Program	Level	First cycle
	Name of the program	Pure Mathematics

COURSE				
Course title	**Introduction to Differential Geometry**			
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)
PMAT 365	VI	Mandatory course	5	2+2+0
Lecturer				
Course Goals	The goal is to restructure the perspective of the relations between different branches of mathematics as analysis, algebra and geometry. The course also provides a generalised approach to knowledge acquired in previous geometry courses.			
Learning Outcomes	This course offers the ability to discern facts relating to geometric properties of curves and surfaces with their analytic representations.			

COURSE CONTENT

- Curves in R^3.
- Natural parameter of a curve in R^3. Frenet formulas.
- Surfaces in R^3. Tangent plane.
- The first fundamental form of a surface in R^3.
- Isometric surfaces. Surface of revolution.
- Intrinsic geometry of a surface.
- The second fundamental form of a surface. Dupin indicatrix.
- Principal curvatures. Gaussian and mean curvature.
- Minimal surfaces.
- Weingarten derivation formulas.
- Gauss- Petterson Formula
- First Beltrami differential operator
- Geodesics on surfaces in R^3.

LITERATURE

[1] B. O'Neill, Elementary Differential Geometry, 2nd ed., Academic Press, 1997,
[2] J. A. Thorpe, Elementary Topics in Differential Geometry, Springer, 2000.

STUDENT WORKLOAD (hours in a semester)

Lectures	30	Exercises	30	Individual work	65	T o t a l	125

GRADING			REMARKS
Criterion	Maximum points	Minimum points	
Midterm exams	60	30	
Final exam	40	25	
T o t a l	100	55	