

Southern Illinois University at Carbondale
DEPARTMENT OF MATHEMATICS
COURSE ANNOUNCEMENT

Fall 2012
Credit: 3 hrs
2:00-2:50 MWF
EGRA 408

My office:
Neckers 377

[www.math.siu.edu/
/kocik/classes/m435.htm](http://www.math.siu.edu/kocik/classes/m435.htm)

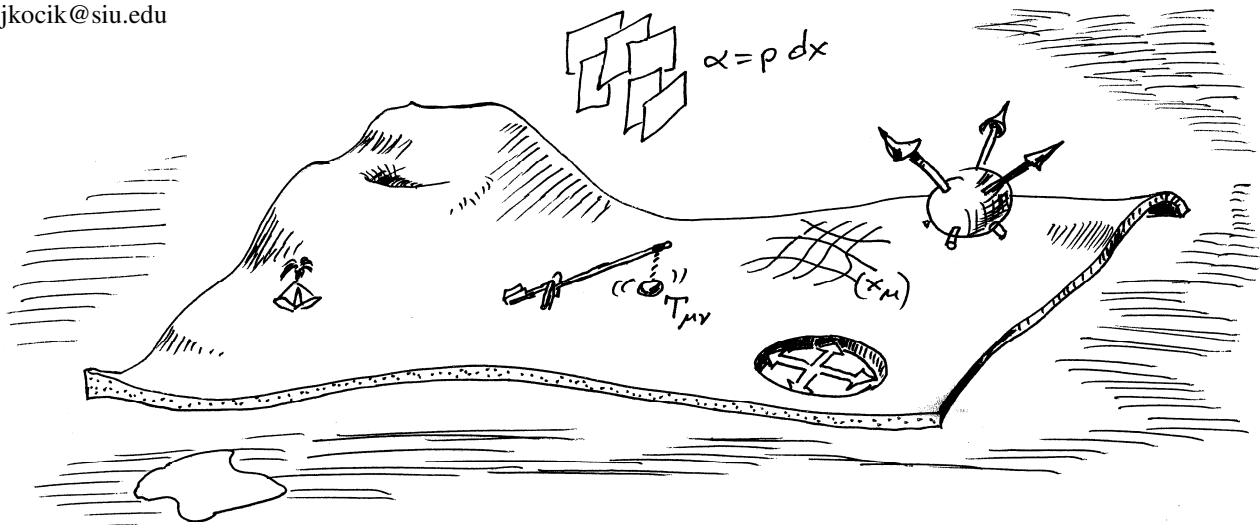
email: jkocik@siu.edu

Math 435

Introduction to differential geometry

Jerzy Kocik

Develop your geometric imagination and mathematical intuition by learning a new language — that of the modern differential geometry.



Content: Methods of **modern** differential geometry will be used to understand a number of ideas. Two parts:

1. Friendly introduction to the basic concepts and language of the **modern differential geometry**: vector fields, exterior forms, Lie derivative, geometric structures, curvature, etc.
2. Applications to things that you may know but with a twist of possibly unexpected interpretation. Art of recognizing the geometric content of different areas of math and physics.

Features: Intuitive approach
Interesting and colorful examples
Applications (for everybody something).
Modern language

Requirements: **just** basics of linear algebra and basic calculus. All necessary preliminary concepts will be reviewed.

Audience: majors in mathematics, physics and engineering. Also anybody interested in such questions as what is the shape of the universe, what is “dx”, really, or what lives in the dual space?...

Text: To be selected. Lots of handouts.

Email me if you have questions: jkocik@siu.edu

