

# Huron Area Technical Center

1160 South Van Dyke

Bad Axe, MI. 48413

Phone: (989) 269-9284

**Course Name:** Mechanical/Architectural Engineering and Design

**Instructor:** Mr. Ruth

## Course Description:

In this course you will learn to use two different programs that have been created by Autodesk. The programs that we will be using are Autodesk Mechanical and Autodesk Inventor. With these programs you will learn to create 2Dimensional drawings, 3Dimensional models, and assemblies. Once you learn to use the software programs you will be designing a VEX Robot and working on the Mini Innovative Vehicle Design Project. If you are interested in Architectural Design you will learn to design a house using Chief Architect, AutoCAD, and Autodesk Revit.

## Classroom Fees

SkillsUSA Competition and Membership (\$15.00)

## Content Delivery

### Semester One

- Students will cover Autodesk Inventor (Mechanical Drafting CIP 15.1306)
  - o Segments 1,2,3,6,7 & 10
- Students will cover Chief Architect and AutoCAD (Drafting and Design Technology CIP 15.1301)
  - o Segments 1,2,3,5,7 & 8

### Semester Two

- Students will cover AutoCAD (Mechanical Drafting CIP 15.1306)
  - o Segments 4,5,8,9,11 & 12
- Students will cover Autodesk Revit (Drafting and Design Technology CIP 15.1301)
  - o Segments 4,6,9,10,11 & 12

## Lecture/Lab

Lab – 80%

Lecture – 20%

## Course Objectives:

- Learn to use Autodesk Inventor
- Learn the Basics of AutoCAD
- VEX Robotics Design

- Mini Innovative Vehicle Design
- Autonomous Innovative Vehicle Design
- Architectural Design using Chief Architect
- Architectural Design using AutoCAD
- Architectural Design using Autodesk Revit
- Mathematical concepts used in Mechanical/Architectural Design
- Use and Handling of Drone

### **Student Competencies:**

- Use and understanding of Autodesk Inventor
- Use and understanding of Autodesk Mechanical
- Understanding technical terms used in Mechanical Engineering
- Use and understanding of Chief Architect
- Use and understanding of AutoCAD
- Use and understanding of Autodesk Inventor
- Understanding technical terms used in Architectural Engineering
- Ability to use mathematical concepts used in Engineering
- Use and Handling of Drone

### **Required Text:**

Group, Chief Architect. *Chief Architect X4*. Coeur d'Alene, 31 August 2011.

Larkin, Dr. John C. *Practical Problems in Mathematics for DRAFTING AND CAD*. Clifton Park : DELMAR CENGAGE Learning, 2005.

Shih, Randy H. *AutoCAD 2013 Tutorial - First Level: 2D Fundamentals*. Mission: Stephen Schroff, 2012.

—. *Learning Autodesk Inventor 2013*. Mission: Stephen Schroff, 2012.

Stine, Daniel John. *Residential Design Using AutoCAD 2013*. Mission: Stephen Schroff, 2012.

—. *Residential Design Using Autodesk Revit Architecture 2013*. Mission: Stephen Schroff, 2012.

### **Required Software**

Autodesk Design Academy

### **References & Other Resources:**

students.autodesk.com

<http://www.vexrobotics.com>

### **Course Advisory Committee:**

Dan Rothe  
Scott Jump  
Jeff Skinner

David Jimpkoski  
Sandi Smith  
Tyler Geiger

Nathan Cobb  
Rob Stiverson

Clark Brock  
Scott Ranquist

## **Final Exam:**

The FINAL EXAM will only be application using Autodesk Inventor and AutoCAD.

## **Class Policies:**

- **Missed Classes:** You are responsible for obtaining any material that you missed during your absence whether it is from another student or the instructor.
- **Assignments:** All assignments are due at the beginning of the class on the due date. Late submission of assignments will be assessed a penalty of 10% per day. NO EXCEPTIONS.
- **Academic Dishonesty:** There is to be no cheating on any assignment for this is a serious offense and will be dealt with by receiving a zero for that assignment. The assignment will still be completed in order to receive participation for the class period.
- **Need for Assistance:** If you have any condition, such as a physical learning disability, which will make it difficult for you to carry out the work as I have outlined it, or which will require academic accommodations, please notify me as soon as possible.
- **All school rules and policies will be followed as well as the ones on the following page.**

## **Evaluation & Grading:**

40% - Work ethic standard  
60% - Academic standard

## **Career Clusters:**

- Science, Technology, Engineering & Mathematics

Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.

- Architecture & Construction

Careers in designing, planning, managing, building and maintaining the built environment.