1077-I1-300   **Paul R Bouthellier*** (`pbouthe@pitt.edu`), 504 East Main Street, Titusville, PA 16354.
Teaching 3D Mathematical Modeling.

Creating mathematical models of 3-dimensional objects has many applications. One application is in manufacturing. An example of this is the creation of car parts-for which Bezier curves were created. In this presentation the computer packages Poser, 3D Studio Max, Maya, Swift 3D, and Carrara will be used to illustrate the mathematical models created for a chess game and a (space) flight simulator. The purpose is to teach students how to break a complex modeling problem into a series of simpler ones-which are much easier to model. From the chess game the following will be modeled: the 6 pieces, the board, and a chess clock. To model and animate these objects we will use: Bezier curves, rotation matrices, Boolean additions and subtractions, trigonometry, texture mappings, geometric deformations, and inverse kinematics. For the flight simulator we will model: several space ships, planets, and a galaxy. These will be modeled and animated using: Bezier curves, Boolean additions and subtractions, texture mappings, spherical coordinates, parametric equations, rotation matrices, quaternions, and local and global coordinate systems. (Received August 19, 2011)