Math 457/557 Differential Geometry

Instructor: Dr. G. Lugo

Office Hours: Office hours will be by appointment in a virtual environment or by email.
lugo@uncw.edu

Textbooks: Differential Geometry in Physics, by G. Lugo (UNCW)
Differential Geometry – Schaum's Outline, by M. Lipschutz
Recommended: Classical Differential Geometry, by D. J. Struik (Dover)

Syllabus: Chapter 1   Vector and Curves
Chapter 2   Differential Forms
Chapter 3   Connections
Chapter 4   Theory of Surfaces

Grading: The grade will be based on the cumulative distribution of your scores on the following:
Homework   100 points
Exam 1   100 points
Exam 2   100 points
Final   Part I Take-Home 100 points
                  Part II. In-Class   100 points   Comprehensive
Problems marked with an asterisk (*) are for graduate students only.
Fine tuning of the grade will take into account other factors such as attendance, improvement, grade distribution, consistency and class participation. Efforts will be made to device exams which will result on a ten point grading scale.

Make-ups: There will be no make-ups, no early exams. No exceptions.

Honor Code: Complete academic honesty is expected from all students. Please read section V of the Undergraduate Academic Honor code.

Disabilities: If you feel that you should qualify for disability testing or accommodations during this course, contact the Office if Disability Services in Westside Hall or call ext. 3746.

Attendance: Do not miss any classes, but most important, do not miss any exams! -

Goals: 1) To show that the Fundamental Theorem of Calculus, Green's Theorem, Stoke's Theorem
    and Gauss's Theorem are all special cases of the Generalized Stoke's Theorem
2) To show how differential forms can be used to elegantly express various physical laws
3) To gain full comprehension of the Laplacian which appears in Schrödinger's Equation
    and potential Theory
4) To learn about Gaussian Curvature and lay the mathematical foundation for the theory of
    General Relativity.

Covid Policy: Classes are face to face while possible. Following CDC Guidelines, UNC System directives, and out of mutual respect as outlined in the UNCW Seahawk Respect Compact, all faculty, staff, and students will wear face coverings while inside buildings. Students who are unprepared or unwilling to wear protective face coverings will not be permitted to participate in face to face sessions and will need to leave the building. Noncompliant students will be referred to the Dean of Students for an Honor Code Violation. Any student who has a medical concern with wearing a face covering should contact the Disability Resource Center at (910) 962 7555.