Introduction
The goals and aspirations of teaching a digital design process vary widely between different design programs and educational institutions, as well as between academia and the profession. However, at the core of three dimensional design is:

1.) the ability to visualize and understand, manipulate and represent form and space

2.) a general understanding of the different tools (software and hardware) and techniques available to use to work up and present your design

Frequently, even designers who have come to rely on the computer, use it in a very technical way. Construction documents are created with 2D drafting software, presentations are assembled in PowerPoint and image simulations are created in Photoshop. While these are all useful and effective ways of using the computer, using an explicitly digital design process has the potential to substantially improve the quality of design ideas and solutions. Computer visualizations can strengthen design thinking and radically alter the designer’s fundamental processes. We believe that this shift will result in a substantial improvement over a traditional approach to design.

In addition, understanding the location of the design, and having the ability to quickly gain access to data and in turn bring it in to 3D modeling software to perform site analysis, can expedite the design process. It can also simplify corrections down the road.

There is continuing pressure on design programs to teach the more technical skills such as AutoCAD. Clients and competitive demands for efficiency and presentation graphics have pressured many design firms to create a skill base more dependent upon young designers than at any time in history. This is primarily because older designers are reluctant to learn new computer skills.

However, to focus the debate about the computer's role on skills versus ideas ignores the fact that computers have the potential to change the process of three dimensional design. Computer-aided design provides designers with a highly effective simulated 3D design environment. This is a significant shift from the two-dimensional process designers have practiced for centuries. The 3D nature of these tools invites the designer to think and act in the third dimension to a greater degree than previously imagined.

The Course
This course is intended to help students make more effective use of digital design tools as they explore and develop design ideas. It provides an opportunity to learn the process of digital design as an endeavor independent of the design studio and still closely linked to it.
The use of ongoing studio projects will be integrated into the coursework wherever possible. "Interactive Digital Design" has six basic educational goals:

1) To teach students to design using 3D modeling software as an alternative to the traditional plan and elevation process; to understand the value of a digital-based analysis and evaluation.

2) To encourage students to think and design three dimensionally, using a variety of forms, materials and transformations.

3) To encourage students to use digital design for their design studio projects.

4) To teach students a comprehensive digital design process, beginning with site analysis and initial studies of form and space and ending with high-resolution presentation drawings.

5) To expose students to graphic techniques that will assist them in the development of presentation graphics throughout the design and visualization process.

6) To explore further the potential of different software applications, used as tools used to communicate conceptual and final design ideas.

The first two thirds of the class will introduce both some tools and processes that are important for effective digital design and design communication. Students will learn to design exclusively using the computer through a variety of methods. Design decisions are made on screen, using the 3D and 2D graphic software of their choice. In-class instruction will focus on the use of SketchUp, ArcGIS and PhotoShop as design tools however students can elect to work with other digital design tools through a proposal submission to be discussed in class. Other software possibilities include FormZ, Maya, 3d Studio Max. The last third of the course will apply 3D digital design principles learned earlier in the semester to a design project.

Course Projects
The first part of the semester will introduce students to a variety of different design tools including Poser, Photoshop and Sketchup. We will explore the different modeling tools available to students and how to use the modeling process for visual thinking, using primitives to make real world forms. Finally, students will learn how to add detail to models with surface textures, how to compose views for effective communication and rendering techniques.

The second segment of this course will introduce ArcGIS as a tool for site analysis and as a tool to gain valuable base data in order to begin a 3-D model. Students will learn how to find and work with GIS data and in turn how to quickly export this data into Sketch-up.

The last portion of the semester will focus on a single, comprehensive digital design project that will integrate 2D and 3D techniques. This project will use a digital design process to develop a design project from analysis, to concept through design development and detail design. The entire process will be documented and presented in a multimedia format at the end of the semester.

Due Dates:
All projects shall be submitted on the stated due date—late projects will not be accepted for evaluation. Exceptions may be granted based on extenuating circumstances, arranged in advance with the instructor(s).

**Academic Integrity:**
It is expected that each student will do his/her own creative work on each assigned project or exercise, unless assigned as a team project—where each student is expected to contribute to the collaborative effort of the team. Any form of cheating, plagiarism, or other act of academic dishonesty will be dealt with according to Penn State Policies.

**Evaluation:**
Project grades will be determined by the successful completion of the stated course objectives and criteria developed for each project. Additional factors will be considered such as a student's:

- motivation, enthusiasm and project organization
- participation in studio discussions and critiques
- creativity in thought process
- creativity in project development and refinement
- presentation and communication of individual's work

An individual's final grade for the course will be determined by assigning a value to each project. This value will be listed on each project sheet handed out in class.

20% of every exercise or project grade will be based on process and participation.

**Syllabus Changes:**
The Instructor reserves the right to make changes in the syllabus and calendar throughout the course as necessary.

**Attendance**
Attendance is mandatory for this class. If extenuating circumstances prevent class attendance, please contact the instructor as soon as possible. If the student is unable to attend class then it is the student’s responsibility to notify the instructor in advance and to arrange making up work missed in class.