CS6670 Introduction to Computer Aided Geometric Design

From **Catalog Course Description**:
Introduction to current concepts and issues in CAGD systems with emphasis on free-form surface design; mathematics of free-form curve and surface representations, including Coons patches, Bezier method, B-splines, triangular interpolants, and their geometric consequences; classical surface geometry; local and global design tradeoffs and explicit and parametric tradeoffs; subdivision and refinement as techniques in modeling; current production capabilities compared to advanced research. Laboratory experiments with current CAD systems.

Goal:
To learn principles, current practices, and outstanding research issues in the area of Computer Aided Geometric Design and Computer Aided Manufacturing. The ideas also touch on Computer Aided Engineering. This involves reviewing and using mathematics as well as learning new forms of representations and computational methods. Discussions in class introduce application area problems and current solution methodologies. Grading is based on assignments that evaluate written and programming homeworks.

Learning Outcomes:
The students should come away from this class with
- A knowledge of contemporary issues
- An ability to apply knowledge of relevant mathematics to solve domain design engineering problems
- An ability to program the concept algorithms in order to apply to design problems.
- Sufficient knowledge of the representations and problem solution methodologies to apply them to research problems in other areas.