

CONSTRUCTION ENGINEERING TECHNOLOGY CLUSTER

T54001 Introduction to Architecture (5640)

Open to grades 9, 10, 11, 12

2 semesters, 1 credit per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

This course introduces students to the fundamental design and development aspects of architectural planning activities. Application and design principles are used in conjunction with mathematical and scientific knowledge. Computer software programs should allow students opportunities to design, simulate, and evaluate the construction of buildings and communities. Activities include the preparation of cost estimates as well as a review of regulatory procedures that would affect project design.

T54012 Architectural Drafting and Design I (5640)

Open to grades 10, 11, 12

2 semesters, 1 credit per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

Recommendation(s): Introduction to Architecture, Introduction to Industrial Technology

Dual Credit Available

This course provides students with a basic understanding of the detailing skills commonly used by a drafting technician. Areas of study include: lettering, sketching, proper use of equipment, geometric constructions with emphasis on orthographic (multiview) drawings that are dimensioned and noted to ANSI standards. This course includes the creation and interpretation of construction documents. Methods of geometric construction, three dimensional drawing techniques, and sketching will be presented as well as elementary aspects of residential design and site work. Areas of emphasis include print reading and drawing. Another purpose of this course is to provide students with a basic understanding of the features and considerations associated with the operation of a computer-aided design (CAD) system. Students gain valuable hands-on experience with AutoCAD.

T54022 Architectural Drafting and Design II (5652)

Open to grades 11, 12

2 semesters, 2 credits per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

Prerequisite(s): Architectural Drafting & Design I

Dual Credit Available

Note: Qualifies for Quantitative Reasoning

This course presents a history and survey of architecture and focuses on creative design of buildings in a studio environment. Covers problems of site analysis, facilities programming, space planning, conceptual design, proper use of materials, selection of structure and construction techniques. Develops presentation drawings, and requires oral presentations and critiques. Generation of form and space is addressed through basic architectural theory, related architectural styles, design strategies, and a visual representation of the student's design process. Advanced CAD enables students to make the transition from 2D drafting to 3D modeling. Various architectural software packages and application may be used.

T54111 Introduction to Construction (4792)

Open to grades 9, 10, 11, 12

2 semesters, 1 credit per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

This course offers hands-on activities and real world experiences related to the skills essential in residential, commercial and civil building construction. During the course, students are introduced to the history and traditions of construction trades. Students also learn and apply knowledge of the care and safe use of hand and power tools as related to each trade. In addition, students are introduced to blueprint reading, applied math, basic tools and equipment, and safety. Students will demonstrate building construction techniques, including concrete and masonry, framing, electrical, plumbing, dry walling, HVAC, and painting as developed locally in accordance with

available space and technologies. They also investigate topics related to the purchasing and maintenance of structures, special purpose facilities, green construction and construction careers.

T54112 Construction Trades I (5580)

Open to grades 10, 11, 12

2 semesters, 2 credits per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

Recommendation(s): Introduction to Construction

Dual Credit Available

This course includes classroom and laboratory experiences covering the formation, installation, maintenance, and repair of buildings, homes, and other structures. This course also covers the use of working drawings and applications from the print to the work. Students explore the relationship of views and details, interpretation of dimension, transposing scale, tolerance, electrical symbols, sections, a materials list, architectural plans, geometric construction, three dimensional drawing techniques, and sketching. Elementary aspects of residential design and site work will also be covered. Areas of emphasis will include print reading and drawing, room schedules and plot plans. Students will develop an understanding and interpretation of the Indiana Residential Code for one and two-family dwellings and safety practices including Occupational Safety and Health Administration's Safety & Health Standards for the construction industry.

T54122 Construction Trades II (2 hour) (5578)

T54123 Construction Trades II (3 hour) (5578)

Open to grades 11, 12

2 semesters, 2/3 credits per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

Prerequisite(s): Construction Trades I

Dual Credit Available

This course builds on the topics covered in Construction Trades I and includes: formation, installation, maintenance, and repair of buildings, homes, and other structures including recent trends in the residential construction industry. Information is presented concerning materials, occupations, and

professional organizations within the industry. Students will develop basic knowledge, skills, and awareness of interior trim. It provides training in installation of drywall, moldings, interior doors, kitchen cabinets, and baseboard moldings. Students also develop skills in the finishing of building exteriors. They also explore skills in the installation of cornices, windows, doors and various types of sidings used in today's marketplace. Additionally, the course covers the design and construction of roof systems and using framing squares for traditional rafter and truss roofing.

T54212 Construction Trades: Electrical I (2 hour) (4830)

T54213 Construction Trades: Electrical I (3 hour) (4830)

Open to grades 11, 12

2 semesters, 2/3 credits per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

Prerequisite(s): Construction Trades 2

Dual Credit Available

This course includes classroom and laboratory experiences emphasizing the operation, maintenance and safe use of various tools including the builder's level and transit. It also covers the history of building construction to present-day applications emphasizing future trends and construction as a career. It provides instruction and practice in the use of working drawings and applications from blueprint to worksite. Students examine relationship of views and details, interpretation of dimension, transposing scale, tolerance, electrical symbols, sections, a materials list, architectural plans, room schedules and plot plans. It covers both AC and DC circuits. Students will use mathematical principles to solve electrical problems and to troubleshoot electrical circuits.

**T54222 Construction Trades: Electrical II
(2 hour) (4832)**

**T54223 Construction Trades: Electrical II
(3 hour) (4832)**

Open to grades 12

2 semesters, 2/3 credits per semester

Approximate cost per semester: TBD

Meets requirements: THD, AHD, Core 40

**Prerequisite(s): Construction Trades:
Electrical I**

Dual Credit Available

Note: Qualifies for Quantitative Reasoning

This course includes classroom and laboratory experiences concerned with the practice of residential wiring, including electrical service, metering equipment, lighting, switches, outlets and other common components, and methods of installation and maintenance of the residential wiring system in accordance with the current National Electrical Code. Studies include mechanical installation of hardware as well as electrical design and layout. This course also focuses on tool use, wiring methods, and material selection and installation for commercial and industrial wiring systems.