Introduction to Parametric CAD: UG/NX
Outline of Instruction

Course Information

Project Type	CAD
Organization	Monroe County Community College, Applied Science and Engineering Technology
Developers	Jamal Al-Aref
Development Date	12/12/2012
Course Number	METC 172
Instructional Area	Mechanical Engineering Technology
Division	Industrial
Potential Hours of Instruction	90
Total Credits	4

Description

In this course, the students learn concepts in the use of profiles and parametric features as building blocks for 3D solid models, using the UG/NX part and assembly modeling software. Advanced topics of NURBS surfacing and assemblies, as well as the creation of 2D drawings will be discussed. An analysis of models using Finite Elements Analysis (FEA) tools will be attempted time permitting.

Major Units

- A comparison of 2D techniques to the varied 3D techniques of wireframe, surface, solid and parametric solids.
- Creating work planes to most efficiently construct part geometry.
- How constraints define a parametric model.
- Using Non-Uniform Rational B-Splines (NURBS) to represent a 3D contour.
- Building an assembly from component models, and using constraints to hold them together.
- Creating an exploded assembly with a bill of materials.
- Dropping off 2D details of a model to produce proper paper prints.
- There will be a short time spent looking at the advanced features of the software, such as Finite Element Analysis (FEA)
- Kinematic simulations showing how they can improve the mechanical part design process

Target Population

CAD Certification is designed for two year career and technical education programs or for those with experience.

Types of Instruction

Instruction Type	Contact Hours	Credits
Classroom Presentation	90	4

Textbooks

TBD.

Learner Supplies

Scientific Calculator.

3-Ring Binder.

Prerequisites

MDTC 121 or MDTC 160

Course Outcomes

1. Create, modify, and constrain properly 2D sketches.
2. Create and edit solid model parts
3. Using advanced tools for solid modeling.
4. Modifying solid parts.
5. Create complex assemblies
6. Create and modify engineering drawing.
7. Produce printable orthographic detail drawings
8. Learning real life design methods.
9. Gaining knowledge of best practice for building mechanical part models.
10. Working on projects to gain in depth the structure of assembly.