

Math 457/557 Differential Geometry

- Instructor:** Dr. G. Lugo
- Office Hours:** Br 224. MWF 11:00-12:00 or by app.
- 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 1 100 points
Final 150 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 of 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.