Wayne-Westland Community Schools

Architectural and Engineering Design II

Course Syllabus
2024-2025

CIP Number: 15.1301 PSN: 20434
Course Number: V3820 Engineering and Design II (2 credits) or V6020 Engineering and Design 1 (3 credits)
Course Days/Times: Monday-Friday; Monday-Friday; 07:25 – 11:05am & 11:10am - 1:50pm
Instructor: Mr. David Brinkerhoff
Email: brinkerhoffd@wwcsd.net
Google Classroom: https://classroom.google.com/c/Mzg0MDExNTMzNjg3 Class Code: 6m3natd
Phone: 734-419-2141 (Design Lab) / 734-419-2063 (3D Printing Lab)
Location: Room #118 & 117 / William D. Ford Career-Technical Center

COURSE PREREQUISITE
Successful competition of AED I

COURSE DESCRIPTION
This course is structured for advanced students who wish to continue to develop their Architectural and Technical Drafting skills so that their proficiency and knowledge is at the level where he or she will be able to pursue a co-op placement in their designated field of study. Students will be challenged with workplace problems and be involved in several different types of computer and hands-on activities.

COURSE STANDARDS
The second year course is devoted entirely to segment Q. All standards will occur at varying levels throughout first and second semester.

- *Students create elevation drawings involving multilevel structures (Arch)*
- *Students create and assemble projects involving open-framing construction. These drawings consist of exterior and interior stud layout - wall, door and window framing techniques (Arch)*
- *Students develop an individual portfolio (digital & traditional) that includes examples of their classroom practice and projects (Arch & Tech)*
- *Students create illustrations or photo-realistic representations of the 3-D computer model projects (Arch & Tech)*
- *Students gain experience using alternate CADD system. Additional workplace CADD systems (ex. Rhino, Solidworks, SketchUp) are introduced (Arch & Tech)*
- *Students construct complex component modeling. Problems related to Industry standards practiced in the workplace (Tech)*
- *Students assemble complex assembly problems involving several components (Tech)*
- *Students practice concepts involving gears, pulleys and ratios (Tech)*
- *Students interpret manufacturing processes, specifically additive manufacturing. Students will practice the process of using a 3-D printer too convert their computer model into a real functioning part and assess (Tech)*
- *Students with the opportunity in the workplace based on availability (Arch & Tech)*
- *Students develop a portfolio (digital & traditional) that includes examples of their classroom*

practice and projects (Arch & Tech)

- *Students demonstrate problem-solving and critical thinking skills to develop design projects: Audio Speaker System; Catapult Project; Submersible Project; Tower Crane Project (Tech)*
- *Students develop presentation rendering; photo-realistic representation of the project (Arch & Tech)*
- *Students create secondary auxiliary views-an additional view obtained by a projection on a plane other than the traditional projection planes (Tech)*
- *Students create pattern drawings-the layout is used as a pattern for tracing out the developed shape on flat material-sheet metal (Tech)*
- *Student interpret fastening devices used for assembling component parts (Tech)*

TEXTBOOKS

BASIC TECHNICAL DRAWING 7th ed. - by Spencer, Dygdon, and Novak
ENGINEERING drawing and design 6TH ed. - by Jensen, Helsel and Short
TECHNICAL DRAWING 11ed. - by Giesecke, Mitchell, Spencer, Hill, Dygdon and Novak.
ARCHITECTURE residential drafting/design 7th ed. - by Clois E. Kicklighter

LAB EQUIPMENT

(25) Dell Precision 3650 desktop computer workstation with duel 21" Dell monitors
(1) HP LaserJet 700
(1) HP Design Jet T520 large format printer
(1) Design Jet T830 large format printer
(12) Dremel 3D45 3D Printers
(1) Stratasys F170 3D Printer
(1) EinScan-SE Desktop 3D Scanner

LAB SOFTWARE

The lab is currently licensed with the following software:
AutoCad 2023; Inventor Pro 2023; Solidworks 2023; Revit 2023; Microsoft Office Suite 2016

STUDENT LEADERSHIP (CTSO) OPPORTUNITIES

Students have several opportunities to participate in community service, leadership and/or student design competitions. Opportunities include *Skills-USA*; *MITES* (Michigan Industrial Technical Education Society); *NTHS* (National Technical Honor Society); *Robotics First; Work Based Learning*

CREDIT

Upon completion of this course, students are able to receive the following credits that can be applied towards their requirements for graduation - senior math related credit; visual, performing and applied art (VPAA); science credit (counselor determination); and world language credit (counselor determination). Credit is only applied after competition of the yearlong AED course.

POST-SECONDARY CONNECTIONS

William D. Ford Career Technical Center has articulation agreements with a variety of post-secondary institutions in Michigan. In order to qualify for college credits, typically one must be a program completer with a B+ or higher. In addition, you must be accepted into the college and meet with your advisor. Current agreements exist with the following institutions: MIAT, Western Michigan University, Wayne County Community College, Schoolcraft College and Davenport University. Please contact your advisor at the attending college for articulation paperwork.

COMPETENCY/CREDENTIALS
Students will be expected to take a test through Precision Exams and Certiport. These are end-of-course certification exams that demonstrate entry to mid-level industry knowledge and skill. Earning these certifications are a great addition to any resume.

Students in this course are eligible to sit for the _____ exam(s), which provides industry credential(s) that will support students in gaining employment in the future. William D. Ford Career Technical Center's students with a grade of C or higher are eligible. This opportunity is offered at no cost to families.

WORK-BASED LEARNING
Work-based learning are valuable experiences in which every student in Career and Technical Education are required to participate. All students will be given opportunities to attend a minimum of one field experience each school year. Those students who do not attend the scheduled experience(s) will be expected to find a site where they will spend a minimum of one class period in a business related to their program of study. The student will be required to get the teacher's signed permission, the parent/guardian's signed permission, fill out a training agreement to be signed by the site supervisor, and provide their own transportation to and from the site. Upon completion of the field experience, the student will turn in a question and answer assignment provided by the teacher regarding the experience.

CERTIFICTATE OF PROGRAM COMPLETITION
A student will be granted a Certificate of Competition if the students successfully completes all 12 segments with a C or higher and has successfully taken the Certiport-Autodesk assessment.

GRADING SYSTEM
A student can earn a possible of 10 points a day. The number of points that each assignment is worth will be equal to the amount of time required to complete the assignment. For example, if a drawing should take three days to construct, it's worth 30 points. The total number of points earned divided by the total possible equals' grade percentage. The grading system in this class is a standard format. A…93% or higher; A-…92% - 90%; B+…89% - 87%; B…86% - 83%; B-…82% - 80%; C+…79% - 77%; C… 76% - 73%; C-…72% - 70%; D+…69% - 67%; D…66% - 63%; D-…62% - 59.5%; below 59.5 - E

MIDTERM AND FINAL CERTIFICATION EXAM
At the end of each semester, students will take a certification exam using **'you science' - precision exams** website.

SEMESTER GRADE CALCULATION
The semester grade is calculated as the following: 40% for each of the two marking periods and 10% for the midterm/final.

EVALUATION
Students will be evaluated on different types of classroom activities (drawings, quizzes, projects) and participation. Drawings/Projects will be assessed on the following criteria:

- **Accuracy** (was the problem constructed correctly)
- **Completion** (was the problem completed?)
- **Organization** (was the drawing organized, line weights, line quality, titleblock etc…)
- **Participation** (student's use of class time)

*** Copying another students' file and claiming it as your own will result is a 0 for the project . . . If it happens again, that student will be dealt with according to the school's rules and regulations.**

EXTRA HELP

The instructor is always available for extra help. Feel free to schedule a time that's convenient for both you and the instructor. This could possibly be before or after school. Test/Quizzes may be read aloud and extended time may be permitted under certain circumstances.

CLASS RESPONSIBILITIES and GUIDELINES

The time spent on assignments is the responsibility of that individual. How you get there depends on you and your determination! How you utilize that time is your choice. Use it wisely. Completing an assignment is only part of the task. **Producing quality work by showing that you have mastered the skill is the goal!** The following guidelines are behavior standards or expectations that are to be observed at all times.

❶ Obey all school rules.
❷ Be respectful (towards others and their property).
❸ Be ready (mentally and physically).
❹ Do not disrupt the learning of others.
❺ The golden rule.

*** **Music**; using a phone to listen to music is permitted, however, please have your headphones in and the music level should keep to an acceptable level.*
*** **Phone**; using a cell phone to make a personal phone call is not permitted in class. They can be out, but use should be kept to a minimal.*
*** **Food**; No food or beverages of any kind are allowed in the lab...*

************OPEN DOOR POLICY************

My door is always open if there are any questions, concerns, etc. Please **communicate** with the instructor…

As part of Architectural and Engineering Design course, the student will be exposed to and have the opportunity to operate and build skills using various types of hand and power tools. We would like to stress that, before a student is allowed to operate power tools:

- He / She will be instructed on the safe use of each power tool he / she will be allowed to use.
- His / Her operating procedures will be checked by the teacher.

I understand that my child will work unattended or handle items that might not otherwise be in a traditional classroom. I understand and authorize my son or daughter to use these items and agree that they, along with the teaching staff, will use their best judgment and behavior in the classroom or lab. I release Wayne-Westland Community Schools along with its agents, employees, and owners of any liability. These items include, but are not limited to…

Variety of hand tools (ex. hammer, screw drivers, wrenches, utility knives, etc.); hot glue gun; power hand tools (ex. cordless drills, Dremel tool, etc); 3D printers; machines (band saw, drill press, and belt sander) and any other tools needed for this class to be successful.

Student Signature: _____Date: _____

Student E-mail: _____

Student Contact #: _____

Parent/Guardian Signature: _____Date: _____

Parent E-mail Address: _____

Parent Contact #: _____

If you have any questions, please contact Mr. Brinkerhoff at 734-419-2141 or brinkerhoffd@wwcsd.net.