Course Description: A computer-aided modeling course. Development of three-dimensional drawings and models from engineering sketches and orthographic drawings and utilization of three-dimensional models in design work.

Text, References, and Supplies: Parametric Modeling with Autodesk Inventor 2017
Randy Shih
Software: Autodesk Inventor

This class will utilize the required text throughout the entire semester; therefore, having a book is essential.

Course Goals/Objectives: The following list of course goals will be addressed in the course. The goals are directly related to the performance objectives. Upon successful completion of the course the student will:

1. Understand the basics of 3D modeling
2. Use sketch geometry
3. Use geometric constraints.
4. Use dimensioning in the sketch environment
5. Create base features from sketches.
6. Use the browser bar (model tree) to modifying existing model features.
7. Understand “design intent” and its application to solid modeling.
8. Create parts with multiple sketches and features.
9. Use placed features to modify a 3D model.
10. Understand the practical uses of parametric constraints (dimensions)
11. Create features from projected geometry.
12. Understand the importance of parent/child relationships in features.
13. Turn features on and off with the suppress features option.
14. Create multiview 2D drawings from 3D models
15. Use iProperties to fill out title block.
16. Create isometric views and other pictorial views from 3D model.
17. Create multi-sheet drawings.
18. Utilize work features for feature/model creation.
19. Create 2D drawings of auxiliary view from 3D model.
20. Use symmetrical features, including: revolved, mirrored, and patterns.
21. Use advanced 3D construction tools including, sweep, loft, and shell.
22. Create sheet metal parts.
23. Create assemblies using multiple parts and assembly constraints.
25. Use the Content Center to place standard components.
26. Reuse 2D AutoCAD files to create 3D models
27. Create contact sets for use with the contact solver.
28. Perform basic stress analysis.
Student Contributions and Class Policies:

1. Students are expected to exhibit professional behavior during scheduled class times.
2. Regular and punctual attendance is expected of all students in all classes for which they have registered.
3. All absences are considered to be unauthorized unless the student is absent due to sickness or emergencies.
4. The instructor is responsible for judging the validity of any reasons given for absence.
5. Students will not be allowed to make up an examination missed due to an absence unless they have reasons acceptable to the instructor.
6. Students may be dropped from a class by the registrar, on or before the twelfth day of class, upon recommendation of the instructor who feels the student has been unjustifiably absent or tardy a sufficient number of times to preclude meeting the course objective.
7. After the twelfth day of class, it is the student's responsibility to initiate the drop in the Office of Student Services. Failure to do so may result in the students receiving a grade of “F.”
8. Students are responsible for maintaining, organizing, and backing up copies of all digital files. Failure to maintain an up-to-date backup may result in data loss.

Evaluation of Students:

- Regular daily work: 40%
- Periodic tests: 10%
- Attendance & Participation: 15%
- Final Project: 20%
- Final Exam: 15%

Grade Scale:

- 90 and above: A
- 80-89: B
- 70-79: C
- 60-69: D
- 0-59: F

Course Schedule:

This class meets two or four times a week, for a total of two (2) lecture hours and four (4) lab hours.

Due dates for course assignments will be announced throughout the semester. This will be subject to the progression of the class, therefore attendance is very important.
INFORMATION:
Students will acquire and evaluate information from existing sources and determine its relevance and accuracy as needed to build a systematic information base. Students will employ computers to acquire, organize, analyze, and communicate information.

TECHNOLOGY:
Applies technology to task, understands overall intent and proper procedures for setup and operation of equipment and computer hardware and software.

READING:
Students will locate, understand, and analyze data in documents including manuals, graphs, and schedules to perform tasks. The students will learn from a text to determine the main idea or essential message, the relevant facts and specifications, the meaning of unknown or technical vocabulary, and the appropriateness of theories of other writers.

MATHEMATICS:
Approaches practical problems by choosing appropriately from a variety of math techniques. Students will use basic math calculations throughout the course work.

LISTENING/SPEAKING:
Students will receive, attend to, interpret, and respond to verbal messages and other cues such as body language in ways that are appropriate to the purpose; for example, to comprehend; to learn; to critically evaluate; to appreciate; or to support the speaker.

PERSONAL QUALITIES:
The students will display responsibility, self-esteem, sociability, self-management, integrity and honest toward goal attainment and perseverance.

Students with Disabilities:
Any student who, because of a disabling condition, may require some special arrangements in order to meet course requirements should contact Shep Grinnan as soon as possible. Mr. Grinnan’s office is located in the Scharbauer Student Center Building. These conditions may include documented physical or educational disabilities. Please be aware that services or accommodations are not automatic. Each student must request them and secure the proper authorizations/documentation.
Midland College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following individuals have been designated to handle inquiries regarding the non-discrimination policies: **Tana Baker, Title IX Coordinator/Compliance Officer, 3600 N. Garfield, SSC 242, Midland, TX 79705, (432) 685-4781, tbaker@midland.edu; Natasha Morgan, Director Human Resources/Payroll, 3600 N. Garfield, PAD 104, Midland, TX 79705, (432) 685-4534, nmorgan@midland.edu.** For further information on notice of non-discrimination, visit [http://wdcrobc01.ed.gov/CFAPPS/OCR/contactus.cfm](http://wdcrobc01.ed.gov/CFAPPS/OCR/contactus.cfm) or call 1 (800) 421-3481.

**Spanish**

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