Course Title-Course Code: MAT 302 Inroduction to Algebra II	**Name of the Programme:** Secondary Science and mathematics education

Semester	**Teaching Methods**							**Credits**	
	Lecture	**Recite**	**Lab.**			**Other**	**Total**	**Credit**	**ECTS Credit**
6	28	28				69	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	Mat 301
Course Contents	Definition of a Ring and Examples, Subrings, Homomorphisms, Some Examples of Noncommutative Rings, Ideals, Quotient Rings, Isomorphism Theorems, Field of Fractions of an Integral Domain, Polinomial Ring over a Ring, Evaluation Homomorphisms, Factorizations of Polinomials over a Field, Eisenstein Irreducibility Criterion, Unique Factorization Domains, Examples of non Unique Factorization Domains, Euclidean Rings, Gaussian Rings
Course Objectives	To introduce the students to the basic properties of rings, to help them understanding, thinking and arguing on abstract concepts
Learning Outcomes and Competences	•
Textbook and /or References	Instructor's Notes, A First Course in Abstract Algebra by J. B. Fraleigh, Introduction to Abstract Algebra by Derek J. Robinson, Fundamental Concepts of Abstract Algebra by Gertrude Ehrlich

Assessment Criteria		***If any,mark as (X)***	**Percent (%)**
	Midterm Exams	X	%40
	Quizzes		
	Home works		
	Projects		
	Term Paper		
	Laboratory Work		
	Other		
	Final Exam	X	%60

Instructors	Prof. Dr. A. O Asar
Week	**Subject**
1	Definition of a Ring and Examples
2	Subrings, Homomorphisms
3	Some Examples of Noncommutative Rings
4	Ideals

5	Quotient Rings, Isomorphism Theorems
6	Field of Fractions of an Integral Domain
7	Polinomial Ring over a Ring
8	Evaluation Homomorphisms
9	Factorizations of Polinomials over a Field
10	Eisenstein Irreducibility Criterion
11	Unique Factorization Domains
12	Examples of non Unique Factorization Domains
13	Euclidean Rings
14	Gaussian Rings

Course Title-Course Code: Mat. 304 Differential Geometry	**Name of the Programme:** DEPARMENT OF SECONDARY SCIENCE AND MATHEMATİCS EDUCATION – MATHEMATICS EDUCATION BRANCH

Semester	**Teaching Methods**							**Credits**	
	Lecture	**Recite**	**Lab.**			**Other**	**Total**	**Credit**	**ECTS Credit**
5	28	28				69	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	It is suggested that the courses MAT101, MAT102, Mat103 and Mat 104 should be taken before
Course Contents	Regular surfaces, Change of parameters, Differentiable functions on surfaces, The tangent plane, The differential of a map, The first fundamental form, Area, Orientation of surface, The Gauss map, The Gauss map in local coordinates, Second fundamental form, Vector fields, Ruled surfaces, Minimal surfaces, The Gaussian curvature, Mean curvature.
Course Objectives	• To understand the concepts of regular surface, first fundamental form, Gauss map and second fundamental form. • To applicate these concepts .
Learning Outcomes and Competences	• They can understand concepts dealing with surfaces. • They can appl,icate these concepts
Textbook and /or References	M. P. Do Carmo Differential Geometry of Curvers and Surfaces, Prentice-Hall, New-Jersey, 1976. M. M. Lipschutz Theory and Problems of Differential Geometry, Schaum's Outline Series, McGraw-Hill Company, NewYork,1969. B. O'Neill Differential Geometry, Academic Pres, New York, 1986.

Assessment Criteria		***If any ,mark as (X)***	**Percent (%)**
	Midterm Exams	X	%25
	Quizzes		
	Homeworks	X	%5
	Projects	X	%10
	Term Paper		
	Laboratory Work		
	Other		
	Final Exam	X	%60

Instructors	Prof. Dr. H. Hüseyin UĞURLU hugurlu@gazi.edu.tr

Week	Subject
1	Regular surfaces
2	Change of parameters
3	Differentiable functions on surfaces
4	The tangent plane
5	The differential of a map
6	The first fundamental form, Area
7	Orientation of surface
8	The Gauss map
9	The Gauss map in local coordinates
10	Second fundamental form
11	Vector fields
12	Ruled surfaces
13	Minimal surfaces
14	The Gaussian curvature, Mean curvature.

Course Title-Course Code: MAT306 TOPOLOGY	**Name of the Programme:** DEPARMENT OF SECONDARY SCIENCE AND MATHEMATİCS EDUCATION – MATHEMATICS EDUCATION BRANCH

Semester	**Teaching Methods**							**Credits**	
	Lecture	**Recite**	**Lab.**			**Other**	**Total**	**Credit**	**ECTS Credit**
6	28	28				69	125	3	5

Language	Turkish
Compulsory / Elective	Compulsory
Prerequisites	It is suggested that the courses MAT101, MAT102, Mat105,Mat 106 and MAT305 should be taken before
Course Contents	Continuity in topological and metric spaces; open and closed functions; homeomorphism; topology derived with functions; first and second countability of topologic spaces, separable topological spaces; convergence of nets in a topological space; separation axioms, Compact spaces, Limit and sequential compactness, Connected spaces, Path connected spaces
Course Objectives	• To understand what is the meaning of the concepts such as homeomorphism, Compactness, connectedness • To transfer these concepts to explanation the properties of some special subsets of real numbers and continuous functions defined on closed intervals
Learning Outcomes and Competences	They can recognize that topology is a kind of geometry which deal with the invariant properties of sets They can explain why continuous functions take maximum and minimum values defined on a closed bounded intervals They can make clear why the range of a closed bounded interval is again a closed bounded interval under the continuous functions They can make clear that why a bounded sequence of real numbers has at least an accumulation point
Textbook and /or References	Munkres, J. P., Topology a first Course, Prentice Hall, Inc.,1975 Aslım, G., Genel Topoloji, Ege Üniv, Fen Fak.,Yay. No: 109 Karaçay, T., Genel Toploloji, Karadeniz Teknik Üniv. Temel Bilimler Fakültesi Yay No: 73, Trabzon,1982. Kelly, J.L., General Topology, D. Van Nostrand Company, Inc., New York, 1955

Assessment Criteria		***If any,mark as (X)***	**Percent (%)**
	Midterm Exams	X	%25
	Quizzes		
	Homeworks	X	%5
	Projects	X	%10

	Term Paper		
	Laboratory Work		
	Other		
	Final Exam	X	%60
Instructors	Prof. Dr. Ziya ARGÜN ziya@gazi.edu.tr		
Week	**Subject**		
1	Introduction of this course
2	Continuity in topological and metric spaces
3	The relations sequential continuity and continuity
4	Open and closed functions
5	Homeomorphism and homeomorphic topological spaces
6	Topologies derived with functions
7	First and second countability of topologic spaces
8	Separable topological spaces
9	Convergence of nets in a topological space
10	Separation axioms
11	Compact spaces
12	Limit and sequential compactness
13	Connected spaces
14	Path connected spaces

Course Title-Course Code: MAT 308 Computer Programming II								**Name of the Program:** DEPARMENT OF SECONDARY SCIENCE AND MATHEMATICS EDUCATION – MATHEMATICS EDUCATION BRANCH	
Semester	**Teaching Methods**							**Credits**	
	Lecture	**Recite**	**Lab.**			**Other**	**Total**	**Credit**	**ECTS Credit**
6	28	28				44	100	3	4
Language	Turkish								
Compulsory / Elective	Compulsory								
Prerequisites									
Course Contents	Unit concept in Pascal and functionalities of some system units, File systems in Pascal and basic database operations, projects.								
Course Objectives	The main objective of this course is to provide an opportunity to students to construct the concept in the content in a deeper form.								
Learning Outcomes and Competences	Students will be expected to use the programming techniques more effectively								
Textbook and /or References	Computer Programming, I. Flores Introduction to computer programming , D. I. Cutler								

Assessment Criteria		***If any,mark as (X)***	**Percent (%)**
	Midterm Exams	X	10
	Quizzes		
	Homeworks		
	Projects	X	60
	Term Paper		
	Laboratory Work		
	Other		
	Final Exam	X	30

Instructors	Assoc. Prof. Dr. Ahmet Arikan, arikan@gazi.edu.tr, hsandir@gazi.edu.tr, guyer@gazi.edu.tr
Week	**Subject**
1	Unit concept in Pascal
2	Functionalities of some system units
3	File systems in Pascal
4	File systems in Pascal (continue)
5	Basic database operations

6	Basic database operations
7	Midterm Exam
8	Projects
9	Projects
10	Projects
11	Projects
12	Projects
13	Projects
14	General discussions

Course Title-Course Code: MAT 322 ELECTIVE (ELECTIVE TOPICS IN MATHEMATICS)	Name of the Programme: DEPARMENT OF SECONDARY SCIENCE AND MATHEMATİİCS EDUCATION – MATHEMATICS EDUCATION BRANCH

Semester	Teaching Methods							Credits	
	Lecture	Recite	Lab.			Other	Total	Credit	ECTS Credit
2	28	28				44	100	3	4

Language	Turkish
Compulsory / Elective	Elective
Prerequisites	Mat 101, Mat 104, Mat 201-202
Course Contents	Parallel postulates; parallelism in spherical and hiperbolic geometry. 3-Spheres in 4-space; triangles in 4-space. Dissection theory. Square roots, pythagoras theorem, similar triangles.. Geometric solutions of quadratic and cubic equations, Projections of asphere onto aplane. Duality and trigonometry. Isometries and patterns
Course Objectives	Construction of various models of the basic concepts and properties informally in geometry, comparision of Euclidean and non-Euclidean geometries, emphasizing the distinctions of individual and cultural etc .
Learning Outcomes and Competences	Recognizing the different geometries, modelling the ideas.
Textbook and /or References	David W. Henderson; Prentice Hall, Upper Saddle River, NJ 07458

Assessment Criteria		***If any,mark as (X)***	**Percent (%)**
	Midterm Exams	X	%25
	Quizzes		
	Homeworks	X	%5
	Projects	X	%10
	Term Paper		
	Laboratory Work		
	Other		
	Final Exam	X	%60

Instructors	Mustafa Öztürk
Week	**Subject**
1 **2**	Parallel postulates. (1)

3 **4** **5** **6** **7** **8** **9** **10** **11** **12** **13** **14**	Parallelism in spherical and hiperbolic geometry. (2) 3-Spheres in 4-space. (3) Triangles in 4-space. (4) Dissection theory. (5) Square roots. (6) Pythagoras theorem, midterm exam. (7) Similar triangles. (8) Geometric solutions of quadratic equations. (9) Geometric solutions of cubic equations. (10) Projections of asphere onto aplane. /11) Duality and trigonometry. (12) Isometries and patterns. (13) Polyhedra. (14)