

Technology Education – MDD I & II / Inventor

Mark T. Sheehan High School

Year 2018-2019

Teachers: Mr. Czarnecki

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Software: Inventor

Room: E105/E114

Phone: (203) 949-6591:5929#

Book: Exploring Drafting

Developers: Autodesk

Course Description:

With the explosion of technology as we view it today, an understanding of moving from idea to product is essential. In drafting the student is introduced to traditional concepts as they relate to the four technologies. Within each aspect the student will be guided through instruction, demonstration, hands on activities and problem solving techniques. Mechanical Drafting & Design (MDD) (*Formerly CAD) will be introduced. MDD is the organized use of fundamental drafting tools without the use of a computer, LCD monitor, input device, and CAD software to perform drafting and design tasks. These tasks involved can range from the simple and repetitive to the complex. Since all drafting skills can be reduced to the use of lines, arcs, points, symbols, and text, most CAD systems deal with these primitives and the many ways of grouping, reusing, and manipulating these items. The primitives are used to create more complex drawings through the use of any number of input devices to form the drawing on the screen. Later students will use software to create Mechanical Drawings drawings and assemblies that can be modified, stored, or dumped to a 3D Printer to produce a hard copy.

Course Objectives:

- Understand sketching as a conversational tool to communicate ideas
- Recognize the essential aspects of bringing an idea to a functional design
- Use conventional Board Drafting Equipment
- Recognize the career possibilities available in this area of learning
- Complete activities in Problem Solving
- Develop familiarity with computer hardware and software
- Develop computer awareness, such as:
 - Keyboard skills
 - Familiarity with different input devices
 - Computer storage methods
- Use the creating and editing capabilities of Inventor
- Use the drawing and image storage capabilities of Inventor
- Produce 3D printed copies.



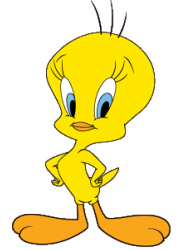
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Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

Students:

- Apply existing knowledge to generate new ideas, products, or processes.
- Create original works as a means of personal or group expression.
- Use models and simulations to explore complex systems and issues.



Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

Students:

- Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
- Communicate information and ideas effectively to multiple audiences using a variety of media and formats.
- Develop cultural understanding and global awareness by engaging with learners of other cultures.
- Contribute to project teams to produce original works or solve problems.
- Plan strategies to guide inquiry.
- Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- Process data and report results.

Research and Information Fluency

- Students apply Mechanical & Digital tools to gather, evaluate, and use information.

Critical Thinking, Problem Solving, and Decision Making

- Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Students:

- Identify and define authentic problems and significant questions for investigation.
- Plan and manage activities to develop a solution or complete a project.
- Collect and analyze data to identify solutions and/or make informed decisions.
- Use multiple processes and diverse perspectives to explore alternative solutions.

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Digital Citizenship

- Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

Students:

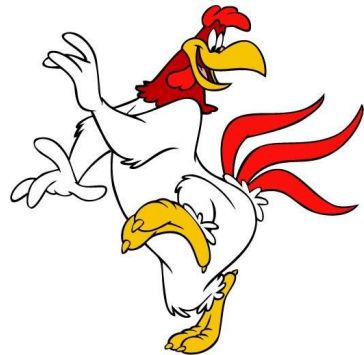
- Advocate and practice safe, legal, and responsible use of information and technology.
- Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.
- Demonstrate personal responsibility for lifelong learning.
- Exhibit leadership for digital citizenship.

Technology Operations and Concepts

- Students demonstrate a sound understanding of technology concepts, systems, and operations.

Students:

- Understand and use technology systems.
- Select and use applications effectively and productively.
- Troubleshoot systems and applications.
- Transfer current knowledge to learning of new technologies



Instructional Methods:

Lectures, demonstrations, laboratory activities, cooperative learning, learning within a module, peer instruction and mentoring, field trips and guest speakers.

Instructional Materials:

Autodesk Inventor, Web Classroom materials, handouts, powerpoint slides, instructional videos.

Class Schedule: Full year, 2 to 3 days per week, 84-minute periods.

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MDDI - (CAD I)

CURRICULUM OUTLINE

This outline may be modified as the course proceeds and does not necessarily reflect the actual order of topics to be discussed. Realizing that students are beginning this class at different levels of understanding, I will try to accommodate that as much as possible.

Introduction

- A. Classroom rules & norms
- B. Review of syllabus
- C. Unit 1: Introduction to Drafting & CAD
- D. Unit 2: Careers in CADD
- E. Unit 3: Sketch Packet
- F. Unit 4: Lettering Packet
- G. Unit 5: Measurement & Assessment
- H. Unit 6: Introduction to 2D Views from 3D Shapes
- I. Unit 7: Hand out Drawing Boards & Tool Bags/Intro Tools
- J. Unit 8: Board Set-up & Drawing Setup
- K. Unit 9: Drawing Packet - Safety Key
- L. Unit 10: Dimension Safety Key
- M. Unit 11: Drawing Packet - Finger Guide
- N. Unit 12: Drawing Packet - Rod Support
- O. Unit 13: Drawing Packet - Terminal Block
- P. Unit 14: Drawing Packet - Tailstock Clamp
- Q. Unit 15: Drawing Packet - Index Feed



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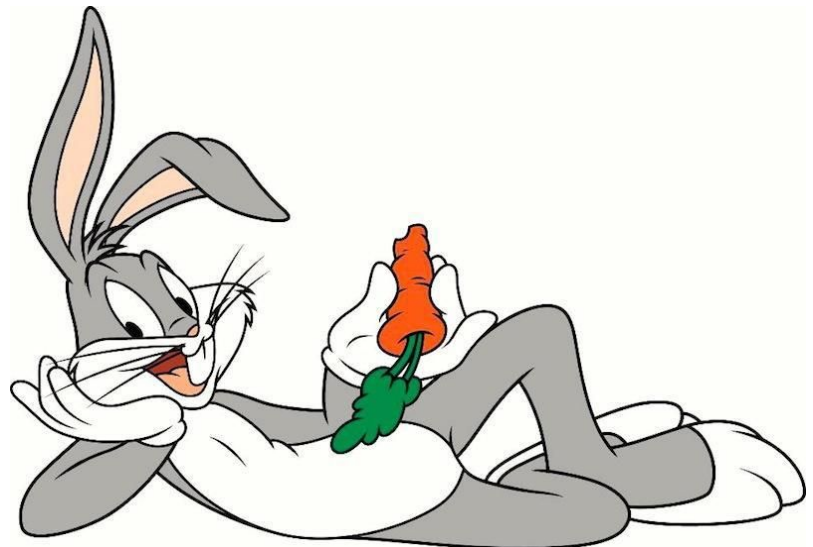
MDDII - (CAD II)

CURRICULUM OUTLINE

This outline may be modified as the course proceeds and does not necessarily reflect the actual order of topics to be discussed. Realizing that students are beginning this class at different levels of understanding, I will try to accommodate that as much as possible.

Introduction

- A. Classroom rules & norms
- B. Review of syllabus
- C. History & structure of the CADD & Inventor
- D. Unit 16: Inventor - Lesson 1: Using the Interface
- E. Unit 17: Cartesian Coordinates
- F. Unit 18: Inventor - Lesson 2: Basic Functionality
- G. Unit 19: Inventor - Lesson 3: _____
- H. Unit 20: Creating a CD Jewel Case & Storage Box pg. 30-31
- I. Unit 21: Creating a CD Jewel Case & Storage Box pg. 30-31 Continued
- J. Unit 22: Inventor - Lesson 4: Assembly Basics
- K. Unit 23: Inventor - Lesson 4: Assembly Basics continued
- L. Unit 24: Exercise: Assembling a Mechanical Claw
- M. Unit 25: Exercise: Assembling a Mechanical Claw continued
- N. Unit 26: Inventor - Lesson 5: Toolbox Basics
- O. Unit 27: Inventor - Lesson 6: Drawing Basics
- P. Unit 28: Inventor - Lesson 7: Drawing Basics continued
- Q. Unit 29: Inventor - Lesson 8: E-Drawing Basics
- R. Unit 30: Inventor - Lesson 8: E-Drawing Basics continued
- S. Unit 31: 3D Safety Key
- T. Unit 32: 3D Finger Guide
- U. Unit 33: 3D Rod Support



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Evaluation: Student evaluation will be based upon attendance, the successful completion of quizzes, a midterm examination, a final examination, student presentations, and lab experiences. The percentage that each of these course components contribute to final grade is listed in the table below.

Course Component:	Percentage of Final Grade:
Quizzes	15%
Unit & Tests	15%
Homework	10%
Projects	50%
Participation	10%

CLASS COMMUNITY NORMS

The following expectations have been compiled by previous 3D Modeling & Animation classes. Students are aware that school wide rules and policies also apply, as do the computer room rules listed below.

STUDENTS' EXPECTATIONS OF OTHER STUDENTS

- Show RESPECT for:
 - Other people when they are talking
 - Other's personal space
 - Other's property
 - Yourself
- HELP others
- COOPERATE
- COMMUNICATE problems, needs, ideas...

STUDENT EXPECTATIONS OF THE TEACHER

- Show RESPECT for students
- COMMUNICATE with students
- Provide INDIVIDUAL HELP to everyone
- Have PATIENCE

TEACHER EXPECTATIONS OF STUDENTS

- Show RESPECT for the teacher, each other, and the equipment
- COMMUNICATE problems, needs, ideas...□
- Have PATIENCE
- REQUEST HELP if you are having trouble (tutoring available)



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- COOPERATE
- Be ON TIME, and ON TASK throughout each class, and don't forget Web design is an ART.

COMPUTER ROOM RULES

- No eating or drinking
- Any internet searching must be assigned and related to classroom assignments or your account will be disabled for 2 days for the first offense, 3 days for the second, and so on (this includes checking personal email).
- Do not download anything from the internet/email or put your own disk into the computers unless virus scan protection is loaded onto your computer and turned on.

Please return this sheet to Mr. Czarnecki by Friday, September 31st.

I have read and understood the requirements and policies of the 3D Design & Animation course.

Student name (PRINT) _____

Student signature _____

Parent name (PRINT) _____

Parent signature _____

