MATH 345 – DIFFERENTIAL GEOMETRY I

Semester:	Fall 2007		
Instructor:	Alex Degtyarev		
Office:	Room SA-130	**E-mail:**	degt@fen.bilkent.edu.tr
Phone:	x 2135		
Assistant:	TBA	**Office:**	

Exams & Grading: 2 Midterms

- **1st Midterm** (%25) — $\sim 5^{\text{th}}$ week
- **2nd Midterm** (%30) — $\sim 10^{\text{th}}$ week

Final exam (%35)

- **Final Exam** — Finals week

Homeworks (%10)

75% attendance is obligatory

Course Schedule:	Tuesday	10:40–12:30 am	Room SAZ 21
	Friday	9:40–10:30 am	Room SAZ 02
Office Hours:	Tuesday	1:40– 2:30 pm	
	Friday	1:40– 2:30 pm	

Textbook: Manfredo P. do Carmo, *Differential Geometry of Curves and Surfaces*, (Prentice-Hall, New Jersey, 1976)

Supplementary: Luther Pfahler Eisenhart, *A Treatise on the Differential Geometry of Curves and Surfaces*, (Dover publications, New York, 1960)

Week	Subject
#1	(§ 1.2, 1.3) Curves, Regular Curves and Arch Length
#2	(§ 1.4, 1.5) Curves Parametrized by Arc Length
#3	(§ 1.6, 1.7) Global Properties
#4	(§ 2.2, 2.3) Regular Surfaces, Change of Parameters
#5	(§ 2.4, 2.5) Tangent Plane, First Fundamental Form
#6	(§ 1.6, 2.7, 2.8) Orientation, Definition of Area
#7	Review and Problems. **Midterm I**
#8	(§ 3.2) The Gauss Map
#9	(§ 3.3) The Gauss Map in Local Coordinates
#10	(§ 3.4) Vector Fields
#11	(§ 3.5) Ruled and Minimal Surfaces. **Midterm II**
#12	(§ 4.2, 4.3) Isometries, Conformal Maps, The Gauss Theorem
#13	(§ 4.4) Parallel Transport, Geodesics
#14	(§ 4.5, 4.6) The Gauss-Bonnet Theorem. Exponential Map
#15	*Review & catch-up*