement. Decomposition/composition algorithms. Direct file processing techniques. Indexed file generation and improvement. File converting, and generation and improvement of multi connected list structures. Introduction to database management systems.
Course Objectives	Structures, organization and processing of files. Physical features of storage environment. Sequential file generation and improvement. Decomposition/composition algorithms. Direct file processing techniques. Indexed file generation and improvement. File converting, and generation and improvement of multi connected list structures. Introduction to database management systems.
Learning Outcomes and Competences	Structures, organization and processing of files. Physical features of storage environment. Sequential file generation and improvement. Decomposition/composition algorithms. Direct file processing techniques. Indexed file generation and improvement. File converting, and generation and improvement of multi connected list structures. Introduction to database management systems.
Textbook and /or References	Folk, M.J., Zoellick, B., Riccardi, G., File Structures: An Object-Oriented Approach with C++, Addison-Wesley, 1998. Tharp, A.L., File Organization and Processing, Wiley, 1988. Salzberg, B., File Structures: An Analytic Approach, Prentice Hall, 1988.

Assessment Criteria	If any, mark as (X)	Percentage (%)
Midterm Exams	X	30
Quizzes	-	-
Homeworks	X	30
Projects	-	-
Term Paper	-	-
Laboratory Work	-	-
Other	-	-
Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Files structures, organization and processing
2	files structures, organization and processing
3	Storage media physical properties
4	Sequential file creation and development
5	Sequential file creation and development
6	Parsing / merge algorithms
7	Parsing / merge algorithms
8	Direct file processing techniques
9	Direct file processing techniques
10	Index file creation and development
11	file conversion and multi-linked list to create structures and development
12	file conversion and multi-linked list to create structures and development
13	An introduction to database management system
14	An introduction to database management system

Course Title-Code:	Program Name:
OPERATING SYSTEMS - BM309	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Fundamental concepts of operating systems, process management, time sharing working, context changing, threads, inter processes interaction and synchronization, mutual exclusion, semaphores, classic process problems, deadlock, catching and prevention, process sequential algorithms, memory management, paging, virtual memory, file system and management, Input/Output units.
Course Objectives	Fundamental concepts of operating systems, process management, time sharing working, context changing, threads, inter processes interaction and synchronization, mutual exclusion, semaphores, classic process problems, deadlock, catching and prevention, process sequential algorithms, memory management, paging, virtual memory, file system and management, Input/Output units.
Learning Outcomes and Competences	Fundamental concepts of operating systems, process management, time sharing working, context changing, threads, inter processes interaction and synchronization, mutual exclusion, semaphores, classic process problems, deadlock, catching and prevention, process sequential algorithms, memory management, paging, virtual memory, file system and management, Input/Output units.
Textbook and /or References	Tanenbaum, Andrew S., Modern Operating Systems, Prentice-Hall, 2001. Gary Nutt, Operating Systems. A Modern Perspective, Addison Wesley, 2004 William Stallings, Operating Systems, Prentice-Hall, 2001.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Operating systems basic concepts
2	Transaction management
3	Time of shared work
4	Changing Context
5	yarns (threads)
6	Processes and interactions between synchronization
7	Mutual exclusion
8	Semaphores
9	Classic process problems
10	Fatal crash, trapping and blocking
11	Business sorting
12	Memory management, paging,
13	Image memory, file system and management
14	Input / Output units.

Course Title-Code:									Program Name:	
COMPUTER ARCHITECTURE - BM311									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	No									
Course Contents	Introduction, computer performance. System paths, cache, interior and exterior memories. Input and output. Command sets, addressing modes, CPU structure. RISC and CISC architectures. Command level parallelism and superscalar processors. EPIC (IA-64) architecture. Control unit and micro programmed control. Parallel computer architectures.									
Course Objectives	Introduction, computer performance. System paths, cache, interior and exterior memories. Input and output. Command sets, addressing modes, CPU structure. RISC and CISC architectures. Command level parallelism and superscalar processors. EPIC (IA-64) architecture. Control unit and micro programmed control. Parallel computer architectures.									
Learning Outcomes and Competences	Introduction, computer performance. System paths, cache, interior and exterior memories. Input and output. Command sets, addressing modes, CPU structure. RISC and CISC architectures. Command level parallelism and superscalar processors. EPIC (IA-64) architecture. Control unit and micro programmed control. Parallel computer architectures.									
Textbook and /or References	William F. Gilreath, Phillip A. Laplante, Computer Architecture: A Minimalist Perspective, Kluwer Academic Publishers, 2003. Hwang Kai, Advanced Computer Architecture, McGraw-Hill, 1993.									
Assessment Criteria									If any, mark as (X)	Percentage (%)
	Midterm Exams								X	30
	Quizzes								-	-
	Homeworks								X	30
	Projects								-	-
	Term Paper								-	-
	Laboratory Work								-	-
	Other								-	-
	Final Exam								X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr									

Week	Subject
1	Introduction, Computer performance
2	System roads
3	Cache
4	Internal and external memory
5	Entry and exit
6	command sets
7	Addressing modes
8	CPU structure
9	RISC and CISC architectures command-level parallelism and superskaler processors
10	EPIC (IA-64) architecture
11	EPIC (IA-64) architecture
12	control unit and micro-programmed control
13	Parallel computer architectures
14	

Course Title-Code:									Program Name:	
FOREIGN LANGUAGE FOR PROFESSIONAL II - BM341									**COMPUTER ENGINEERING DEPARTMENT**	
Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	42	15	-	4	14	-	-	75	3	3
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	BM242									
Course Contents	Terms about computer engineering, approaches to follow literature easily.									
Course Objectives	Terms about computer engineering, approaches to follow literature easily.									
Learning Outcomes and Competences	Terms about computer engineering, approaches to follow literature easily.									
Textbook and /or References	Lecture Notes									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

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Course Title-Code:									Program Name:	
MICROPROCESSORS - BM310									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	43	-	51	14	-	-	150	4	6
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	No									
Course Contents	Basic concepts about microprecessors. Analysis of memories, working principles and types. Address space and memory design. Microprocessors and basic concepts of I/O. Interrupt structures and interrupt priority. Direct memory Access. Design of I/O interface. Analysis of 8155 and 8251 interface. Analysis of 8085 command time tables. Analysis of other 8/16 bite microprocessors. Introduction to microprocessor based system design.									
Course Objectives	Basic concepts about microprecessors. Analysis of memories, working principles and types. Address space and memory design. Microprocessors and basic concepts of I/O. Interrupt structures and interrupt priority. Direct memory Access. Design of I/O interface. Analysis of 8155 and 8251 interface. Analysis of 8085 command time tables. Analysis of other 8/16 bite microprocessors. Introduction to microprocessor based system design.									
Learning Outcomes and Competences	Basic concepts about microprecessors. Analysis of memories, working principles and types. Address space and memory design. Microprocessors and basic concepts of I/O. Interrupt structures and interrupt priority. Direct memory Access. Design of I/O interface. Analysis of 8155 and 8251 interface. Analysis of 8085 command time tables. Analysis of other 8/16 bite microprocessors. Introduction to microprocessor based system design.									
Textbook and /or References	Antonakos, James L. , An introduction to the Intel family of microprocessors, Prentice Hall, 1999. Brey, Barry B., The Intel microprocessors : 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, and Pentium Pro processor, Prentice Hall, 2003. Walter, A.Tiebel, Avtar, Singh, 8088 and 8086 Microprocessors, The Programming, Interfacing, Software, Hardware, and Applications, Prentice Hall, 2003.									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Microprocessors basic concepts
2	memory, working principles and analysis of species
3	memory, working principles and analysis of species
4	Address space and memory design
5	Microprocessors and I / O basic concepts
6	Cutting structures and cutting priority
7	Direct memory access
8	I / O interface design
9	8155 and 8251 examining interfaces
10	8085 timeline examination of the command
11	8085 examination of the command timeline
12	Other 8 / 16 bit microcontroller examining input into the design of microprocessor-based string
13	input into the design of microprocessor-based string
14	

Course Title-Code:	Program Name:
FORMAL LANGUAGES AND AUTOMATA - BM312	COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Fundamental definitions. Automata and finite automata. Regular expressions and formal languages. Features of regular languages. Content free grammar structures and languages. Pushdown automata. Features of content free languages. Introduction to Turing machines. Undecidable problems. Hard problems.
Course Objectives	Fundamental definitions. Automata and finite automata. Regular expressions and formal languages. Features of regular languages. Content free grammar structures and languages. Pushdown automata. Features of content free languages. Introduction to Turing machines. Undecidable problems. Hard problems.
Learning Outcomes and Competences	Fundamental definitions. Automata and finite automata. Regular expressions and formal languages. Features of regular languages. Content free grammar structures and languages. Pushdown automata. Features of content free languages. Introduction to Turing machines. Undecidable problems. Hard problems.
Textbook and /or References	J.E. Hopcroft, R. Motwani, J. D. Ullman, Introduction to Automata Theory, Languages and Computation, Addison Wesley, 2001. Kelly, D., Automata and Formal Languages: An Introduction, Prentice Hall, 1995. Brookshear, J.G., Theory of Computation: Formal Languages, Automata, and Complexity, Addison Wesley, 1989.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Basic definitions
2	Automata and finite automata
3	Regular expressions and formal languages
4	Regular expressions and formal languages
5	Regular features of the language
6	Contents independent structures and languages
7	Pushdown automaton
8	Pushdown automaton
9	Contents of language-independent features
10	introduction to Turing machines
11	introduction to Turing machines
12	Decision problems can not be
13	Decision problems can not be
14	difficult problems.

Course Title-Code:	Program Name:
SOFTWARE ENGINEERING - BM314	COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Introduction to Software Engineering. Software evaluation, calculation and planning in Software Life Cycle framework, software requirements analysis techniques. Software engineering methodologies. System architecture and design in detail, implementation, test and maintenance methods. Quality in software, set up techniques and principles for qualified software. Software standards. Review of computer aided software engineering (CASE) technologies. Software project application. Applied term homework.
Course Objectives	Introduction to Software Engineering. Software evaluation, calculation and planning in Software Life Cycle framework, software requirements analysis techniques. Software engineering methodologies. System architecture and design in detail, implementation, test and maintenance methods. Quality in software, set up techniques and principles for qualified software. Software standards. Review of computer aided software engineering (CASE) technologies. Software project application. Applied term homework.
Learning Outcomes and Competences	Introduction to Software Engineering. Software evaluation, calculation and planning in Software Life Cycle framework, software requirements analysis techniques. Software engineering methodologies. System architecture and design in detail, implementation, test and maintenance methods. Quality in software, set up techniques and principles for qualified software. Software standards. Review of computer aided software engineering (CASE) technologies. Software project application. Applied term homework.
Textbook and /or References	Daniel H. Steinberg, Daniel W. Palmer, “Extreme Software Engineering: A Hands-On Approach”, Pearson Prentice Hall, 2004

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-

	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	**Subject**		
1	Introduction to Software Engineering		
2	Software Life Cycle in the framework of software measurement, calculation and planning		
3	Software requirements analysis techniques		
4	Software requirements analysis techniques		
5	software engineering methodologies		
6	The system architecture and detailed design, implementation, testing and maintenance methods		
7	in software quality, software quality installation techniques and principles		
8	in software quality, software quality installation techniques and principles		
9	Software Standards		
10	Software Standards		
11	computer-aided software tools (CASE) technologies review computer-aided		
12	software tools (CASE) technology, a review of the		
13	Software Project Implementation		
14	Applied term paper		

Course Title-Code:	Program Name:
DATABASE SYSTEMS - BM316	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Introduction to database systems. Hierarchical, network and relational data modals. Correlation (relation) model. Correlation algebra. Integrity. Normalization. SQL query. Database design. Synchronous working. Object oriented database. XML databases.
Course Objectives	Introduction to database systems. Hierarchical, network and relational data modals. Correlation (relation) model. Correlation algebra. Integrity. Normalization. SQL query. Database design. Synchronous working. Object oriented database. XML databases.
Learning Outcomes and Competences	Introduction to database systems. Hierarchical, network and relational data modals. Correlation (relation) model. Correlation algebra. Integrity. Normalization. SQL query. Database design. Synchronous working. Object oriented database. XML databases.
Textbook and /or References	Elmas, R., Navathe, S.B., Fundamentals of Datatabase Systems, Addison Wesley, 2004. Patrick O'NEIL + Elizabeth O'NEIL, Database Principles, Programming, and Performance, Morgan Kaufmann, 2000. Raghu Ramakrishnan + Johannes Gehrke, Database Management Systems, Mc Graw Hill, 2002.

Assessment Criteria	If any, mark as (X)	Percentage (%)
Midterm Exams	X	30
Quizzes	-	-
Homeworks	X	30
Projects	-	-
Term Paper	-	-
Laboratory Work	-	-
Other	-	-
Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	**Subject**

1	An introduction to database systems
2	Hierarchical, network and relational data models
3	Hierarchical, network and relational data models
4	Relation model
5	Relation algebra
6	Unity
7	normalization
8	SQL query
9	SQL query
10	Database design
11	Simultaneous studies
12	Object-oriented database
13	XML databases
14	XML databases

Course Title-Code:	Program Name:
FOREIGN LANGUAGE FOR BUSINESS - BM342	COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	28	15	-	43	14	-	-	100	2	4

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	BM341
Course Contents	Students need to know global communication skills for business relation with other countries when they join business life relationship this course develops students verbal and written communication abilities.
Course Objectives	Students need to know global communication skills for business relation with other countries when they join business life relationship this course develops students verbal and written communication abilities.
Learning Outcomes and Competences	Students need to know global communication skills for business relation with other countries when they join business life relationship this course develops students verbal and written communication abilities.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

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Course Title-Code:					Program Name:					
DATA COMMUNICATIONS - BM403					COMPUTER ENGINEERING DEPARTMENT					
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	No
Course Contents	Data transmission, signal coding techniques, digital communication techniques, data connection control, multiplexing. Wide area networks, circuit switching, packet switching, routing. Cellular wireless networks. Local networks. High speed networks. Wireless networks. Inter-networks protocols.
Course Objectives	Data transmission, signal coding techniques, digital communication techniques, data connection control, multiplexing. Wide area networks, circuit switching, packet switching, routing. Cellular wireless networks. Local networks. High speed networks. Wireless networks. Inter-networks protocols.
Learning Outcomes and Competences	Data transmission, signal coding techniques, digital communication techniques, data connection control, multiplexing. Wide area networks, circuit switching, packet switching, routing. Cellular wireless networks. Local networks. High speed networks. Wireless networks. Inter-networks protocols.
Textbook and /or References	Data and Computer Communications (8th Edition) by William Stallings

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Data transmission
2	signal coding techniques
3	Digital communication techniques
4	Hierarchical, network and relational data models
5	The data link control, multiplexing
6	wide area networks
7	Circuit switching
8	packet switching Orientation
9	Cellular wireless networks
10	Local networks
11	High speed networks
12	Wireless networks
13	Network protocols between
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Course Title-Code:										
COMPUTER PROJECT I - BM495										
Program Name:										
COMPUTER ENGINEERING DEPARTMENT										
Semester	**Teaching Methods**								**Credits**	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	28	43	-	65	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	No									
Course Contents	It is a fall term Project aimed for students to develop their engineering attitudes and present a report containing final results of their development and implementation of their defined projects on computer software and hardware subjects.									
Course Objectives	It is a fall term Project aimed for students to develop their engineering attitudes and present a report containing final results of their development and implementation of their defined projects on computer software and hardware subjects.									
Learning Outcomes and Competences	It is a fall term Project aimed for students to develop their engineering attitudes and present a report containing final results of their development and implementation of their defined projects on computer software and hardware subjects.									
Textbook and /or References	Lecture Notes									

		If any, mark as (X)	**Percentage (%)**
Assessment Criteria	**Midterm Exams**	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	**Subject**

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Course Title-Code:									Program Name:	
COMPUTER NETWORKS - BM402									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	No									
Course Contents	Introduction. Design, implementation and performance principles of Computer Networks. ISO-OSI reference Model. Physical Layer, Data Link Layer, Media Access sub layer, Network Layer, Transport Layer, UDP and TCP/IP protocols and upper layers. Computer Network Devices: Bridge, router, switches. Routing Algorithms.									
Course Objectives	Introduction. Design, implementation and performance principles of Computer Networks. ISO-OSI reference Model. Physical Layer, Data Link Layer, Media Access sub layer, Network Layer, Transport Layer, UDP and TCP/IP protocols and upper layers. Computer Network Devices: Bridge, router, switches. Routing Algorithms.									
Learning Outcomes and Competences	Introduction. Design, implementation and performance principles of Computer Networks. ISO-OSI reference Model. Physical Layer, Data Link Layer, Media Access sub layer, Network Layer, Transport Layer, UDP and TCP/IP protocols and upper layers. Computer Network Devices: Bridge, router, switches. Routing Algorithms.									
Textbook and /or References	Tanenbaum, A., Computer Networks, Prentice Hall, 2003. Comer, D.E., Computer Networks and Internets with Internet Applications, Prentice Hall, 2001. Halsall, F., Data Communications, Computer Networks, and Open Systems, Addison-Wesley, 1996.									
Assessment Criteria									If any, mark as (X)	Percentage (%)
	Midterm Exams								X	30
	Quizzes								-	-
	Homeworks								X	30
	Projects								-	-
	Term Paper								-	-
	Laboratory Work								-	-
	Other								-	-
	Final Exam								X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr									

Week	Subject
1	Login
2	Computer network design
3	Computer network design
4	installation of computer networks and performance principles
5	ISO-OSI reference model
6	ISO-OSI reference model
7	Physical layer, data link layer
8	media access sub layer, network layer
9	Transport Layer, UDP and TCP / IP protocols and upper layer
10	Transport Layer, UDP and TCP / IP protocols and upper layer
11	Computer network devices: bridges, routers, switches, Computer network devices:
12	bridges, routers, switches
13	Routing algorithms
14	Routing algorithms

Course Title-Code:									Program Name:	
COMPUTER PROJECT II - BM496									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	28	43	-	65	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Compulsory									
Prerequisites	No									
Course Contents	To develop students' software development, debugging, presentation and reporting skills individually and in groups, by giving them projects. To provide R-D (Research-Development) groups to explain R-D processes related with their developed products, Criteria used for choosing tools, Success and failure narratives.									
Course Objectives	To develop students' software development, debugging, presentation and reporting skills individually and in groups, by giving them projects. To provide R-D (Research-Development) groups to explain R-D processes related with their developed products, Criteria used for choosing tools, Success and failure narratives.									
Learning Outcomes and Competences	To develop students' software development, debugging, presentation and reporting skills individually and in groups, by giving them projects. To provide R-D (Research-Development) groups to explain R-D processes related with their developed products, Criteria used for choosing tools, Success and failure narratives.									
Textbook and /or References	Lecture Notes									
Assessment Criteria									If any, mark as (X)	Percentage (%)
	Midterm Exams								X	30
	Quizzes								-	-
	Homeworks								X	30
	Projects								-	-
	Term Paper								-	-
	Laboratory Work								-	-
	Other								-	-
	Final Exam								X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr									

Week	Subject
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Course Title-Code:	Program Name:
ROBOTICS - BM351	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Short History, currently economic and social incidence. Manipulators degrees of freedom and structural elements. Endpoint elements, drive systems. Manipulators kinematics, direct, inverse kinematics. Jacobean matrix. Work definition and activity specifications. Manipulators dynamics. Equations of motion. Control methods of manipulators.
Course Objectives	Short History, currently economic and social incidence. Manipulators degrees of freedom and structural elements. Endpoint elements, drive systems. Manipulators kinematics, direct, inverse kinematics. Jacobean matrix. Work definition and activity specifications. Manipulators dynamics. Equations of motion. Control methods of manipulators.
Learning Outcomes and Competences	Short History, currently economic and social incidence. Manipulators degrees of freedom and structural elements. Endpoint elements, drive systems. Manipulators kinematics, direct, inverse kinematics. Jacobean matrix. Work definition and activity specifications. Manipulators dynamics. Equations of motion. Control methods of manipulators.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	History
2	Current status of economic and social reflections
3	Current status of economic and social reflections
4	Manipulators of the degrees of freedom and structural features
5	Manipulators of the degrees of freedom and structural features
6	End elements, provocative and drive systems
7	Edge elements, provocative and drive systems
8	Manipulators of the kinematics, direct, inverse kinematics, Jacobian matrix
9	Manipulators of the kinematics, direct, inverse kinematics, Jacobian matrix
10	Business directions and movement specifications
11	Business directions and movement specifications Manipulators of the dynamics, the
12	equations of motion for
13	Manipulators of the control methods
14	Manipulators of the control methods

Course Title-Code:									Program Name:	
MATHEMATICAL MODELING - BM352									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Introduction to mathematical modeling. Variable concept and using it at problems. Optimization concepts and how to use it at applications. Productivity models. Special linear and nonlinear programming models. Precision analysis at mathematical modeling. Special models at dynamic programming. Stochastic operations and industrial applications.									
Course Objectives	Introduction to mathematical modeling. Variable concept and using it at problems. Optimization concepts and how to use it at applications. Productivity models. Special linear and nonlinear programming models. Precision analysis at mathematical modeling. Special models at dynamic programming. Stochastic operations and industrial applications.									
Learning Outcomes and Competences	Introduction to mathematical modeling. Variable concept and using it at problems. Optimization concepts and how to use it at applications. Productivity models. Special linear and nonlinear programming models. Precision analysis at mathematical modeling. Special models at dynamic programming. Stochastic operations and industrial applications.									
Textbook and /or References	E. Zeidler , Nonlinear Functional Analysis and Its Applications: III Variational Methods and Optimizations, New York: Springer Verlag, 1985.									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	An introduction to mathematical modeling
2	variable concept and the use of problem
3	variable concept and the use of problem
4	Optimization concepts and practical location
5	Optimization concepts and practical location
6	Efficiency models
7	Efficiency models
8	Private linear and nonlinear programming models.
9	Mathematical modeling in the sensitivity analysis
10	Mathematical modeling in the sensitivity analysis
11	Dynamic programming, the special models
12	Dynamic programming, the special models
13	Stochastic processes and applications in the industry
14	Stochastic processes and applications in the industry

Course Title-Code:					Program Name:					
COMMUNICATION BASICS - BM353					COMPUTER ENGINEERING DEPARTMENT					
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Mathematical of message signals. Amplitude and angle modulation techniques: Amplitude modulation, double side band, single side band, redundant side band modulation, frequency modulation. Phase locking loops. Frequency division multiplexing. Noise at amplitude and angle modulation. Computer applications at communications.									
Course Objectives	Mathematical of message signals. Amplitude and angle modulation techniques: Amplitude modulation, double side band, single side band, redundant side band modulation, frequency modulation. Phase locking loops. Frequency division multiplexing. Noise at amplitude and angle modulation. Computer applications at communications.									
Learning Outcomes and Competences	Mathematical of message signals. Amplitude and angle modulation techniques: Amplitude modulation, double side band, single side band, redundant side band modulation, frequency modulation. Phase locking loops. Frequency division multiplexing. Noise at amplitude and angle modulation. Computer applications at communications.									
Textbook and /or References	Derin H., Askar M.(1987), Iletisim Kurami,Ankara,ODTÜ									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

	Mathematical representation of the message signal
1	Amplitude and angle modulation techniques: Amplitude modulation, double side-
2	band, single side band
3	Amplitude and angle modulation techniques: Amplitude modulation, double side-
4	band, single side band
5	Now side-band modulation, frequency modulation
6	Now side-band modulation, frequency modulation
7	Phase-locked loops
8	Phase-locked loops
9	frequency division multiplexing
10	frequency division multiplexing
11	frequency division multiplexing
12	Amplitude and angle modulation systems noise
13	Amplitude and angle modulation systems, noise
14	computer applications in Communications
	computer applications in Communications

Course Title-Code:	Program Name:
EXPERT SYSTEMS - BM354	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Principles: inference machine, data base, data acquisition, data representation and control, self-reasoning, indeterminate representation, practical problem solving. Development of Expert systems practice and theory. Expert system tools. Common expert systems examples. Software tools and architectures for expert system. Application homework for Expert system design.
Course Objectives	Principles: inference machine, data base, data acquisition, data representation and control, self-reasoning, indeterminate representation, practical problem solving. Development of Expert systems practice and theory. Expert system tools. Common expert systems examples. Software tools and architectures for expert system. Application homework for Expert system design.
Learning Outcomes and Competences	Principles: inference machine, data base, data acquisition, data representation and control, self-reasoning, indeterminate representation, practical problem solving. Development of Expert systems practice and theory. Expert system tools. Common expert systems examples. Software tools and architectures for expert system. Application homework for Expert system design.
Textbook and /or References	S. Russell and P. Norvig - Artificial Intelligence: A Modern Approach , Prentice Hall, 2003, Second Edition

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Basic concepts: inference machine, knowledge base, knowledge acquisition
2	Basic concepts: inference machine, knowledge base, knowledge acquisition
3	Knowledge representation and control
4	Auto reasoning
5	Auto reasoning
6	Uncertainty representation
7	practical problem solving
8	Expert systems are practical and the theory of development
9	Expert systems are practical and the theory of development
10	Expert system tools
11	Expert system tools
12	Known examples of expert systems
13	Expert systems for design and software tools architectures
14	Expert systems application design assignment

Course Title-Code:	Program Name:
ASSEMBLY LANGUAGES - BM356	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Basic computer architecture and programming languages. Instructions and their usage. Instruction types. Addressing techniques. Programming at Assembler language. Assembler general concepts: Macro, procedures, linking, installation.
Course Objectives	Basic computer architecture and programming languages. Instructions and their usage. Instruction types. Addressing techniques. Programming at Assembler language. Assembler general concepts: Macro, procedures, linking, installation.
Learning Outcomes and Competences	Basic computer architecture and programming languages. Instructions and their usage. Instruction types. Addressing techniques. Programming at Assembler language. Assembler general concepts: Macro, procedures, linking, installation.
Textbook and /or References	Barry B. Brey, The Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Pro, Pentium II, Penium III, Pentium 4 Architecture, Programming and Interfacing (7th edition),Prentice Hall, 2006.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Basic computer architecture and programming languages
2	Commands and use
3	Commands and use
4	command formats
5	command formats
6	Addressing techniques
7	Addressing techniques
8	Assembler language programming
9	Assembler language programming
10	Assembler general concepts: Macros
11	Altyordamlar
12	Altyordamlar
13	Binding
14	Installation

Course Title-Code:									Program Name:	
PRINCIPALS OF ELECTRONIC COMMERCE - BM357									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Electronic commerce principals. Operational data transaction systems. Security protocols, Secure applications. SIM and magnetic cards. Distributed documentation control systems. Business to business operations. E-commerce software design, development and management. Heterogeneous electronic commerce operations. Term Project.									
Course Objectives	Electronic commerce principals. Operational data transaction systems. Security protocols, Secure applications. SIM and magnetic cards. Distributed documentation control systems. Business to business operations. E-commerce software design, development and management. Heterogeneous electronic commerce operations. Term Project.									
Learning Outcomes and Competences	Electronic commerce principals. Operational data transaction systems. Security protocols, Secure applications. SIM and magnetic cards. Distributed documentation control systems. Business to business operations. E-commerce software design, development and management. Heterogeneous electronic commerce operations. Term Project.									
Textbook and /or References	Lecture Notes									
Assessment Criteria								If any, mark as (X)	Percentage (%)	
	Midterm Exams							X	30	
	Quizzes							-	-	
	Homeworks							X	30	
	Projects							-	-	
	Term Paper							-	-	
	Laboratory Work							-	-	
	Other							-	-	
	Final Exam							X	40	
Instructors	Related Lecturer, bmbb@gazi.edu.tr									
Week	Subject									

1	Electronic trade principles
2	Operational data movement systems
3	Operational data movement systems
4	Security provisioning protocols
5	Secure applications
6	SIM and magnetic cards
7	SIM and magnetic cards
8	Distributed control systems documentation Inter-institutional transactions
9	Inter-institutional transactions
10	E-commerce software design, development and management
11	Heterogeneous electronic commerce transactions
12	Heterogeneous electronic commerce transactions
13	Term Project
14	

Course Title-Code:	Program Name:
GRAPH THEORY - BM358	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Directed and undirected graphs, sub graphs, linked-unlinked graphs, trees, connectedness, shortest path, minimum spanning trees. Euler cycles. Hamilton loops. Planar graphs and duality. Arc-node painting. Maximum flow.
Course Objectives	Directed and undirected graphs, sub graphs, linked-unlinked graphs, trees, connectedness, shortest path, minimum spanning trees. Euler cycles. Hamilton loops. Planar graphs and duality. Arc-node painting. Maximum flow.
Learning Outcomes and Competences	Directed and undirected graphs, sub graphs, linked-unlinked graphs, trees, connectedness, shortest path, minimum spanning trees. Euler cycles. Hamilton loops. Planar graphs and duality. Arc-node painting. Maximum flow.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	**Subject**

1	Directional and nondirectional graphs
2	Altgraflar
3	Connected-disconnected graphs
4	Plants
5	Loyalty
6	The shortest path
7	The minimum spanning trees
8	Euler tours
9	Euler tours
10	Hamilton cycles
11	Planar Graphs and duality
12	Planar Graphs and duality
13	arc-node coloring
14	Maximum flow

Course Title-Code:	Program Name:
INTERNET PROGRAMMING - BM359	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Internet and Internet concepts. Introduction to Internet programming. Internet Technologies: HTTP, Web servers, HTML software, CSS2, Dynamic HTML, Forms, JavaScript, VBScript, XML/XSL, DTD, Schema, XML parser, XHTML, Java, Applets. Web servers, CGI scripts (PERL), Java, HTTP servlet, PHP, ASP, JSP, XML parser, database connection. Visual Studio 2005.
Course Objectives	Internet and Internet concepts. Introduction to Internet programming. Internet Technologies: HTTP, Web servers, HTML software, CSS2, Dynamic HTML, Forms, JavaScript, VBScript, XML/XSL, DTD, Schema, XML parser, XHTML, Java, Applets. Web servers, CGI scripts (PERL), Java, HTTP servlet, PHP, ASP, JSP, XML parser, database connection. Visual Studio 2005.
Learning Outcomes and Competences	Internet and Internet concepts. Introduction to Internet programming. Internet Technologies: HTTP, Web servers, HTML software, CSS2, Dynamic HTML, Forms, JavaScript, VBScript, XML/XSL, DTD, Schema, XML parser, XHTML, Java, Applets. Web servers, CGI scripts (PERL), Java, HTTP servlet, PHP, ASP, JSP, XML parser, database connection. Visual Studio 2005.
Textbook and /or References	Internet + World Wide Web How to Program, Third Edition, Prentice Hall, 2004

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Internet and Internet concepts
2	An introduction to Internet programming
3	Internet Technologies: HTTP, Web servers, HTML software, CSS2
4	Dynamik HTML, Forms
5	JavaScript, VBScript
6	XML / XSL, DTD, Schema XML separators, XHTML
7	Java, Applets
8	Web servers
9	CGI written texts (PERL)
10	Java, HTTP servlet
11	PHP, ASP, JSP, XML breakers
12	Database connection Visual Studio 2005
13	
14	

Course Title-Code:	Program Name:
PROGRAMMING WITH JAVA - BM360	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Object oriented programming concepts. Java language semantics and syntax rules. Class, object, inheritance, polymorphism. Application specific designs, interfaces. Encapsulation and inner class concepts. Event processing algorithms.
Course Objectives	Object oriented programming concepts. Java language semantics and syntax rules. Class, object, inheritance, polymorphism. Application specific designs, interfaces. Encapsulation and inner class concepts. Event processing algorithms.
Learning Outcomes and Competences	Object oriented programming concepts. Java language semantics and syntax rules. Class, object, inheritance, polymorphism. Application specific designs, interfaces. Encapsulation and inner class concepts. Event processing algorithms.
Textbook and /or References	Java How to Program, Deitel,H.M., Deitel, P.J

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	**Subject**

1	Object-oriented programming concepts
2	Java language semantics and syntax rules
3	Class
4	Class
5	object
6	object
7	Kalitsallik
8	Very polymorphism
9	Very polymorphism
10	Application-oriented designs Application-oriented designs
11	interfaces
12	Wrappers and concepts of inner class
13	event-processing algorithm
14	

Course Title-Code:	Program Name:
OBJECT ORIENTED ANALYSIS AND DESIGN - BM361	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Classical and Modern methods, Comparative analysis of software development methods. Connection with object. Coad-Yourdon and Rumbaugh designs and object oriented analysis. Implementation of Object Oriented Programming design criteria. Introduction to UML. Component Based development and design. Applications.
Course Objectives	Classical and Modern methods, Comparative analysis of software development methods. Connection with object. Coad-Yourdon and Rumbaugh designs and object oriented analysis. Implementation of Object Oriented Programming design criteria. Introduction to UML. Component Based development and design. Applications.
Learning Outcomes and Competences	Classical and Modern methods, Comparative analysis of software development methods. Connection with object. Coad-Yourdon and Rumbaugh designs and object oriented analysis. Implementation of Object Oriented Programming design criteria. Introduction to UML. Component Based development and design. Applications.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Classical and modern methods
2	software development methods comparative analysis
3	object with link
4	object with link
5	coad-Yourdon and Rumbaugh object-oriented design and analysis
6	coad-Yourdon and Rumbaugh object-oriented design and analysis
7	Object Oriented Programming Design criteria for the implementation of
8	Object Oriented Programming Design criteria for the implementation of
9	UML input
10	UML input
11	Part-based development and design
12	Part-based development and design Applications
13	Applications
14	

Course Title-Code:	Program Name:
PROGRAMMING LANGUAGES - BM362	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Defining of programming languages syntax, their meanings and usage. Formal syntactic representation, expression structure, postfix and infix representation and conversion. Data types and variables, expression and assignment statements, control structures and subroutines. Functional and logical languages and programming. Current programming languages key properties. Program structures, procedures, functions and methods. Inheritance and dynamic delimiters. Graphical user interfaces. Matching, consistency and network structure.
Course Objectives	Defining of programming languages syntax, their meanings and usage. Formal syntactic representation, expression structure, postfix and infix representation and conversion. Data types and variables, expression and assignment statements, control structures and subroutines. Functional and logical languages and programming. Current programming languages key properties. Program structures, procedures, functions and methods. Inheritance and dynamic delimiters. Graphical user interfaces. Matching, consistency and network structure.
Learning Outcomes and Competences	Defining of programming languages syntax, their meanings and usage. Formal syntactic representation, expression structure, postfix and infix representation and conversion. Data types and variables, expression and assignment statements, control structures and subroutines. Functional and logical languages and programming. Current programming languages key properties. Program structures, procedures, functions and methods. Inheritance and dynamic delimiters. Graphical user interfaces. Matching, consistency and network structure.
Textbook and /or References	Software Engineering in C, Peter A. Darnell, Philip E. Margolis, Springer Verlag, 1988

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-

	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	**Subject**		
	Programming languages syntax and their meaning and their use of cookies		
1	Formal lexical representation, narrative structure, postfix and infix representation and		
2	transformation.		
3	Data types and variables, expressions and assignment statements, control		
4	structures and sub-programs		
5	Functional and Logical languages and programming		
6	Existing programming languages key features		
7	Existing programming languages key features		
8	Program Structure		
9	Procedures		
10	Procedures		
11	Functions and methods		
12	Functions and methods		
13	Kalitsallik and dynamic delimiters		
14	Adaptation, consistency and network structure		
	Graphical user interfaces		

Course Title-Code:	Program Name:
WEB BASED TECHNOLOGIES - BM363	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Internet and client/server Technologies. Internet information systems. Web browsers and servers. Client and server side languages. Web databases and XML. Basic Internet applications and protocols: DNS, HTTP, POP3, SMTP, FTP, P2P, IRC etc. Data Networks. OSI layers. Wireless and mobile Networks. Term Project.
Course Objectives	Internet and client/server Technologies. Internet information systems. Web browsers and servers. Client and server side languages. Web databases and XML. Basic Internet applications and protocols: DNS, HTTP, POP3, SMTP, FTP, P2P, IRC etc. Data Networks. OSI layers. Wireless and mobile Networks. Term Project.
Learning Outcomes and Competences	Internet and client/server Technologies. Internet information systems. Web browsers and servers. Client and server side languages. Web databases and XML. Basic Internet applications and protocols: DNS, HTTP, POP3, SMTP, FTP, P2P, IRC etc. Data Networks. OSI layers. Wireless and mobile Networks. Term Project.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

	Internet and client / server technologies
1	Internet information systems
2	Web browsers and servers
3	client and server-side languages
4	Web databases and XML
5	Web databases and XML
6	Basic Internet applications and protocols: DNS, HTTP, POP3, SMTP, FTP, P2P,
7	IRC, etc..
8	Basic Internet applications and protocols: DNS, HTTP, POP3, SMTP, FTP, P2P,
9	IRC, etc..
10	Data networks
11	Data networks
12	OSI layers
13	OSI layers
14	Wireless and mobile networks
	Term Project

Course Title-Code:									Program Name:	
DATABASE APPLICATIONS - BM364									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Entity-Relationship data model, relational data model, relational scheme, functional dependency and normalization, logical and physical database design, relational algebra, Query language (SQL), data recovery, multi-user database applications.									
Course Objectives	Entity-Relationship data model, relational data model, relational scheme, functional dependency and normalization, logical and physical database design, relational algebra, Query language (SQL), data recovery, multi-user database applications.									
Learning Outcomes and Competences	Entity-Relationship data model, relational data model, relational scheme, functional dependency and normalization, logical and physical database design, relational algebra, Query language (SQL), data recovery, multi-user database applications.									
Textbook and /or References	Veri tabani uygulamalari üzerine çesitli kitaplar									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Entity-Relationship data model
2	Entity-Relationship data model
3	relational data model
4	relational data model
5	relational schema
6	Functional dependencies and normalization
7	Logical and physical database design
8	Relational algebra
9	query language (SQL)
10	query language (SQL)
11	Data recovery
12	Data recovery
13	Multi-user database applications
14	Multi-user database applications

Course Title-Code:									Program Name:	
SIGNALS AND SYSTEMS - BM365									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	54	14	-	-	125	3	5
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Periodic signals. Odd and even signals. Exponential and sinusoidal signals. Stimulation and step functions. Continuous and discrete systems. Basic system features.									
Course Objectives	Periodic signals. Odd and even signals. Exponential and sinusoidal signals. Stimulation and step functions. Continuous and discrete systems. Basic system features.									
Learning Outcomes and Competences	Periodic signals. Odd and even signals. Exponential and sinusoidal signals. Stimulation and step functions. Continuous and discrete systems. Basic system features.									
Textbook and /or References	A.V. Oppenheim, A.S. Willsky, S.H. Nawab, Signals + Systems, Prentice-Hall, 1997, ISBN 0-13-651175-9.									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Periodic signals
2	Periodic signals
3	Periodic signals
4	Single and double signals
5	Single and double signals
6	Exponential and sinusoidal signals
7	Exponential and sinusoidal signals
8	Exponential and sinusoidal signals
9	impulse and step functions
10	impulse and step functions
11	continuous and discrete systems
12	continuous and discrete systems
13	Basic system features
14	Basic system features

Course Title-Code:	Program Name:
SYSTEM ANALYSIS - BM366	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	System functions and components. Problem Definition and Solution Principles, System Development Life Cycle. Analysis Tools and Techniques. A Data System Modeling with Data-Flow Schemes. Data Definition and Knowledge Requirements in Data Dictionary. System Design and Application. Computer Inputs, Outputs, Controls and Records, Design. IT Systems Development Phases and System Analysis. Feasibility Study. Administration Function, Data and Knowledge Concepts. Determination of Knowledge Requirements. System Analysis Tools. IT Systems Classification. Computer Aided Software Engineering Tools.
Course Objectives	System functions and components. Problem Definition and Solution Principles, System Development Life Cycle. Analysis Tools and Techniques. A Data System Modeling with Data-Flow Schemes. Data Definition and Knowledge Requirements in Data Dictionary. System Design and Application. Computer Inputs, Outputs, Controls and Records, Design. IT Systems Development Phases and System Analysis. Feasibility Study. Administration Function, Data and Knowledge Concepts. Determination of Knowledge Requirements. System Analysis Tools. IT Systems Classification. Computer Aided Software Engineering Tools.
Learning Outcomes and Competences	System functions and components. Problem Definition and Solution Principles, System Development Life Cycle. Analysis Tools and Techniques. A Data System Modeling with Data-Flow Schemes. Data Definition and Knowledge Requirements in Data Dictionary. System Design and Application. Computer Inputs, Outputs, Controls and Records, Design. IT Systems Development Phases and System Analysis. Feasibility Study. Administration Function, Data and Knowledge Concepts. Determination of Knowledge Requirements. System Analysis Tools. IT Systems Classification. Computer Aided Software Engineering Tools.
Textbook and /or References	SATZINGER - JACKSON – BURD System Analysis and Design, Course Technology

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-

	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	**Subject**		
1	System Functions and Components		
2	Problem Presentation and Resolution principles		
3	System Development Life Cycle		
4	Analysis Tools and Techniques		
5	Data Flow diagrams and an Information System Modeling		
6	Data Definition and Data Dictionary for the Information Requirements		
7	System Design and Implementation		
8	computer entries, Outcomes, and the Registrar of Control, Design		
9	Information Systems Development and Systems Analysis Phase. Feasibility Study		
10	Management function, Data and Information Concepts		
11	Determination of Information Requirements		
12	System Analysis Tools		
13	Classification of Information Systems		
14	Computer Aided Software Engineering Tools		

Course Title-Code:	Program Name:
SCRIPT LANGUAGES - BM367	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Evolution of Scripts Languages, types, characteristics and usage areas. Script Concepts: Web and CGI programming, data abstraction and object oriented approach. User interface design and development. Elective languages: HTML, XML, Java Script, PERL, Python and TCL/TK. Application semester homework.
Course Objectives	Evolution of Scripts Languages, types, characteristics and usage areas. Script Concepts: Web and CGI programming, data abstraction and object oriented approach. User interface design and development. Elective languages: HTML, XML, Java Script, PERL, Python and TCL/TK. Application semester homework.
Learning Outcomes and Competences	Evolution of Scripts Languages, types, characteristics and usage areas. Script Concepts: Web and CGI programming, data abstraction and object oriented approach. User interface design and development. Elective languages: HTML, XML, Java Script, PERL, Python and TCL/TK. Application semester homework.
Textbook and /or References	Learning Perl, R.L. Schwartz, T. Phoenix, B. Foy, 4th edition, O'Reilly Media, 2005

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	**Subject**

1	Development of scripting languages, types, properties and application areas
2	Web Programming
3	CGI programming
4	Data abstraction
5	object-oriented approach
6	User interface design and development
7	HTML
8	XML XML
9	Java Script
10	Perl
11	Python
12	TCL / TK
13	Applied Term Paper
14	

Course Title-Code:	Program Name:
ALGORITHM ANALYSIS AND DESIGN - BM368	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	54	14	-	-	125	3	5

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Algorithm effectiveness. Analysis of computer algorithms. Classification, search, paging and parallel. Analysis of mathematical algorithms. Game and puzzle, network algorithms and probability algorithm analysis. Convert and manage approach using Divide and conquer. Principal graph structures, functions and algorithms. Random algorithms and analysis. Dynamic programming algorithms.
Course Objectives	Algorithm effectiveness. Analysis of computer algorithms. Classification, search, paging and parallel. Analysis of mathematical algorithms. Game and puzzle, network algorithms and probability algorithm analysis. Convert and manage approach using Divide and conquer. Principal graph structures, functions and algorithms. Random algorithms and analysis. Dynamic programming algorithms.
Learning Outcomes and Competences	Algorithm effectiveness. Analysis of computer algorithms. Classification, search, paging and parallel. Analysis of mathematical algorithms. Game and puzzle, network algorithms and probability algorithm analysis. Convert and manage approach using Divide and conquer. Principal graph structures, functions and algorithms. Random algorithms and analysis. Dynamic programming algorithms.
Textbook and /or References	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein., Introduction to Algorithms. 2nd Edition, McGraw Hill, 2001. Sedgewick, Robert, Algorithms in C++, Addison-Wesley, 2001.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Algorithm efficiency
2	computer algorithm analysis of the
3	Classification, search, paging, and paralleling
4	Classification, search, paging, and paralleling
5	Mathematical analysis of algorithms
6	Games and puzzles, network algorithms and probability analysis of algorithms
7	games and puzzles, network algorithms and probability analysis algorithms
8	Divide and is converted to administer and manage approaches
9	Divide and is converted to administer and manage approaches
10	Basic diagram structures, functions and algorithms
11	random algorithms and analysis random algorithms and analysis available
12	Dynamic programming algorithms
13	Dynamic programming algorithms
14	

Course Title-Code:	Program Name:
ADVANCED COMPUTER ARCHITECTURE - BM451	COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Computer architecture and introduction to parallel processing, Introduction to ILP-processors, Pipeline processors, VLIW structures, Superscalar processors, Process and control expressions, SIMD structures, Vectorial structures, Multithread structures.
Course Objectives	Computer architecture and introduction to parallel processing, Introduction to ILP-processors, Pipeline processors, VLIW structures, Superscalar processors, Process and control expressions, SIMD structures, Vectorial structures, Multithread structures.
Learning Outcomes and Competences	Computer architecture and introduction to parallel processing, Introduction to ILP-processors, Pipeline processors, VLIW structures, Superscalar processors, Process and control expressions, SIMD structures, Vectorial structures, Multithread structures.
Textbook and /or References	Stallings, W., "Computer Organization and Architecture 7/e", Prentice Hall, 2006.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Computer architecture and parallel processing input
2	Introduction to ILP-processor
3	Introduction to ILP-processor
4	Pipeline Processors
5	Pipeline Processors
6	VLIW structure
7	VLIW structure
8	superscalar processors
9	Processing and control statements
10	SIMD structures
11	SIMD structures
12	Vector structures
13	Multithread structures
14	Multithread structures

Course Title-Code:									Program Name:	
DIGITAL SIGNAL PROCESSING - BM452									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Signals and systems, continuous signals, discrete signals, Fourier analysis, sampling, matching, z-transform; z-transformation for convergence region, discrete Fourier transformation (DFT), fast Fourier transformation (FFT), digital filter design.									
Course Objectives	Signals and systems, continuous signals, discrete signals, Fourier analysis, sampling, matching, z-transform; z-transformation for convergence region, discrete Fourier transformation (DFT), fast Fourier transformation (FFT), digital filter design.									
Learning Outcomes and Competences	Signals and systems, continuous signals, discrete signals, Fourier analysis, sampling, matching, z-transform; z-transformation for convergence region, discrete Fourier transformation (DFT), fast Fourier transformation (FFT), digital filter design.									
Textbook and /or References	Understanding Digital Signal Processing (2nd Edition) by Richard G. Lyons									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Signals and Systems
2	Continuous signals
3	discrete signals
4	discrete signals
5	Fourier analysis, sampling
6	Overlapping the
7	z-transform
8	z-transform for the convergent area
9	Discrete Fourier Transform (DFT)
10	Discrete Fourier Transform (DFT)
11	Fast Fourier Transform (FFT)
12	Fast Fourier Transform (FFT)
13	Digital filter design
14	Digital filter design

Course Title-Code:									Program Name:	
REAL TIME SYSTEMS - BM453									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Real Time Systems. Real Time Operating System Concepts: Task Switching, Time Accordance, Data Communication. Real Time Software Development Techniques. Real Time Software Development Tools.									
Course Objectives	Real Time Systems. Real Time Operating System Concepts: Task Switching, Time Accordance, Data Communication. Real Time Software Development Techniques. Real Time Software Development Tools.									
Learning Outcomes and Competences	Real Time Systems. Real Time Operating System Concepts: Task Switching, Time Accordance, Data Communication. Real Time Software Development Techniques. Real Time Software Development Tools.									
Textbook and /or References	Real-Time Systems by Jane W. S. Liu									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Real-Time Systems
2	Real Time Systems
3	Real Time Operating System Concepts
4	Real Time Operating System Concepts
5	Task Switching
6	Task Switching
7	Time calibration
8	Time calibration
9	Data Communications
10	Data Communication
11	Real Time Software Development Methods
12	Real Time Software Development Methods
13	Real Time Software Development Tools
14	Real Time Software Development Tools

Course Title-Code:	Program Name:
ARTIFICIAL INTELLIGENCE - BM455	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Intelligence and artificial intelligence definitions. Problem solving techniques: state-space approach, problem-reduction approach, problem modeling, problem presentation, detailed search algorithms (breadth-first, depth-first, iterative deepening), heuristic search algorithms. Game theory. Information representation and reasoning : logical suggestions; syntax, semantics and proof theory (deductive inference), predicate logic, manufacturing systems, semantics networks and frames. Rule base, expert systems, inference motor. Machine learning: induction, command learning, learning with samples, classification, explanation based learning, relational and heuristic learning. Artificial intelligence applications. Term Project.
Course Objectives	Intelligence and artificial intelligence definitions. Problem solving techniques: state-space approach, problem-reduction approach, problem modeling, problem presentation, detailed search algorithms (breadth-first, depth-first, iterative deepening), heuristic search algorithms. Game theory. Information representation and reasoning : logical suggestions; syntax, semantics and proof theory (deductive inference), predicate logic, manufacturing systems, semantics networks and frames. Rule base, expert systems, inference motor. Machine learning: induction, command learning, learning with samples, classification, explanation based learning, relational and heuristic learning. Artificial intelligence applications. Term Project.
Learning Outcomes and Competences	Intelligence and artificial intelligence definitions. Problem solving techniques: state-space approach, problem-reduction approach, problem modeling, problem presentation, detailed search algorithms (breadth-first, depth-first, iterative deepening), heuristic search algorithms. Game theory. Information representation and reasoning : logical suggestions; syntax, semantics and proof theory (deductive inference), predicate logic, manufacturing systems, semantics networks and frames. Rule base, expert systems, inference motor. Machine learning: induction, command learning, learning with samples, classification, explanation based learning, relational and heuristic learning. Artificial intelligence applications. Term Project.
Textbook and /or References	A Modern Approach (2nd Edition) by Stuart J. Russell and Peter Norvig

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-

	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	**Subject**		
1	Intelligence and artificial intelligence Description		
2	State-space approach, problem-reduction approach		
3	The problem model, problem report		
4	More search algorithms (breadth-first, depth-first, iterative deepening)		
5	heuristic search algorithms Game theory		
6	Syntax and semantics		
7	Proof theory (deductive inference), load logic, production systems		
8	Semantics networks and frames		
9	rule base, expert systems, inference engine		
10	Machine learning: inductive command with learning, learning by examples		
11	Classification, explanation-based learning, relational, and intuitive learning		
12	Artificial Intelligence Applications		
13	Term Paper		
14			

Course Title-Code:									Program Name:	
COMPILERS AND CODE GENERATION - BM458									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Evolution of compiler logical development. Programming languages, translators, grammar classification, language design, finite state automata, lexical analyzer, bottom-up parsing, top-down parsing, symbol chart processing, code production, processing and optimization.									
Course Objectives	Evolution of compiler logical development. Programming languages, translators, grammar classification, language design, finite state automata, lexical analyzer, bottom-up parsing, top-down parsing, symbol chart processing, code production, processing and optimization.									
Learning Outcomes and Competences	Evolution of compiler logical development. Programming languages, translators, grammar classification, language design, finite state automata, lexical analyzer, bottom-up parsing, top-down parsing, symbol chart processing, code production, processing and optimization.									
Textbook and /or References	Lecture Notes									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Compiler of the logical design development
2	Programming languages
3	Programming languages
4	Converters
5	Converters
6	Grammar categories
7	Language design
8	Finite state automata
9	Leksik analyzers for
10	below up parsing top-down parsing
11	symbol table processing
12	Code production, processing and optimization
13	Code production, processing and optimization
14	

Course Title-Code:	Program Name:
SPECIAL TOPICS IN COMPUTER ENGINEERING I - BM459	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Methodological examination of Theoretical developments in information and computer technologies.
Course Objectives	Methodological examination of Theoretical developments in information and computer technologies.
Learning Outcomes and Competences	Methodological examination of Theoretical developments in information and computer technologies.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

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Course Title-Code:	Program Name:
SPECIAL TOPICS IN COMPUTER ENGINEERING II - BM460	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Methodological examination of Practical developments in information and computer technologies.
Course Objectives	Methodological examination of Practical developments in information and computer technologies.
Learning Outcomes and Competences	Methodological examination of Practical developments in information and computer technologies.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

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Course Title-Code:	Program Name:
BIOINFORMATICS - BM461	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Fundamentals of molecular biology and genetic. DNA and 3-D structure databases, data scanning, information bases, sorting algorithms, A brief introduction to life chemistry, DNA, RNA, PCR algorithms, hidden Markov model, protein folding models, Monte Carlo method, gene expression, system control, signal processing, dynamics in cell interior, system approach and computational biology, gene mutation and human diseases.
Course Objectives	Fundamentals of molecular biology and genetic. DNA and 3-D structure databases, data scanning, information bases, sorting algorithms, A brief introduction to life chemistry, DNA, RNA, PCR algorithms, hidden Markov model, protein folding models, Monte Carlo method, gene expression, system control, signal processing, dynamics in cell interior, system approach and computational biology, gene mutation and human diseases.
Learning Outcomes and Competences	Fundamentals of molecular biology and genetic. DNA and 3-D structure databases, data scanning, information bases, sorting algorithms, A brief introduction to life chemistry, DNA, RNA, PCR algorithms, hidden Markov model, protein folding models, Monte Carlo method, gene expression, system control, signal processing, dynamics in cell interior, system approach and computational biology, gene mutation and human diseases.
Textbook and /or References	Russel P. J., Genetics, Fifth Edition, An Imprint of Addison Wesley Longman Inc., 1998T

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Molecular biology and genetics at the basic concepts
2	and 3-D structure of DNA databases
3	Data screening
4	Knowledge bases
5	ranking algorithms
6	brief introduction to the life chemistry
7	DNA, RNA, PCR algorithms
8	hidden Markov model, protein folding problem
9	Monte Carlo method
10	Gene expression, system control
11	Signal processing
12	Intracellular dynamics
13	System approach and computational biology
14	gene mutation and human disease

Course Title-Code:	Program Name:
FUZZY LOGIC - BM462	COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Fuzzy sets and basic fuzzy sets operations; fuzzy relation and expansion principle; linguistic variables; fuzzy logic and approximate reasoning; fuzzy rule base; fuzzy decision mechanism; fuzzier and defuzzier. Fuzzy systems for nonlinear structures. Fuzzy system design with input-output data set.
Course Objectives	Fuzzy sets and basic fuzzy sets operations; fuzzy relation and expansion principle; linguistic variables; fuzzy logic and approximate reasoning; fuzzy rule base; fuzzy decision mechanism; fuzzier and defuzzier. Fuzzy systems for nonlinear structures. Fuzzy system design with input-output data set.
Learning Outcomes and Competences	Fuzzy sets and basic fuzzy sets operations; fuzzy relation and expansion principle; linguistic variables; fuzzy logic and approximate reasoning; fuzzy rule base; fuzzy decision mechanism; fuzzier and defuzzier. Fuzzy systems for nonlinear structures. Fuzzy system design with input-output data set.
Textbook and /or References	An Introduction to Fuzzy Logic for Practical Applications by Kazuo Tanaka and T. Niimura

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Fuzzy sets and fuzzy sets based operations
2	Fuzzy sets and fuzzy sets based operations
3	Fuzzy relations and expansion principle
4	Fuzzy relations and expansion principle
5	linguistic variables
6	Fuzzy logic and approximate reasoning
7	Fuzzy about logic and reasoning
8	Fuzzy rule base
9	Fuzzy rule base
10	Fuzzy decision mechanism
11	Fuzzy therapeutic agents and the net
12	Fuzzy therapeutic agents and the net
13	non-linear fuzzy systems for buildings
14	Input-output data set with a fuzzy system design

Course Title-Code:	Program Name:
GEOGRAPHIC INFORMATION SYSTEMS - BM463	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Geographical Information Systems (GIS) and cartography: Illustrations, relations between GIS and cartography, map's significance as visualization tool in GIS, positional data, samples of cartographic methods application in GIS. Map characteristics in GIS: cartographic approaches, cartographic communication in GIS, functions and kinds of maps which uses in GIS.
Course Objectives	Geographical Information Systems (GIS) and cartography: Illustrations, relations between GIS and cartography, map's significance as visualization tool in GIS, positional data, samples of cartographic methods application in GIS. Map characteristics in GIS: cartographic approaches, cartographic communication in GIS, functions and kinds of maps which uses in GIS.
Learning Outcomes and Competences	Geographical Information Systems (GIS) and cartography: Illustrations, relations between GIS and cartography, map's significance as visualization tool in GIS, positional data, samples of cartographic methods application in GIS. Map characteristics in GIS: cartographic approaches, cartographic communication in GIS, functions and kinds of maps which uses in GIS.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Geographic Information Systems (GIS) and cartography
2	Definitions
3	GIS and cartography relations between
4	GIS and cartography relations between
5	GIS visualization tool, the importance of the map
6	GIS visualization tool, the importance of the map
7	Spatial data
8	Spatial data
9	GIS cartographic examples of implementation methods
10	GIS map features
11	GIS map features
12	Cartographic approaches
13	GIS cartographic communication GIS applications functions and types of maps used
14	

Course Title-Code:	Program Name:
MULTIMEDIA SYSTEMS - BM464	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Architecture for multimedia systems, digital sound, display technology and image compression. Computer graphic science, multimedia information systems, multimedia communication systems. Internet structure. Data storage and access methods in The Internet.
Course Objectives	Architecture for multimedia systems, digital sound, display technology and image compression. Computer graphic science, multimedia information systems, multimedia communication systems. Internet structure. Data storage and access methods in The Internet.
Learning Outcomes and Competences	Architecture for multimedia systems, digital sound, display technology and image compression. Computer graphic science, multimedia information systems, multimedia communication systems. Internet structure. Data storage and access methods in The Internet.
Textbook and /or References	Multimedia Communication Systems: Techniques, Standards, and Networks by K. R. Rao, Zoran S. Bojkovic, and Dragorad A. Milovanovic

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	For multimedia systems architectures
2	Multi-media systems architectures
3	Digital audio
4	Digital audio
5	Image and video compression technology
6	Image and video compression technology
7	computer graphics science
8	Computer graphics science
9	Multi-media information systems
10	Multi-media communication systems
11	Internet's structure
12	Internet's structure
13	Internet data storage and data access methods
14	Internet data storage and data access methods

Course Title-Code:									Program Name:	
DISTRIBUTED SYSTEMS - BM465									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Fundamentals of distributed systems algorithms, problems, Necessary models and methods for design and understand distributed applications with fault tolerance. Practical and actual distributed system application samples.									
Course Objectives	Fundamentals of distributed systems algorithms, problems, Necessary models and methods for design and understand distributed applications with fault tolerance. Practical and actual distributed system application samples.									
Learning Outcomes and Competences	Fundamentals of distributed systems algorithms, problems, Necessary models and methods for design and understand distributed applications with fault tolerance. Practical and actual distributed system application samples.									
Textbook and /or References	Principles and Paradigms (2nd Edition) by Andrew S. Tanenbaum and Maarten van Steen									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Distributed systems algorithms, the basis for
2	Distributed systems algorithms, the basis for
3	Problems
4	Problems
5	Problems
6	error tolerance is taken into consideration the distributed applications to design
7	error tolerance is taken into consideration the distributed applications to design
8	error tolerance is taken into consideration the distributed applications to design
9	Models and methods
10	Models and methods
11	Models and methods
12	Practice update distributed systems application examples
13	Practice update distributed systems application examples
14	Practice current distributed systems application Examples

Course Title-Code:									Program Name:	
PERCEPTRON NETWORKS AND APPLICATIONS - BM466									**COMPUTER ENGINEERING DEPARTMENT**	
Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Artificial neural networks and introduction to evolutionary computing theory with applications. Neurological structures. Neural networks and neurons. Simple neurons and modeling. Perceptrons. Mathematical and computing models and structures. Feed-Back and Feed-Forward neural networks. Multi-layer perceptrons. Artificial neural network training algorithms. Supervised and unsupervised learning techniques. Perceptron network applications. Term Project									
Course Objectives	Artificial neural networks and introduction to evolutionary computing theory with applications. Neurological structures. Neural networks and neurons. Simple neurons and modeling. Perceptrons. Mathematical and computing models and structures. Feed-Back and Feed-Forward neural networks. Multi-layer perceptrons. Artificial neural network training algorithms. Supervised and unsupervised learning techniques. Perceptron network applications. Term Project									
Learning Outcomes and Competences	Artificial neural networks and introduction to evolutionary computing theory with applications. Neurological structures. Neural networks and neurons. Simple neurons and modeling. Perceptrons. Mathematical and computing models and structures. Feed-Back and Feed-Forward neural networks. Multi-layer perceptrons. Artificial neural network training algorithms. Supervised and unsupervised learning techniques. Perceptron network applications. Term Project									
Textbook and /or References	Lecture Notes									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-

	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	**Subject**		
1	Artificial neural networks (ANN) and evolutionary computation theory and practice		
2	input		
3	Biological structures		
4	Neural networks and nerve cells		
5	simple neurons		
6	neuron modeling		
7	neuron modeling		
8	Perseptronlar		
9	Mathematical and calculation models and structures		
10	Back and feedforward networks		
11	Multi-storey Perseptronlar		
12	ANN learning algorithms		
13	Consultant and advisor without learning techniques		
14	Perceptron network applications		
	Term Paper		

Course Title-Code:									Program Name:	
INFORMATION THEORY - BM467									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Entropy-Physical System state ambiguity unit. Entropy of Complex Systems: Entropy Summation theorem; Conditional Entropy: Combination of dependent systems. Entropy and Information: partial information. Entropy and Information for unstable systems. Entropy of finite Markov chains; Information coding problems: Shennon-Pheno code; faulty communication. Blocked channels transferring capacity.									
Course Objectives	Entropy-Physical System state ambiguity unit. Entropy of Complex Systems: Entropy Summation theorem; Conditional Entropy: Combination of dependent systems. Entropy and Information: partial information. Entropy and Information for unstable systems. Entropy of finite Markov chains; Information coding problems: Shennon-Pheno code; faulty communication. Blocked channels transferring capacity.									
Learning Outcomes and Competences	Entropy-Physical System state ambiguity unit. Entropy of Complex Systems: Entropy Summation theorem; Conditional Entropy: Combination of dependent systems. Entropy and Information: partial information. Entropy and Information for unstable systems. Entropy of finite Markov chains; Information coding problems: Shennon-Pheno code; faulty communication. Blocked channels transferring capacity.									
Textbook and /or References	Lecture Notes									

Assessment Criteria	If any, mark as (X)	Percentage (%)
Midterm Exams	X	30
Quizzes	-	-
Homeworks	X	30
Projects	-	-
Term Paper	-	-
Laboratory Work	-	-
Other	-	-
Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Entropy-Physical Systems of Market Uncertainty Measures Rating
2	complex system Entropy: Entropy collection theorem
3	Conditional Entropy
4	dependent combination of systems
5	Entropy and Information
6	Partial information
7	Status can change continuously entropy for systems and more
8	Entropy of Finite Markov Chains
9	Entropy of Finite Markov Chains
10	Information to the Code Problems
11	Information to the Code Problems
12	Shennon-Phenom code
13	Incorrect Contact
14	Disabled channels Naklet of the Capabilities

Course Title-Code:									Program Name:	
E-SIGNATURE AND PUBLIC KEY INFRASTRUCTURES - BM468									**COMPUTER ENGINEERING DEPARTMENT**	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	E-Signature, components, applications. Security Goals: data integrity, authentication, privacy, delegation, security tools and hardware. Computer and communication security. Standards. ISO 270001. Digital Signature Algorithms. Keys. Hashing Algorithms. Public Key infrastructure and components. E-Signature law and applications.									
Course Objectives	E-Signature, components, applications. Security Goals: data integrity, authentication, privacy, delegation, security tools and hardware. Computer and communication security. Standards. ISO 270001. Digital Signature Algorithms. Keys. Hashing Algorithms. Public Key infrastructure and components. E-Signature law and applications.									
Learning Outcomes and Competences	E-Signature, components, applications. Security Goals: data integrity, authentication, privacy, delegation, security tools and hardware. Computer and communication security. Standards. ISO 270001. Digital Signature Algorithms. Keys. Hashing Algorithms. Public Key infrastructure and components. E-Signature law and applications.									
Textbook and /or References	Lecture Notes									
Assessment Criteria								If any, mark as (X)	Percentage (%)	
	Midterm Exams							X	30	
	Quizzes							-	-	
	Homeworks							X	30	
	Projects							-	-	
	Term Paper							-	-	
	Laboratory Work							-	-	
	Other							-	-	
	Final Exam							X	40	
Instructors	Related Lecturer, bmbb@gazi.edu.tr									

Week	Subject
1	E-signature definition, components, applications
2	security elements, data integrity
3	ID verification and validation
4	Repudiation Made
5	Safety requirements and approaches used
6	Computer and communications security
7	Standards, ISO 27001
8	Digital Signature Algorithms
9	Switches
10	Summarization Algorithms
11	Public-key infrastructure and components
12	E-signature software and equipment
13	Public-key infrastructure and equipment
14	E-Signature Law. E-signature applications.

Course Title-Code:									Program Name:	
GENETIC ALGORITHMS AND PROGRAMMING - BM469									**COMPUTER ENGINEERING DEPARTMENT**	
Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Introduction to biological structures. Genetic algorithms: machine learning fundamentals and programming. Searching Strategies. Mathematical principals. Randomness in learning systems. Microscopic dynamic system modeling. Schema theorem, tree based genetic programming. Applications. Term Project.
Course Objectives	Introduction to biological structures. Genetic algorithms: machine learning fundamentals and programming. Searching Strategies. Mathematical principals. Randomness in learning systems. Microscopic dynamic system modeling. Schema theorem, tree based genetic programming. Applications. Term Project.
Learning Outcomes and Competences	Introduction to biological structures. Genetic algorithms: machine learning fundamentals and programming. Searching Strategies. Mathematical principals. Randomness in learning systems. Microscopic dynamic system modeling. Schema theorem, tree based genetic programming. Applications. Term Project.
Textbook and /or References	An Introduction to Genetic Algorithms (Complex Adaptive Systems) by Melanie Mitchell

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Introduction to biological structure
2	Genetic algorithms
3	Genetic algorithms
4	Programming and machine learning foundations of
5	Programming and machine learning foundations of
6	search strategies
7	Mathematical foundations
8	Learning systems rasgelelik
9	microscopic dynamics system models
10	microscopic dynamic system models
11	schema theory
12	tree-based genetic programming
13	tree-based genetic programming
14	Applications, Term Paper

Course Title-Code:									Program Name:	
EMBEDDED SYSTEMS - BM470									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Fundamentals of Embedded Systems. Embedded systems problem solving methodologies. Real time operating systems, micro controlled circuits, embedded development, communications protocols, data acquire, sensor signal processing and control theory. Programming methods for embedded systems. I2C data bus and applications. Matrix and Analog Keyboard programming. Seven-Segment display drivers. Remote control units and decoders.									
Course Objectives	Fundamentals of Embedded Systems. Embedded systems problem solving methodologies. Real time operating systems, micro controlled circuits, embedded development, communications protocols, data acquire, sensor signal processing and control theory. Programming methods for embedded systems. I2C data bus and applications. Matrix and Analog Keyboard programming. Seven-Segment display drivers. Remote control units and decoders.									
Learning Outcomes and Competences	Fundamentals of Embedded Systems. Embedded systems problem solving methodologies. Real time operating systems, micro controlled circuits, embedded development, communications protocols, data acquire, sensor signal processing and control theory. Programming methods for embedded systems. I2C data bus and applications. Matrix and Analog Keyboard programming. Seven-Segment display drivers. Remote control units and decoders.									
Textbook and /or References	UML-B Specification for Proven Embedded Systems Design by Jean Mermet									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Embedded systems teach the basic structure of the
2	Embedded Systems Problem solving methods to win
3	Real-time operating systems
4	Micro-control circuits
5	Embedded Development
6	Communication protocols
7	The data obtained for acts
8	The data obtained in act Sensor signal processing and control theory
9	Embedded systems programming methods for
10	I2C bus and applications
11	Keyboard programming (Matrix, Analog)
12	Seven Scattered Indicators Drivers
13	remote control units and decoders.
14	

Course Title-Code:	Program Name:
INTRODUCTION TO IMAGE PROCESSING - BM471	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Image Processing Fundamentals, Sampling and quantization. Digital image projection, resolution, image enlargements and reduction. Neighborhood, adjacency, connectivity, regions, borders, distance metrics. Image traverse, Simple image processing algorithms. Simple filters and applications. Color models. Image File Formats.
Course Objectives	Image Processing Fundamentals, Sampling and quantization. Digital image projection, resolution, image enlargements and reduction. Neighborhood, adjacency, connectivity, regions, borders, distance metrics. Image traverse, Simple image processing algorithms. Simple filters and applications. Color models. Image File Formats.
Learning Outcomes and Competences	Image Processing Fundamentals, Sampling and quantization. Digital image projection, resolution, image enlargements and reduction. Neighborhood, adjacency, connectivity, regions, borders, distance metrics. Image traverse, Simple image processing algorithms. Simple filters and applications. Color models. Image File Formats.
Textbook and /or References	Digital Image Processing, 2. Edition, R.C. Gonzalez, R.E. Woods, Prentice Hall, 2002.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Image processing and basic concepts
2	Sampling and quantization
3	numeric display images
4	resolution
5	resolution
6	Image magnification and reduction
7	Neighborhood, contiguity, connectivity
8	Regions, borders
9	Distance criteria
10	Image on the navigation
11	simple image processing algorithms
12	simple filters and applications
13	Color models
14	Image file formats

Course Title-Code:									Program Name:	
SECURE CODING - BM472									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Secure coding principals and applications. Software vulnerabilities. System attacks. Secure design techniques. Samples of software implementations. Spy Software implementation techniques. Test techniques. Applications and term project.									
Course Objectives	Secure coding principals and applications. Software vulnerabilities. System attacks. Secure design techniques. Samples of software implementations. Spy Software implementation techniques. Test techniques. Applications and term project.									
Learning Outcomes and Competences	Secure coding principals and applications. Software vulnerabilities. System attacks. Secure design techniques. Samples of software implementations. Spy Software implementation techniques. Test techniques. Applications and term project.									
Textbook and /or References	Lecture Notes									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Secure coding principles and practices
2	secure coding principles and practices
3	software vulnerabilities
4	software vulnerabilities
5	System attacks
6	System attacks
7	Safe design techniques
8	Safe design techniques
9	The software to perform Examples
10	Malicious software implementation techniques
11	Test Techniques
12	Applications
13	Applications
14	Term Paper.

Course Title-Code:	Program Name:
INTRODUCTION TO WIRELESS AND MOBILE NETWORKS - BM473	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Wireless and Mobile Networks infrastructure. Problem solving techniques. Wireless area access. Architectures and protocols. GSM/GPRS, CDMA, 802.11, Bluetooth, 3G, nG, mobile IP, mobile transport layer, mobile application development.
Course Objectives	Wireless and Mobile Networks infrastructure. Problem solving techniques. Wireless area access. Architectures and protocols. GSM/GPRS, CDMA, 802.11, Bluetooth, 3G, nG, mobile IP, mobile transport layer, mobile application development.
Learning Outcomes and Competences	Wireless and Mobile Networks infrastructure. Problem solving techniques. Wireless area access. Architectures and protocols. GSM/GPRS, CDMA, 802.11, Bluetooth, 3G, nG, mobile IP, mobile transport layer, mobile application development.
Textbook and /or References	Stallings, W. Wireless communications + Networks

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Of wireless and mobile network infrastructures
2	Problem and solution methods
3	Wireless media access
4	Architecture and protocols
5	GSM / GPRS
6	GSM / GPRS
7	CDMA, 802.11
8	CDMA, 802.11 Bluetooth
9	3G, nG
10	Mobile IP
11	Mobile IP
12	Mobile transport layer
13	Mobile application development.
14	

Course Title-Code:	Program Name:
CONTROL SYSTEMS - BM474	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Process control computers, Dynamic modeling of processes. Feed-Back control design. Feed-Forward Control. Multi-cycle control systems. Alternative control structures. Industrial Applications.
Course Objectives	Process control computers, Dynamic modeling of processes. Feed-Back control design. Feed-Forward Control. Multi-cycle control systems. Alternative control structures. Industrial Applications.
Learning Outcomes and Competences	Process control computers, Dynamic modeling of processes. Feed-Back control design. Feed-Forward Control. Multi-cycle control systems. Alternative control structures. Industrial Applications.
Textbook and /or References	Modern Control Systems (11th Edition) (Pie) by Richard C Dorf and Robert H. Bishop

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Process control computers
2	Process control computers
3	Process dynamic models
4	Process dynamic models
5	Back-fed control design
6	Back-fed control design
7	Forward-fed controls
8	Forward-fed controls
9	If more than one-cycle control systems
10	If more than one-cycle control systems
11	Alternatively, controller structures
12	Alternatively, controller structures
13	Industrial applications
14	Industrial applications

Course Title-Code:	Program Name:
INTRODUCTION TO CRYPTOGRAPHY - BM475	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Fundamentals of Cryptographic systems. Classic Cryptography systems and numeric theory. Symmetric and Asymmetric algorithms. Data cryptography standards (DES), advanced cryptography standards (AES), keys, key management and public keys. RSA algorithm. Hashing algorithms. Cryptographic protocols.
Course Objectives	Fundamentals of Cryptographic systems. Classic Cryptography systems and numeric theory. Symmetric and Asymmetric algorithms. Data cryptography standards (DES), advanced cryptography standards (AES), keys, key management and public keys. RSA algorithm. Hashing algorithms. Cryptographic protocols.
Learning Outcomes and Competences	Fundamentals of Cryptographic systems. Classic Cryptography systems and numeric theory. Symmetric and Asymmetric algorithms. Data cryptography standards (DES), advanced cryptography standards (AES), keys, key management and public keys. RSA algorithm. Hashing algorithms. Cryptographic protocols.
Textbook and /or References	D. R. Stinson, Cryptography: theory and practice, CRC, 1995.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Cryptography and encryption systems, the basic concepts
2	classical cryptographic systems and number theory
3	Symmetric and asymmetric algorithms
4	Data encryption standard (DES)
5	Advanced encryption standard (AES)
6	Advanced encryption standard (AES) Switches
7	Key management and public key
8	Key management and public key
9	RSA algorithm
10	RSA algorithm
11	summary algorithms
12	Cryptographic protocols
13	Cryptographic protocols
14	

Course Title-Code:									Program Name:	
MACHINE LEARNING - BM476									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Machines. Learning methodologies and theorems. Bayes decision making, parametric methods, non-parametric methods, decision trees, linear difference, artificial intelligence methods and learning. Uncontrolled classification and learning.									
Course Objectives	Machines. Learning methodologies and theorems. Bayes decision making, parametric methods, non-parametric methods, decision trees, linear difference, artificial intelligence methods and learning. Uncontrolled classification and learning.									
Learning Outcomes and Competences	Machines. Learning methodologies and theorems. Bayes decision making, parametric methods, non-parametric methods, decision trees, linear difference, artificial intelligence methods and learning. Uncontrolled classification and learning.									
Textbook and /or References	Machine Learning (Mcgraw-Hill International Edit) by Thomas Mitchell									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Machinery
2	Learning methodologies and theorems
3	Bayesian decision theory
4	Bayesian decision theory
5	Parametric methods
6	-parametric methods can not be
7	-parametric methods can not be
8	Decision trees
9	Decision trees
10	linearity of differentiation
11	Linear of differentiation
12	Artificial intelligence and learning methods
13	Artificial intelligence and learning methods
14	unsupervised classification and learning

Course Title-Code:	Program Name:
MICROCONTROLLERS - BM477	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Fundamentals of microcontrollers and microcomputer systems. 8 bit microprocessors and structures. ALU, recorders and control units. Computer data transmission, machine language, assembly language and types. Addressing methods. Command types and assembly programming. Input-output control and applications, integrated circuits, microprocessors, control circuits and PIC programming.
Course Objectives	Fundamentals of microcontrollers and microcomputer systems. 8 bit microprocessors and structures. ALU, recorders and control units. Computer data transmission, machine language, assembly language and types. Addressing methods. Command types and assembly programming. Input-output control and applications, integrated circuits, microprocessors, control circuits and PIC programming.
Learning Outcomes and Competences	Fundamentals of microcontrollers and microcomputer systems. 8 bit microprocessors and structures. ALU, recorders and control units. Computer data transmission, machine language, assembly language and types. Addressing methods. Command types and assembly programming. Input-output control and applications, integrated circuits, microprocessors, control circuits and PIC programming.
Textbook and /or References	Adim Adim PICmicro Programlama, Infogate yayinlari

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Introduction to micro controllers
2	microcomputer systems basics
3	8-bit microprocessors and structures
4	ALU, recorders and control units
5	computer to transmit information
6	machine language
7	Assembly language and variations
8	Addressing methods command types and assembly language programming
9	Input-Output control and program applications
10	Integrated Circuits
11	Microprocessors
12	Control Circuits
13	PIC programming
14	

Course Title-Code:									Program Name:	
NANOTECHNOLOGIES - BM478									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Intelligent materials, production, production processes, nanotechnologies and computer science. Nano and micro electro mechanic structures. Mathematical models for nano systems. Structural design, simulation and modeling. Hamilton and Lagrange Equations.									
Course Objectives	Intelligent materials, production, production processes, nanotechnologies and computer science. Nano and micro electro mechanic structures. Mathematical models for nano systems. Structural design, simulation and modeling. Hamilton and Lagrange Equations.									
Learning Outcomes and Competences	Intelligent materials, production, production processes, nanotechnologies and computer science. Nano and micro electro mechanic structures. Mathematical models for nano systems. Structural design, simulation and modeling. Hamilton and Lagrange Equations.									
Textbook and /or References	Understanding Nanotechnology by Scientific American and editors at Scientific									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Smart materials
2	Production
3	Production-process
4	Production-process
5	Nano technology and computer science
6	Nano technology and computer science
7	Nano and micro-electromechanical structures
8	Nano mathematical models for systems
9	Nano mathematical models for systems
10	Structural design
11	Structural design
12	Simulation and modeling
13	Simulation and modeling
14	Hamilton and Lagrance equations

Course Title-Code:									Program Name:	
PARALLEL COMPUTER ARCHITECTURE AND PROGRAMMING - BM479									**COMPUTER ENGINEERING DEPARTMENT**	
Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Parallel computers. Parallel virtual machines. Parallel computing. Parallel computer modeling, super computers, shared memory, distributed memory, scaling processors. Parallel programming techniques, Parallel programming, processing with data transmission, consecutive order processing, shared memory processing etc. Parallel processing and programming techniques and algorithms. MPI usage.									
Course Objectives	Parallel computers. Parallel virtual machines. Parallel computing. Parallel computer modeling, super computers, shared memory, distributed memory, scaling processors. Parallel programming techniques, Parallel programming, processing with data transmission, consecutive order processing, shared memory processing etc. Parallel processing and programming techniques and algorithms. MPI usage.									
Learning Outcomes and Competences	Parallel computers. Parallel virtual machines. Parallel computing. Parallel computer modeling, super computers, shared memory, distributed memory, scaling processors. Parallel programming techniques, Parallel programming, processing with data transmission, consecutive order processing, shared memory processing etc. Parallel processing and programming techniques and algorithms. MPI usage.									
Textbook and /or References	Lecture Notes									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Parallel computers
2	Parallel virtual machine
3	Parallel calculations
4	Parallel computer models
5	super computers
6	shared memory
7	Distributed memory, scalable processors
8	Parallel programming techniques
9	Parallel programming Message delivery and processing
10	Sequential processing with my order
11	shared memory processing
12	Comprehensive techniques and parallel processing algorithms and applications for
13	MPI usage
14	

Course Title-Code:									Program Name:	
SYSTEM SIMULATION - BM480									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Common problem solving techniques, simulation methods and computer applications, simulation modeling classes, digital and analog simulation computers and simulation programming languages.									
Course Objectives	Common problem solving techniques, simulation methods and computer applications, simulation modeling classes, digital and analog simulation computers and simulation programming languages.									
Learning Outcomes and Competences	Common problem solving techniques, simulation methods and computer applications, simulation modeling classes, digital and analog simulation computers and simulation programming languages.									
Textbook and /or References	Simulation of Communication Systems: Modeling, Methodology and Techniques (Information Technology: Transmission, Processing and Storage) by Michel C. Jeruchim, Philip Balaban, and K. Sam Shanmugan									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	General problem-solving techniques
2	General problem-solving techniques
3	Simulation methods
4	Simulation methods
5	Simulation methods
6	Computer applications
7	Computer applications
8	Simulation models classes
9	Simulation models classes Simulation models classes
10	Digital and analog computers used in the simulation
11	Digital and analog computers used in the simulation
12	Simulation programming languages
13	Simulation programming languages
14	

Course Title-Code:	Program Name:
SYSTEM ENGINEERING - BM481	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	System Engineering aspect, technical products. System engineer responsibilities and products. Software project planning and control, software design and development. Project management planning, project time planning, job schedule tree, software metrics, earned value analysis method, system engineering management, system engineering management planning, integrated product development, risk analysis. System analysis, system analysis methodologies (structural, object based), operating concept manual; system necessities, characterization process. Risk analysis.
Course Objectives	System Engineering aspect, technical products. System engineer responsibilities and products. Software project planning and control, software design and development. Project management planning, project time planning, job schedule tree, software metrics, earned value analysis method, system engineering management, system engineering management planning, integrated product development, risk analysis. System analysis, system analysis methodologies (structural, object based), operating concept manual; system necessities, characterization process. Risk analysis.
Learning Outcomes and Competences	System Engineering aspect, technical products. System engineer responsibilities and products. Software project planning and control, software design and development. Project management planning, project time planning, job schedule tree, software metrics, earned value analysis method, system engineering management, system engineering management planning, integrated product development, risk analysis. System analysis, system analysis methodologies (structural, object based), operating concept manual; system necessities, characterization process. Risk analysis.
Textbook and /or References	Systems Engineering Principles and Practice by Alexander Kossiakoff and William N. Sweet

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-

	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	**Subject**		
1	System engineering overview		
2	Technical Products		
3	System engineering responsibilities and products		
4	The software project planning and control		
5	The software design and development		
6	Project management plan, project time management, business diffraction tree		
7	Software metrics acquired value analysis method		
8	System engineering management		
9	System engineering management plan		
10	Integrated product development		
11	Risk management		
12	System analysis, systems analysis methodologies (structural, object-based)		
13	Operating concept document the system needs, requirements definition process		
14	Risk analysis.		

Course Title-Code:	Program Name:
INTRODUCTION TO COMPUTER SECURITY - BM482	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
2	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Fundamental principal of Computer Security. Classification of threats and passwords. Permission access, Symmetric and asymmetric cryptography techniques. Security life cycle. Security policy and standards. Firewalls. Virus and Antivirus Software's. Spyware and protection techniques. Intrusion detection systems. Spam and Anti-spam. Personal information and computer security.
Course Objectives	Fundamental principal of Computer Security. Classification of threats and passwords. Permission access, Symmetric and asymmetric cryptography techniques. Security life cycle. Security policy and standards. Firewalls. Virus and Antivirus Software's. Spyware and protection techniques. Intrusion detection systems. Spam and Anti-spam. Personal information and computer security.
Learning Outcomes and Competences	Fundamental principal of Computer Security. Classification of threats and passwords. Permission access, Symmetric and asymmetric cryptography techniques. Security life cycle. Security policy and standards. Firewalls. Virus and Antivirus Software's. Spyware and protection techniques. Intrusion detection systems. Spam and Anti-spam. Personal information and computer security.
Textbook and /or References	Computer Security Fundamentals (Prentice Hall Security Series) by Chuck Easttom

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr

Week	Subject
1	Introduction to Computer Security, and Basic Concepts
2	Classification of Threat Passwords
3	Access Permissions
4	Symmetric and Asymmetric Encryption Techniques
5	Security an introduction to the life cycle
6	Security policy and standards
7	Firewalls
8	Viruses and Anti Virus Software
9	Spyware and Conservation Techniques
10	Spyware and Conservation Techniques
11	Intrusion Detection Systems
12	Intrusion Detection Systems
13	Spam and Anti-spamlar
14	Personal information and computer security

Course Title-Code:	Program Name:
DESIGN PATTERNS - BM483	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Principal of design patterns. Design patters demands. Classifications of design patterns (creativity, structural, behavioral design patterns). Analysis of design patterns and sample applications.
Course Objectives	Principal of design patterns. Design patters demands. Classifications of design patterns (creativity, structural, behavioral design patterns). Analysis of design patterns and sample applications.
Learning Outcomes and Competences	Principal of design patterns. Design patters demands. Classifications of design patterns (creativity, structural, behavioral design patterns). Analysis of design patterns and sample applications.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Design pattern description
2	Design pattern description
3	Design patterns need to use
4	Design patterns need to use
5	Design patterns categories
6	Design patterns categories
7	creative categories
8	creative categories
9	Structural classification
10	Structural classification
11	Behavioral design patterns
12	Behavioral design patterns
13	Design patterns and examples of applications of the study
14	Design patterns and examples of applications to be reviewed

Course Title-Code:	Program Name:
UNIX PROGRAMMING - BM484	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Operating Systems. Network Operating Systems. Network programming. Multipurpose and multi-user mobile systems. Shell and Shell programming. Open source code development. Time sharing and multi programming. Applications, processes and tracks. Unix environment input-output, file systems, asynchronous threads.
Course Objectives	Operating Systems. Network Operating Systems. Network programming. Multipurpose and multi-user mobile systems. Shell and Shell programming. Open source code development. Time sharing and multi programming. Applications, processes and tracks. Unix environment input-output, file systems, asynchronous threads.
Learning Outcomes and Competences	Operating Systems. Network Operating Systems. Network programming. Multipurpose and multi-user mobile systems. Shell and Shell programming. Open source code development. Time sharing and multi programming. Applications, processes and tracks. Unix environment input-output, file systems, asynchronous threads.
Textbook and /or References	Advanced UNIX Programming (2nd Edition) (Addison-Wesley Professional Computing Series) by Marc J. Rochkind

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Operating systems
2	Network operating systems
3	Network programming
4	Network programming
5	Multi-purpose, multi-use portable systems
6	Shell, shell programming
7	Shell, shell programming
8	Open-source code development Time-sharing and multi-programming
9	Programs, processes and the trajectory of
10	Unix environment Input / Output
11	File system
12	File system
13	asynchronous events.
14	

Course Title-Code:	Program Name:
TECHNOLOGIES OF DISTANCE LEARNING - BM485	COMPUTER ENGINEERING DEPARTMENT

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Distance Learning Technologies, techniques and applications. Distance learning approaches, data relations. Satellite, video, sound usage in transmissions between geographical areas. Human computer interactions. Learning material development. Distance Learning infrastructure and management. System and material tests. Learning management systems.
Course Objectives	Distance Learning Technologies, techniques and applications. Distance learning approaches, data relations. Satellite, video, sound usage in transmissions between geographical areas. Human computer interactions. Learning material development. Distance Learning infrastructure and management. System and material tests. Learning management systems.
Learning Outcomes and Competences	Distance Learning Technologies, techniques and applications. Distance learning approaches, data relations. Satellite, video, sound usage in transmissions between geographical areas. Human computer interactions. Learning material development. Distance Learning infrastructure and management. System and material tests. Learning management systems.
Textbook and /or References	Lecture Notes

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject

1	Distance Learning technologies, techniques and applications
2	distance learning approaches
3	Data exchange
4	Data exchange
5	Satellite TV, video, sound with the use of remote geography between data transmission
6	Human computer interaction
7	Educational materials development
8	Educational materials development
9	distance education infrastructure, building and managing
10	distance education infrastructure, building and managing
11	System and materials testing
12	System and materials testing
13	Learning management systems
14	Learning management systems

Course Title-Code:					Program Name:					
VLSI DESIGN - BM486					COMPUTER ENGINEERING DEPARTMENT					
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Designing of very large scale integrated circuit methods. Design verification and test methods. Adders, Multiplexers, Numerators, ALU, Memories and Finite State Machines(FSM) structures. Synchronization, meta-stability, PLL and DLL circuits. Programmable logic gates (CPLD, FPGA, FPLD) with integrated circuit designs. Introduction to HDL-Hardware Description Language. Using HDL with computer design tools to integration of circuit design implementation.									
Course Objectives	Designing of very large scale integrated circuit methods. Design verification and test methods. Adders, Multiplexers, Numerators, ALU, Memories and Finite State Machines(FSM) structures. Synchronization, meta-stability, PLL and DLL circuits. Programmable logic gates (CPLD, FPGA, FPLD) with integrated circuit designs. Introduction to HDL-Hardware Description Language. Using HDL with computer design tools to integration of circuit design implementation.									
Learning Outcomes and Competences	Designing of very large scale integrated circuit methods. Design verification and test methods. Adders, Multiplexers, Numerators, ALU, Memories and Finite State Machines(FSM) structures. Synchronization, meta-stability, PLL and DLL circuits. Programmable logic gates (CPLD, FPGA, FPLD) with integrated circuit designs. Introduction to HDL-Hardware Description Language. Using HDL with computer design tools to integration of circuit design implementation.									
Textbook and /or References	VLSI Digital Signal Processing Systems: Design and Implementation by Keshab K. Parhi									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Very large scale integrated circuits (VLSI) design methods
2	Very large scale integrated circuits (VLSI) design methods
3	design verification and test methods
4	Collectors, striking, counters
5	ALU
6	Memory and finite state machines (FSM) structure
7	synchronization, meta-stability
8	PLL and DLL circuits
9	PLL and DLL circuits
10	Programmable logic devices (CPLD, FPGA, FPLD) and integrated circuit designs
11	HDL hardware description An introduction to the language
12	computer-aided design tools, integrated circuit design using the HDL
13	Implementations
14	Implementations

Course Title-Code:	Program Name:
MANAGEMENT INFORMATION SYSTEMS - BM487	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	General view of Management Information Systems(MIS). Using MIS like organization development tools. Conceptual bases : Knowledge, system, planning, control, organization and management concept, human as knowledge processor, Decision making process, Selection methods from choices. Structures of MIS. Processes, planning, control, decision making and MIS supporting management level, decision-support systems, determination of knowledge requirements. Planning of IT systems, design, implementation and execution.
Course Objectives	General view of Management Information Systems(MIS). Using MIS like organization development tools. Conceptual bases : Knowledge, system, planning, control, organization and management concept, human as knowledge processor, Decision making process, Selection methods from choices. Structures of MIS. Processes, planning, control, decision making and MIS supporting management level, decision-support systems, determination of knowledge requirements. Planning of IT systems, design, implementation and execution.
Learning Outcomes and Competences	General view of Management Information Systems(MIS). Using MIS like organization development tools. Conceptual bases : Knowledge, system, planning, control, organization and management concept, human as knowledge processor, Decision making process, Selection methods from choices. Structures of MIS. Processes, planning, control, decision making and MIS supporting management level, decision-support systems, determination of knowledge requirements. Planning of IT systems, design, implementation and execution.
Textbook and /or References	Management Information Systems, Fifth Edition by Effy Oz

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Management Information Systems (MIS) overview
2	An organization development approach as a means of MIS
3	Conceptual foundations
4	Information, systems, planning, supervision, organization and management concepts
5	Information as human handler
6	Decision-making process, from among options selected methods
7	Decision-making process, from among options selected methods
8	YBS'nin structure
9	Operations, planning, supervision, decision-making and management levels MIS support
10	Decision-support systems
11	Decision-support systems
12	Information requirements determination
13	Information systems planning, design, implementation and operation
14	Information systems planning, design, implementation and operation

Course Title-Code:	Program Name:
OPERATIONS RESEARCH - BM488	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
2	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Linear Programming, Simplex method, Duality and sensitivity analysis, transportation problems. Digital approaches in decision making problems. Optimization Concept. OR/MS approaches, development performance methods. Decision theory, game theory, project programming, non-linear programming.
Course Objectives	Linear Programming, Simplex method, Duality and sensitivity analysis, transportation problems. Digital approaches in decision making problems. Optimization Concept. OR/MS approaches, development performance methods. Decision theory, game theory, project programming, non-linear programming.
Learning Outcomes and Competences	Linear Programming, Simplex method, Duality and sensitivity analysis, transportation problems. Digital approaches in decision making problems. Optimization Concept. OR/MS approaches, development performance methods. Decision theory, game theory, project programming, non-linear programming.
Textbook and /or References	Introduction to Operations Research and Revised CD-ROM 8 by Frederick S. Hillier and Gerald J. Lieberman

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	**Subject**

1	Linear programming
2	One-way methods
3	dual problem analysis and final improvement
4	Transport problem
5	Dynamic programming
6	Decision-making in the numerical approaches problem
7	Optimization Concept
8	OR / MS approaches Performance enhancement methods
9	Decision theory
10	Game theory
11	Project programming
12	non-linear programming
13	non-linear programming
14	

Course Title-Code:	Program Name:
DATA MINING - BM489	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Definition of data mining. General view of data mining application areas, techniques and models. Data mining phases: Aim determination, data selection and preprocessing, data reduction and data transformation, selecting data mining learning algorithm, model assessment and knowledge presentation, explication existent knowledge. Examination of data mining learning algorithm: decision trees, classification, curve adjust, relation establishment, memory base methods, k-means algorithm, control, artificial neural networks.
Course Objectives	Definition of data mining. General view of data mining application areas, techniques and models. Data mining phases: Aim determination, data selection and preprocessing, data reduction and data transformation, selecting data mining learning algorithm, model assessment and knowledge presentation, explication existent knowledge. Examination of data mining learning algorithm: decision trees, classification, curve adjust, relation establishment, memory base methods, k-means algorithm, control, artificial neural networks.
Learning Outcomes and Competences	Definition of data mining. General view of data mining application areas, techniques and models. Data mining phases: Aim determination, data selection and preprocessing, data reduction and data transformation, selecting data mining learning algorithm, model assessment and knowledge presentation, explication existent knowledge. Examination of data mining learning algorithm: decision trees, classification, curve adjust, relation establishment, memory base methods, k-means algorithm, control, artificial neural networks.
Textbook and /or References	Practical Machine Learning Tools and Techniques, Second Edition (Morgan Kaufmann Series in Data Management Systems) by Ian H. Witten and Eibe Frank

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Data mining is the definition of
2	Data mining application areas, techniques and models overview
3	Data mining stages
4	Purpose of determination, purpose-dataset creation (data selection)
5	Data Preprocessing and extraction, data reduction and data transformation
6	Data mining learning algorithms to select
7	Model evaluation and presentation of information, the interpretation of information
8	Data mining learning algorithms to look at
9	decision trees, classification
10	Curve fitting, correlation install
11	memory-based methods k-neighbor algorithm, checking
12	Artificial neural networks
13	Artificial neural networks
14	

Course Title-Code:					Program Name:					
OPEN SOURCE CODING - BM490					COMPUTER ENGINEERING DEPARTMENT					
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Open Source Coding Definitions. Open Source code development. Open Source software phenomenon, philosophy, advantages and disadvantages. Open system creation process, software and component compatibility in cooperative working environment, communication between systems, shared and distributed database and application development environments. Open source projects and general features. Security in open sources. Java and Linux programming. Sample applications.									
Course Objectives	Open Source Coding Definitions. Open Source code development. Open Source software phenomenon, philosophy, advantages and disadvantages. Open system creation process, software and component compatibility in cooperative working environment, communication between systems, shared and distributed database and application development environments. Open source projects and general features. Security in open sources. Java and Linux programming. Sample applications.									
Learning Outcomes and Competences	Open Source Coding Definitions. Open Source code development. Open Source software phenomenon, philosophy, advantages and disadvantages. Open system creation process, software and component compatibility in cooperative working environment, communication between systems, shared and distributed database and application development environments. Open source projects and general features. Security in open sources. Java and Linux programming. Sample applications.									
Textbook and /or References	The Success of Open Source by Steven Weber									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Open source coding definitions
2	Open-source code development
3	Open-source software phenomenon, philosophy, advantages and disadvantages
4	open systems create processes
5	The software compatibility and full compliance in the provision of joint work
6	environments
7	System inter-communication
8	shared and distributed databases
9	Database application development environments
10	open source projects and the general features
11	in the open source security
12	in the open source security
13	Java and Linux programming
14	Java and Linux programming Application examples

Course Title-Code:	Program Name:
SYSTEM PROGRAMMING - BM491	**COMPUTER ENGINEERING DEPARTMENT**

Semester	Teaching Methods								Credits	
	Lecture	**Rec.**	**Lab.**	**Project**	**Homework**		**Other**	**Total**	**Credit**	**ECTS Credit**
1	42	15	-	79	14	-	-	150	3	6

Language	Turkish
Compulsory / Elective	Technical Elective
Prerequisites	No
Course Contents	Symbolic Programming Elements. Source and object program, Reentrant program, Reexecutable program. Addressing techniques. Addressing techniques. Procedure definitions, procedure communication techniques. Execution system-symbolic program relation. Programming Techniques. Loader. Linker. Micro programming. Odd and even transitive symbolic translators. Design and Application of various system software. Relations between Machine architecture and system software. Introduction to Windows, Unix operating systems. Assembly languages. Machine dependent assembly, machine independent assembly. Program blocks. Assembler design, MASM and SPARC structures.
Course Objectives	Symbolic Programming Elements. Source and object program, Reentrant program, Reexecutable program. Addressing techniques. Addressing techniques. Procedure definitions, procedure communication techniques. Execution system-symbolic program relation. Programming Techniques. Loader. Linker. Micro programming. Odd and even transitive symbolic translators. Design and Application of various system software. Relations between Machine architecture and system software. Introduction to Windows, Unix operating systems. Assembly languages. Machine dependent assembly, machine independent assembly. Program blocks. Assembler design, MASM and SPARC structures.
Learning Outcomes and Competences	Symbolic Programming Elements. Source and object program, Reentrant program, Reexecutable program. Addressing techniques. Addressing techniques. Procedure definitions, procedure communication techniques. Execution system-symbolic program relation. Programming Techniques. Loader. Linker. Micro programming. Odd and even transitive symbolic translators. Design and Application of various system software. Relations between Machine architecture and system software. Introduction to Windows, Unix operating systems. Assembly languages. Machine dependent assembly, machine independent assembly. Program blocks. Assembler design, MASM and SPARC structures.
Textbook and /or References	Schwartz, Phoenix, Learning Perl, O'Reilly, 2001. Wall, Christiansen, Orwant, Programming Perl, O'Reilly, 2000. Rubini, A., Linux Device/Drivers, O'reilly, 2001.

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-

	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40
Instructors	Related Lecturer, bmbb@gazi.edu.tr		
Week	Subject		
1	Symbolic programming items		
2	source and purpose of the program		
3	again to enter the program		
4	re-run the program		
5	Addressing techniques, the concept of the procedure		
6	Parameter communication techniques		
7	Operating string symbolic program-related, Programming techniques Installer,		
8	Connectors, Micro-programming, single and double-pass symbolic converters		
9	Various system software design and implementation of		
10	Machine architecture and system software, the relationship between		
11	Windows, Unix operating system presentation		
12	Assembly languages		
13	machine dependent assembly, machine independent assembly		
14	Program blocks. Assembler design, MASM and SPARC structures.		

Course Title-Code:									Program Name:	
COMPUTER GRAPHICS - BM492									COMPUTER ENGINEERING DEPARTMENT	
Semester	Teaching Methods								Credits	
	Lecture	Rec.	Lab.	Project	Homework		Other	Total	Credit	ECTS Credit
2	42	15	-	79	14	-	-	150	3	6
Language	Turkish									
Compulsory / Elective	Technical Elective									
Prerequisites	No									
Course Contents	Fundamentals. Principles of interactive graphic programming, graphic hardware, pixel and scanline mechanism, raster systems. 2-D and 3-D geometry, matrix transformations, curves and surface representation, solid state modeling, coloring, visible surface detection and lightening, shadowing and illumination models. Three dimensional visualization. Graphic file formats, computer animations, color models. User interaction design. OpenGL based applications.									
Course Objectives	Fundamentals. Principles of interactive graphic programming, graphic hardware, pixel and scanline mechanism, raster systems. 2-D and 3-D geometry, matrix transformations, curves and surface representation, solid state modeling, coloring, visible surface detection and lightening, shadowing and illumination models. Three dimensional visualization. Graphic file formats, computer animations, color models. User interaction design. OpenGL based applications.									
Learning Outcomes and Competences	Fundamentals. Principles of interactive graphic programming, graphic hardware, pixel and scanline mechanism, raster systems. 2-D and 3-D geometry, matrix transformations, curves and surface representation, solid state modeling, coloring, visible surface detection and lightening, shadowing and illumination models. Three dimensional visualization. Graphic file formats, computer animations, color models. User interaction design. OpenGL based applications.									
Textbook and /or References	Computer Graphics with OpenGL (3rd Edition) by Donald Hearn and M. Pauline Baker									

Assessment Criteria		If any, mark as (X)	Percentage (%)
	Midterm Exams	X	30
	Quizzes	-	-
	Homeworks	X	30
	Projects	-	-
	Term Paper	-	-
	Laboratory Work	-	-
	Other	-	-
	Final Exam	X	40

Instructors	Related Lecturer, bmbb@gazi.edu.tr
Week	Subject
1	Basic concepts
2	interactive graphics programming basics
3	graphics hardware, point and line drawing mechanisms
4	Raster systems
5	2-D and 3-D geometry, matrix transformations, the representation of curves and surfaces
6	a rigid body modeling , coloring
7	Can Appear determination of surface and lighting
8	Shading and lighting models
9	Three-dimensional imaging
10	Graphics file formats
11	Computer animation
12	Color models
13	User interactive design
14	OpenGL and computer applications.