

**King Fahd University of Petroleum and Minerals**

**Department of Mathematics & Statistics**

**Math 451 Syllabus, Term 201**

**Instructor: Dr. Jaecheon Joo**

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**The Course Code and Name:** Math 451, Differential Geometry

**The Course Credit Hours:** 3-0-3

**The Course Objective:** The objective of the course is to introduce students to the concepts of curvatures of curves and surfaces and their applications.

**The Course Content:** Curvature and torsion of curves, Frenet-Serret equation, Normal curvatures of surfaces, First and Second Fundamental forms, Gauss curvature, Gauss Theorema Egregium, Isometry, Gauss-Bonnet Theorem.

**The Course Prerequisite:** Calculus III, Linear Algebra

**The Course Grading Policy:** HW's (15%), Projects (15%), 3 Online Tests (15% each), Final Exam (25%)

**Dates of Exams:** Announced on the Blackboard.

**Textbooks**

1. R. Milman and G. Parker, "Elements of Differential Geometry"
2. M. do Carmo, "Differential geometry of curves and surfaces" 2<sup>nd</sup> ed.
3. J. Oprea, "Differential geometry and its applications" 2<sup>nd</sup> ed.