



JONATHAN DANIEL "DAN" BLATT

WALDWICK HIGH SCHOOL/
WALDWICK MIDDLE SCHOOL
RELATED ARTS, TECH ED

Methods of Contact

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General Class Information

Materials

- Pen or pencil - pencil is required for workshop
- Folder (or space in a folder)
- Paper Notebook
- All login information for websites
- Headphones
- Robotics students and 2D and 3D modeling students need a Flash drive
- Materials and Processing students usually prefer to have their own safety glasses
- Recommended - ear plugs for projects using the workshop

Class Procedures

- Assignments are posted in Google Classroom daily
- I provide video tutorials or other videos for many of my lessons
- Related Activity
- Closing/cleanup

Attendance

- Late students are required to bring a pass, & tardiness will be reported based on standard district procedures
- Students are responsible for all work missed due to absence or tardiness

Leaving Class

- Use of bathroom or water fountain is allowed after direct instruction. Students can signal an immediate emergency by turning their fists during instruction (demonstrated on first day), but should be rarely used.
- High school students will use Smartpass system
- Other reasons for leaving class will be allowed on a case by case circumstance
- Excessive leaving of the class will warrant a call home and possible disciplinary actions.

SAFETY

- Above all else, safety is the #1 priority in all classes. Closed toed shoes should be worn when using the workshop, and loose/dangling clothing should be avoided. Failure to appropriately dress for workshop periods may warrant alternative assignments (I'd prefer my students using the tools though).
- All students will complete a signed safety contract before using any tools or machines. Students are not permitted to use any tools until completing a safety quiz with 90% AND demonstrating tool use in front of Mr. Blatt
- ALL safety guides and materials are available via Google Classroom

Dismissal

- Students are not to leave the room until the bell rings. Students in the workshop must stop all work 5 minutes before the end of class to clean. No students will leave until dismissed by the teacher

Class Rules

- CELL PHONES - AT TEACHER'S DISCRETION - students may use phones to submit work. Improper cell phone use may warrant parent contact on a case by case basis.
- Only Water is permitted if placed on the floor in a closed container
- No food or beverage is allowed in the workshop at any time
- No gum is permitted
- Respect the equipment, respect each other
- Raise your hand with questions during instruction
- Have fun... while getting your work done
- Communicate! Keep Mr. Blatt informed of anything that affects your ability to safely operate tools or machines, or engage in class

Grading

- Grades are earned through a total point system as described below
- Assessments- around 20-50 points depending on length of assessment
- Projects - variable (depending on length/size of project) - documentation is critical too for success

Extra Help - Tinkering space/time

- I am available before school and after school. Students are allowed in the building at 7:30am. Please notify me prior to staying after school.
- Lunch time is available for Middle School students
- Lunch time is available for High School students, but only for independent work.

Course Offerings

HIGH SCHOOL:

CAD 1 - Introduction to 2D & 3D Modeling - 24-25

Mechanical drawing is the systematic representation and dimensional specifications of mechanical and architectural structures. The computer age and CAD has played a major role in some of our most outstanding engineering achievements. The purpose of this course is to help students develop a solid background in mechanical drawing and 2 dimensional CAD skills using Autodesk and other softwares. These skills will enable students to pursue either a school to work transition as well as higher education in post-secondary education in engineering, architecture, and technical institutions. This is accomplished by teaching basic principles common to both traditional and computer aided drafting.

Students will also expand their knowledge and skill is using a variety of CADD and drawing programs. Students will interact with a menu enabling them to create and edit drawings at the blink of an eye which used to take hours. Graphic communications are universal and essential in a global market. It is also important that employees can communicate with design teams and must develop the necessary skills in order to visually communicate. Career opportunities in drafting, mechanical drawing, and engineering will be discussed. The importance of science, mathematics and English will be stressed. This course will be an excellent means of stressing the importance of applying science, mathematics and problem solving skills.

CAD 1 is aligned with the Core Curriculum Content Standards and will integrate the Common Core Standards, Technology, and 21st Century Career and Life Skills within projects and activities which will provide the students with skills and understanding to promote wide applicability outside the classroom.

CAD 2

Mechanical Drawing/CAD 2 is an expansion of the skills acquired in Mechanical Drawing/CAD 1. Emphasis is placed on accuracy and neatness. In CAD 1 students should have mastered 2 dimension drawing commands using AutoCAD. Students in CAD 2 will choose between an architectural or engineering concentration.

Engineering students will use Inventor software to design products. By the end of the first marking period, students will have started fundamental 3D modeling tutorials using Inventor engineering software. By the end of the second marking period, students will finish using Inventor tutorials to provide a solid foundation that will later be used to apply the software for product design and fabrication. By the end of the 3rd marking period the students should be able to model an invention, print out a full set of working drawings, render the product, and then use animation illustrating the product. Projects assigned during third marking period may be entered in the state Technology Student Association Competition

Architectural students will complete Revit tutorials during the first and second marking periods. The third marking period will be used to complete projects that may be entered in the State Technology Student Association competition. During the 4th marking period, if students did not learn how to animate models objects, they will finish tutorials that will enable them to render and create movie files of their project work using Inventor or Revit. By the end of the year, students should be able to model, provide a set off drawings and create a walk through animation of their design. Advanced students will learn how to import their projects into 3DS MAX and animate as an alternative. The fourth marking period should be project based applying the software to design solutions to real life problems.

CAD 2 integrates the Common Core Standards, Technology, and 21st Century Career and Life Skills within projects and activities which will provide the students with skills and understanding to promote wide applicability outside the classroom.

CADD 1 - Introduction to 2 and 3D modeling - SYLLABUS - 24-25

Unit 1: Design Process and Design Thought

Unit 2: Introduction to Drawing Concepts - What is 2D and 3d Modeling?

Unit 3: Mechanical and Engineering Drawing

Unit 4: CAD drawing - AutoCad

Unit 5: Drawing Software Packages

Unit 6: Printing Tools

Unit 7: Architectural Research

Unit 8: Architectural Design

Unit 9: CAD rendering and 3D software

Unit 10: Rendering techniques

Unit 11: Design/Build an Object

Robotics and Electronics

Electronics and Robotics is a high school elective which fulfills a Computer Science and/or Related Arts requirement. In this course, students will explore the field of robotics and control systems through a variety of hands-on, experiential learning experiences. Students will work individually and in teams to design, build, program, and test digital controls and robotics systems, as well as microprocessors and electromechanical components, such as sensors, actuators, motors, and servos. Students will utilize the Engineering Design Process to design and build real-world robotic systems that solve problems present in our day-to-day lives.

Students will be introduced to Robotics, Programming and the Engineering process using the VEX-EXP system. Using basic robotics concepts and applicable programming environments, students will instruct the robot to move, turn, sense light, sound, touch and objects in its path. Working as part of a team, students will build several robots and program the robots to navigate obstacle courses of increasing complexity. Students will also design and create their own robots to accomplish real world problems.

The 21st century skills utilized in Robotics transfer to many emerging fields of studies and careers. This curriculum is based on the Carnegie Mellon Robotics Academy ROBOTC curriculum for VEX and supplemented with several online resources. However, it can be implemented using other robotics languages and/or control units compatible with the VEX hardware. The VEX system provides the ability to build mechanically complex robots which can perform sophisticated tasks.

At another level in the future - This course can bring a competitive team to life inside the classroom. Students will design and build robotic devices that will compete at local and state competitions. The use of CADD software, computer programming, and construction materials, will be used to help students explore various design options to create custom robots to complete a variety of tasks and obstacles.

ROBOTICS AND ELECTRONICS - SYLLABUS - 24-25

Unit 1 - Introduction to safety, design, and engineering

Unit 2 - The Engineering Design Process and Technology

Unit 3 - Introduction to Drawing Concepts - What is 2D and 3d Modeling?

Unit 4 - Intro to Robotics and the Engineering Process

Unit 5 - Introduction to VEX-EXP robotics

Unit 6 - Building a first robot - VEX-EXP - basebot- freeze tag

Unit 7- VEX-EXP robotics project - claw bot and soccer

Unit 8 - VEX-EXP robotics project - catapult bot and bucky basketball

Unit 9 - VEX-EXP robotics project - Up and over

Unit 10 - VEX-EXP robotics project - ring leader - autonomous bots

Unit 11 - VEX-EXP robotics project - treasure hunt - sensor

Unit 12 - VEX-EXP robotics project - platform pacer - engineering design

Unit 13 - VEX-EXP robotics project - castle crusher - sensors and algorithms

Unit 14 - Robotics programming - VEX - VR <https://vr.vex.com/>

Unit 15 - Electronics, Programming and Arduino

Materials and Processing - 24-25

The Materials Processes and Production Systems program gives the students a chance to explore the opportunities in the materials field. The students will learn through lectures, demonstrations and hands on assignments, basic design, research and development, problem solving, construction, assembly methods and finishing.

The students will also learn the proper safe operation of a variety of hand and power tools including the jointer, table saw, band saw, drill press, belt-sander, surface planer, and router. As they progress through the program, they will learn basic and advanced design methods, manufacturing, and fixtures used in mass production. Students are also introduced to various systems of technology in the home and work place.

Technology Learning Activities (TLA'S), incorporating a "hands-on," design and problem solving approach, will allow students to explore a variety of areas related to Materials, Processes, and Production Systems. They will take on the role of researcher, designer, fabricator, tester, and evaluator in order to learn how to apply knowledge to find solutions to problems.

Materials Processing Course is aligned with the Core Curriculum Content Standards and will integrate the Common Core Standards, Technology, and 21st Century Career and Life Skills within projects and activities which will provide the students with skills and understanding to promote wide applicability outside the classroom.

MATERIALS AND PROCESSING - SYLLABUS - 24-25

Unit 1: Introduction and General Safety

Unit 2: Measurement

Unit 3: Materials

Unit 4: Separating Processes

Unit 5: Assembly/Finishing Processes

Unit 6: Turning

Unit 7: Project Cycles/Documenting Projects

Middle School:

8th Grade Technology and Manufacturing:

The goal of 8th grade Technology is to teach students to appreciate the designed world, and engage in processes used to develop technology. During the nine week cycle, students learn fundamental technological terms and how to use a Design Loop to develop solutions to problems. Connections and differences are made between science and technology and how technologies affect our daily lives.

During the scope of 9 weeks, students engage in the following activities:

Week 1 – Definitions and historical background of major technologies. Students will learn how technologies are developed using the Technology Design Loop. The class will discuss the impacts technology has on our society.

Week 2 – 4 Students learn basic drafting and engineering CAD skills. Students will learn critical thinking and problem solving with design/build projects

Week 5 thru 9 - Students learn how to use basic power tools to process wood into a working prototype according to design specifications in the Materials Lab. Strong emphasis on safety and behavior is mandatory.

What are the other Cycle Classes?

8th Grade Cycles