	Course name: MATH 115 Analytic Geometry	**Department:** Mathematics	Semester
			1
	Methods of Education		Credit (ECTS)

	Lecture	Recitation/ (Etud)	Lab	Exams	Homework / Quiz	Other	Total	5
	42	0	0	25	0	84	151	

Language	English
Compulsory/Elective	Compulsory
Prerequisites	No

Course Contents	**Weeks**	**Subjects**
	1	Orthogonal coordinate system in plane and space.
	2	Line equation in plane, plane equation in space, relations of line-plane.
	3	Vectors in space, linear dependence and independence of vectors. Inner product, cross product.
	4	Linear equations systems. Line in plane, projection of a point to a line, distance between two lines.
	5	Line in space, projection and distance of a point to a line.
	6	Half-plane. Plane in space, projection and distance of a point on a plane.
	7	Half-space, angle between two planes.
	8	General definition of conic curves, circle.
	9	Circle tangent, the strength of a point according to a circle, three-point circle equation.
	10	Tangent, ellipse, equation and parametric equation, tangent, direction of ellipse.
	11	Parabola, equation, tangent of parabola.
	12	Hyperbola, equation, tangent, asymptotes, direction of hyperbola.
	13	Curve in space, some special curves.
	14	Standard quadratic surfaces in space.

Course Objectives	The purpose of this course is to • give the standard knowledge of line, plane, vectors, and surfaces. • apply the technical tools to solve the problems related to analytic geometry.
Learning Outcomes and Competences	1) It introduces relations, equations, conics, quadric surfaces related to straight lines in plane and space. 2) The ability of solving problems related to lines, planes, surfaces and recognising them.
Textbook and /or References	**Main texbooks :** 1. Analytical Geometry: With the Properties of Conic Sections, and an Appendix, Constituting a Tract On Descriptive Geometry by John Narrien (2010 – Nabu Press).

		If any, mark as (X)	Percentage (%)
	2. Analytical Geometry: Two and Three Dimensions by D. Chatterjee (2009 – Alpha Science International Limited). 3. Analytical Geometry (Series on University Mathematics) by Izu Vaisman (1997 – World Scientific Publishing Company).		
Assessment Criteria	Midterm Exams	X	40
	Quizzes		
	Homeworks		
	Projects		
	Laboratory work		
	Other		
	Final Exam	X	60