

## Teaching a Course on Polyhedra

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Developing a three-dimensional intuition is important in many disciplines. Chemists, architects, computer engineers, physicists, and mathematicians, to name a few, rely on three-dimensional geometry.

However, many students choosing such majors in college are ill-prepared in this regard. In many cases, their exposure to three-dimensional geometry has been minimal. When they have had modules in geometry, often the teacher was just one step ahead of the student.

In order to address the needs of such students, a course was developed five years ago at Quincy University. This course, *Higher Geometry*, was designed to give students a solid introduction to the geometry of polyhedra. To create a course with the broadest appeal, the only prerequisite for the course is a working knowledge of plane trigonometry. With this background, basic concepts in spherical trigonometry are introduced. Dihedral angles of polyhedra are calculated, as are data for constructing geodesic models.

Essential to the success of the course is having students build three-dimensional models. With each topic, one lecture presentation is supplemented with one hands-on laboratory class. Students benefit greatly from such a course design.

Here, an outline of the course and teaching methodologies will be presented. Sample problems and construction projects will be described. Suggestions for instructors interested in developing such a course will be provided.