Hagerstown Community College Master Syllabus
CAD 228– Solid Modeling/ Mechanical

Course Information
CAD 228– Solid Modeling/ Mechanical
3 Credits
Fall 2018
August 26, 2019 through December 13, 2019
Thursdays from 5:30 P.M. to 9 P.M.

Instructor Information

Course Description
CAD 228 is a hands-on competency based course. It builds on skills and knowledge gained in previous CAD classes. Students receive instruction in use of parametric, solid modeling software (AUTODESK Inventor™) to construct, assemble and animate 3 dimensional models.

Textbook and Course Materials
- This book is also offered as an E-Book.
- Introduction to CAD/ CAE, Carnegie-Mellon 2012. (Open Source:free)

Software:
Autodesk Inventor 2019
Below is the link for a free student version of inventor. http://www.autodesk.com/education/free-software/all

Student Learning Outcomes
This course is a hands-on competency based course. Students use assembly-centric, parametric and solid modeling software to build parts, create assemblies and presentations. Students create three-dimensional models to generate 2D drawings. Upon completion of this class the student will be able to:
- Create solid models using parametric based software.
- Create assemblies using created parts and the content center.
- Create working drawings, exploded drawings and parts lists of assemblies
- Create animations of solid model assemblies.
- Use the software to analyze material properties and perform stress analysis.
- Work in teams to design mechanical systems that can be used to fabricate a prototype of their choice.

General Education Outcomes:
Students will be able to use graphical views to create 3D mechanical parts.

Course Content Objectives
The emphasis of this class is to introduce the student to solid modeling software. The software can be utilized to create parts, assemblies, working drawings, presentations and perform material analysis in a real world environment. The course content objective is as follows:
- Sketching, Constraining and Dimensioning
- Creating and Editing Sketched Features
- Projecting Geometry
• Creating Places features via holes, shelling, working axes, etc.
• Add dimensioning to a drawing view
• 3D Annotation
• Assembly operations
• Advanced Modeling Techniques
• An Introduction to Sheet Metal Design
• An Introduction to Stress Analysis

**Definition of Credit Hour: Classroom Courses**

To earn one academic credit at HCC, students are required to complete a minimum of 37.5 clock hours (45 fifty-minute “academic” hours) of coursework per semester. Those hours of coursework may be completed through a combination of hours within the classroom and hours outside the classroom. Certain courses may require more than the 37.5 minimum hours of coursework per credit. For most classes, students should expect to do at least 2 hours of coursework outside of class for each hour of in-class coursework.

**Minimum clock hours required for this course**

<table>
<thead>
<tr>
<th>Activity</th>
<th>DIRECT Faculty Instruction</th>
<th>Student Work Out of Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-class “lecture”</td>
<td>37.5 hours required</td>
<td>100 hours required</td>
</tr>
<tr>
<td>Reading chapters</td>
<td></td>
<td>20 h</td>
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<tr>
<td>Quiz/activity for each chapter</td>
<td>Included in lecture time</td>
<td>20 h</td>
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<tr>
<td>Research project</td>
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<td>40 h</td>
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<tr>
<td>3 lecture exams</td>
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<td>20 h exam prep</td>
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<tr>
<td><strong>Total Hours</strong></td>
<td>37.5 hours</td>
<td>100 hours</td>
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**Services for students with disabilities:**

Students may receive reasonable accommodations if they have a diagnosed disability and present appropriate documentation. Students seeking accommodations are required to contact the Disability Support Services (DSS) office as early as possible. Students may contact a DSS staff member for an appointment at dss@hagerstowncc.edu or at 240-500-2530.