

MATH 463: Differential Geometry (2nd academic semester 1433/1434 H)

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Important note: kindly update your contact info (Mobile no., email, etc in ODUS PLUS)

Classrooms:

Building: 007 Room: 077C Time: SMW 10am – 10:50am
T 1pm – 1:50pm (Tutorial)

Office Hours: SMW 11am - 1pm

Recommended Books:

- M. P. do Carmo. *Differential geometry of curves and surfaces*. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1976.
- B. O'Neill. *Elementary Differential Geometry*. Academic, New York, 1966.
- J. J. Stoker. *Differential Geometry*. Wiley & Sons, 1989.

If you cannot get hold of those books, any book of Differential Geometry covers the syllabus below shall be useful.

Background:

This course is about the analysis of curves and surfaces in 2- and 3-space using the tools of calculus and linear algebra. Students need a good background in calculus and linear algebra (MATH 312 and its prerequisites).

Syllabus:

Topics covered include

- local and global properties of curves: Plane curves, evaluate and involute, 4-vertex theorem, space curves, curvature, torsion, Frenet-Serret equations, Fundamental theorem, etc.
- local and global theory of surfaces: local parameters, curves on surfaces, geodesic and normal curvature, first and second fundamental form, Gaussian and mean curvature, minimal surfaces, etc.

Homeworks:

Homeworks will be assigned in class.

Examinations:

First Periodic Exam: Mon 29/4/1434 H (in class)

Second Periodic Exam: Mon 19/6/1434 H (in class)

Final Exam: To be announced

Exams' dates are fixed. Kindly be certain that these dates are in your calendar.

The exams may include the following:

- explicit, computational questions
- ask to state theorems/definitions
- questions that require insight
- proofs or examples from the lectures or homeworks

Grading Policy:

Attendance 10%

Quizzes 10%

First Periodic Exam 20%

Second Periodic Exam 20%

Final Exam 40%

Wish you a successful semester!