MATH 4030: Differential Geometry

(1) **TEXT BOOK**: *Carmo, Manfredo Perdigão do*, *Differential geometry of curves and surfaces*;

(2) **REFERENCES**:
Oprea, John: *Differential geometry and its applications*;
Klingenberg, Wilhelm, *A course in Differential Geometry*;
Spivak, Michael, *A comprehensive introduction to Differential Geometry, Vol. 2*

(3) **SYLLABUS**: Regular curves in $\mathbb{R}^2$ and $\mathbb{R}^3$, Frenet formulas, fundamental theorem of the local theory of curves, global theorems on plane curves, regular surface in $\mathbb{R}^3$, change of local parameters, tangent plane and differential of maps, first fundamental form, Gauss map, second fundamental form, Gaussian curvature, ruled surfaces, mean curvature, minimal surfaces, Gauss theorema egregium, Gauss equations and Codazzi equations, Gauss-Bonnet theorem.

(4) **ASSESSMENT SCHEME**:
Homework 10%; Midterm 30%, Final Exam 60%.

(5) **Instructor**:
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