Instructor: Blaine Lawson.

I will give an introduction to the viscosity approach to first and second order nonlinear PDE’s pioneered by Lions, Iishi, Crandall, Evans, Jensen and others. The theory is quite effective for establishing existence and uniqueness of solutions for degenerate elliptic equations. New techniques will be introduced for applying the theory to universal equations in real and complex geometry. Results on the removability of singularities will be also proved. Areas of particular interest will include:

- The Dirichlet Problem for degenerate elliptic, second-order equations on domains in riemannian manifolds. This will include all branches of the homogeneous Monge Ampere equations in the real, complex and quaternionic cases.
- The theory of subharmonic functions in calibrated geometry, and its associated harmonic theory.
- Mean curvature flow by the level set method.

**Prerequisites** are basic real analysis and elementary differential geometry.

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**DSS advisory.** If you have a physical, psychiatric, medical, or learning disability that may affect your ability to carry out the assigned course work, please contact the office of Disabled Student Services (DSS), Humanities Building, room 133, telephone 632-6748/TDD. DSS will review your concerns and determine what accommodations may be necessary and appropriate. All information regarding any disability will be treated as strictly confidential.

Students who might require special evacuation procedures in the event of an emergency are urged to discuss their needs with both the instructor and DSS.