CONSTRUCTION ENGINEERING TECHNOLOGY CLUSTER

T54001 Introduction to Architecture (5640)

Open to grades 9-12
2 semesters, 1 credit per semester
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.

T64111 & T64121 Architectural Drafting and Design I (4802 & 7196)

Open to grades 10-12
2 semesters, 2 credits per semester
Meets requirements of: THD, AHD, Core 40
Recommendation(s): Introduction to Architecture
Note: Intro to Engineering Design (IED) credit embedded
Dual Credit Might be Available

Architectural Drafting and Design I will provide 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 (multi-view) 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 will include print reading and drawing. Another purpose of this introductory 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 will gain valuable hands-on experience with AutoCAD. They will be expected to complete several projects relating to command topics. Topics include: 2D drawing commands, coordinate systems, editing commands, paper and model space, inquiry commands, layers, plotting, text, and basic dimensioning. This course will also include Basic Architectural AutoCAD practices.

T54022 Architectural Drafting and Design II (5652)

Open to grades 11-12
2 semesters, 2 credits per semester
Meets requirements of: THD, AHD, Core 40
Prerequisite(s): Architectural Drafting and Design I
Note: Qualifies as a Quantitative Reasoning course.
Dual Credit Might be Available

Architectural Drafting and Design II 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.

This course will focus on advanced CAD features, including fundamentals of three-dimensional modeling for design and includes overview of modeling, graphical manipulation, part structuring, coordinate system, and developing strategy of modeling. Advanced CAD will enable the student to make the transition from 2D drafting to 3D modeling. Various Architectural software packages and applications may be used.

T54111 Introduction to Construction (4792)

Open to grades 9-12
2 semesters, 1 credit per semester
Meets requirements of: THD, AHD, Core 40

Introduction to Construction is a course that will offer hands-on activities and real-world experiences related to the skills essential in residential, commercial and civil building construction. During the course students will be introduced to the history and traditions of construction trades. The student will 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. Students learn how architectural ideas are converted into projects and how projects are managed during a construction project in this course. Students study construction technology topics such as preparing a site, doing earthwork, setting footings and foundations, building the superstructure, enclosing the structure, installing systems, finishing the structure, and completing the site. Students also investigate topics related to the purchasing and maintenance of structures, special purpose facilities, green construction and construction careers.

T64211 & T64221 Construction Trades I (7130 & 7123)

Open to grades 10-12
2 semesters, 2 credits per semester
Meets requirements of: THD, AHD, Core 40
Recommendation(s): Introduction to Construction
Dual Credit Might be Available

Construction Trades I 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 will explore the relationship of views and details, interpretation of dimension, transposing scale, tolerance, electrical symbols, sections, 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 examine the design and construction of floor and wall systems and develop the skills needed for layout and construction processes of floor and wall systems from blueprints and professional planning documents. Instruction will be given in the following areas, administrative requirements, definitions, building planning, foundations, wall coverings, roof and ceiling construction, and roof assemblies. 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 (5578)

Open to grades 10-12
2 semesters, 2 credits per semester
Meets requirements of: THD, AHD, Core 40
Prerequisite(s): Construction Trades I
Dual Credit Might be 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. This course provides training in installation of drywall, moldings, interior doors, kitchen cabinets, and baseboard moldings. Students will also develop skills in the finishing of building exteriors. They will also explore skills in the installation of cornices, windows, doors and various types of sidings used in today's marketplace. Additionally, the course covers design and construction of roof systems and using framing squares for traditional rafter and truss roofing.