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

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Presentation</td>
<td>90</td>
<td>4</td>
</tr>
</tbody>
</table>

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.
10. Working on projects to gain in depth the structure of assembly.