

Architecture and Construction: Design/Pre-Construction

Career Pathway Plan of Study for ► Learners ► Parents ► Counselors ► Teachers/Faculty

This Career Pathway Plan of Study (based on the Design/Pre-Construction Pathway of the Architecture and Construction Career Cluster) can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. *This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.

| EDUCATION LEVELS | GRADE | English/ Language Arts | Math | Science | Social Studies/ Sciences | Other Required Courses Other Electives Recommended Electives Learner Activities | *Career and Technical Courses and/or Degree Major Courses for Design/Pre-Construction Pathway | SAMPLE Occupations Relating to This Pathway |
|--|--|--|---|--------------------------------------|--|--|--|--|
| <i>Interest Inventory Administered and Plan of Study Initiated for all Learners</i> | | | | | | | | |
| SECONDARY | 9 | English/ Language Arts I | Algebra I | Earth or Life or Physical Science | State History Civics or World History | All plans of study should meet local and state high school graduation requirements and college entrance requirements. Certain local student organization activities such as SkillsUSA are also important including public speaking, record keeping and work-based experiences. | <ul style="list-style-type: none"> • Introduction to the Built Environment | <ul style="list-style-type: none"> ► Architect ► Building Code Official ► Building Designer ► Civil Engineer ► Code Official ► Cost Estimator ► Drafter ► Electrical Engineer ► Electronic Engineer ► Environmental Designer ► Environmental Engineer ► Fire Prevention and Protection Engineer ► Industrial Engineer ► Interior Designer ► Landscape Architect ► Materials Engineer ► Mechanical Engineer ► Regional and Urban Planner/Designer ► Safety Director ► Specification Writer ► Structural Engineer ► Surveying and Mapping Technician |
| | 10 | English/ Language Arts II | Geometry | Biology | U.S. History | | <ul style="list-style-type: none"> • The Language of Architecture and Construction • Information Technology Applications | |
| | 11 | English/ Language Arts III Technical Writing | Algebra II | Physics | Economics Psychology | | <ul style="list-style-type: none"> • Safety, Health and the Workplace Environment • Principles of Design and Pre-Construction | |
| | <i>College Placement Assessments-Academic/Career Advisement Provided</i> | | | | | | <ul style="list-style-type: none"> • Applications in Design and Pre-Construction | |
| | 12 | English/ Language Arts IV | Trigonometry Pre-Calculus | Chemistry | | | | |
| <i>Articulation/Dual Credit Transcribed-Postsecondary courses may be taken/moved to the secondary level for articulation/dual credit purposes.</i> | | | | | | | | |
| POSTSECONDARY | Year 13 | English Composition English Literature | Algebra Trigonometry | Physics | American Government or History Psychology/ Interpersonal Skills | All plans of study need to meet learners' career goals with regard to required degrees, licenses, certifications or journey worker status. Certain local student organization activities may also be important to include. | <ul style="list-style-type: none"> • Introduction to Architectural Technology • Design and Pre-Construction Internship | |
| | Year 14 | Speech/ Oral Communication | Business Accounting Pre-Calculus or Calculus | Environmental Science | Sociology Business Law | | <ul style="list-style-type: none"> • Technical Applications of Design and Pre-Construction • Continue Design and Pre-Construction Internship | |
| | Year 15 | Continue courses in the area of specialization. | | | | | <ul style="list-style-type: none"> • Continue Courses in the Area of Specialization | |
| | Year 16 | | | | | | <ul style="list-style-type: none"> • Complete Design/Pre-Construction Major (4-Year Degree Program) | |

Creating Your Institution's Own Instructional Plan of Study

With a team of partners (secondary/postsecondary teachers and faculty, counselors, business/industry representatives, instructional leaders, and administrators), use the following steps to develop your own scope and sequence of career and technical courses as well as degree major courses for your institution's plan of study.

- 1** Crosswalk the Cluster Foundation Knowledge and Skills (available at <http://www.careerclusters.org/goto.cfm?id=83>) to the content of your existing secondary and postsecondary programs/courses.
- 2** Crosswalk the Pathway Knowledge and Skills (available at <http://www.careerclusters.org/goto.cfm?id=8>) to the content of your existing secondary/postsecondary programs and courses.
- 3** Based on the crosswalks in steps 1 and 2, determine which existing programs/courses would adequately align to (cover) the knowledge and skills. These programs/courses would be revised to tighten up any alignment weaknesses and would become a part of a sequence of courses to address this pathway.
- 4** Based on the crosswalks in steps 1 and 2, determine what new courses need to be added to address any alignment weaknesses.
- 5** Sequence the **content** and **learner outcomes** of the existing programs/courses identified in step 3 and new courses identified in step 4 into a course sequence leading to preparation for all occupations within this pathway. (See list of occupations on page 1 of this document.)
- 6** The goal of this process would be a series of courses and their descriptions. The names of these courses would be inserted into the *Career and Technical Courses* column on the Plan of Study on page 1 of this document.
- 7** The SAMPLE on page 4 is a **sample result** of steps 1-6, and these course titles are inserted into the Plan of Study on page 1 of this document.
- 8** Crosswalk your state academic standards and applicable national standards (e.g., for mathematics, science, history, language arts, etc.) to the sequence of courses formulated in step 6.

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SAMPLE Sequence of Courses for ► Instructional Leaders ► Administrators ► Counselors ► Teachers/Faculty

SAMPLE

Below are suggested courses that could result from steps 1-6 above. However, as an educational institution, course titles, descriptions and the sequence will be your own. This is a good model of courses for you to use as an example and to help you jump-start your process. Course content may be taught as concepts within other courses, or as modules or units of instruction.

The following courses are based on the Cluster Foundation Knowledge and Skills found at <http://www.careerclusters.org/goto.cfm?id=83>. These skills are reinforced through instruction using hands-on applications and through participation in student organization activities.

#1

Introduction to the Built Environment: This core course for the Architecture and Construction Career Cluster will build a knowledge base and technical skills in all aspects of the industry. Learners will be exposed to a broad range of architecture and construction careers and cluster foundation knowledge and skills including basic safety, plan reading, use of tools and equipment and basic rigging as well as how to employ positive work ethics in their careers. Possible student certifications to be earned include NCCER Core, RCA Series, Basic First Aid and CPR. Participation in SkillsUSA will reinforce cluster knowledge and skills. It is recommended that a construction mathematics course be offered in conjunction with this introductory skills course. This may be taught as a career exploration course in conjunction with other foundation Career Cluster courses.

#2

The Language of Architecture and Construction: Students will build the skills necessary to understand what is being communicated through drawings and documents and, in turn, convey ideas, duties and tasks to others in a form representing the industry. Students will use and follow industry-specific verbal and visual skills to accomplish workplace/job-site communications. Students will exhibit public relations skills and enhance communication skills by listening to and speaking with a variety of individuals. Students will learn universal signs and symbols such as colors, flags, stakes and hand signals to function safely in the workplace.

The following courses are based on the Cluster Foundation Knowledge and Skills as well as the Pathway Knowledge and Skills found at <http://www.careerclusters.org/goto.cfm?id=8>. These skills are reinforced through instruction using hands-on applications and through participation in student organization activities.

#3

Information Technology Applications: Students will use technology tools to manage personal schedules and contact information, create memos and notes, prepare simple reports and other business communications, manage computer operations and file storage, and use electronic mail, Internet applications and GIS to communicate, search for and access information. Students will develop skills related to word processing, database management and spreadsheet applications.

#4

Safety, Health and the Workplace Environment: Students will develop in-depth skills for maintaining a safe and productive environment including following regulations to perform inspections, participate in emergency response teams to perform emergency drills, identify unsafe conditions and take corrective actions, and provide a safety orientation to train other employees in safe practices and emergency procedures. Students will ensure that equipment is being used safely in the workplace by training others to use equipment safely, suggest processes and procedures to support safety, and fulfill safety and health requirements for maintenance, installation and repair. Students will monitor equipment and operator performance to assure workplace safety and compliance with both company and national regulations. Efforts will be made to ensure all practices teach students how to accommodate individuals with varying physical abilities. It is suggested that the requirements for OSHA-10 be completed by the end of the 11th grade.

#5

Principles of Design and Pre-Construction: This course provides an overview of processes used in design and pre-construction. Students will develop problem-solving and critical-thinking skills by identifying the relationship between available resources and requirements of a project/problem to accomplish realistic planning. Students will employ basic methods of data collection and analysis to provide potential clients with information for projects. Course content may reflect some of the knowledge and skills of the Visual Arts Pathway from the Arts, Audio/Video Technology and Communications Career Cluster found at <http://www.careerclusters.org/goto.cfm?id=13>.

#6

Applications in Design and Pre-Construction: Students will develop skills that relate to design and pre-construction. Course content will include steps for managing project assignments in a timely manner and developing skills for working as individuals and as team members to accomplish assignments. Students will complete a capstone project in their work-based learning experience that utilizes the knowledge and skills learned in the Design and Pre-Construction Pathway.

#7

Introduction to Architectural Technology: Students will integrate structural systems, environmental systems, safety systems, building envelope systems, and building service systems to design modern buildings. Students will review traditional project phases and various roles within them to plan for and implement phases within a project. Students will develop preliminary drawings and computer-generated plans that will be used in design and pre-construction.

#8

Design and Pre-Construction Internship: Students will work under supervision in an area of interest that relates to design and pre-construction. This internship may be continued the second year and may include community service.

#9

Technical Applications of Design and Pre-Construction: Students will exhibit a positive work ethic to comply with employment requirements. They will apply basic principles of environmental impact to enhance project acceptance and quality, and apply design requirements to accommodate people with varying physical abilities. Students will demonstrate their appreciation for diversity of needs, values and social patterns in completing a set of technical drawings that can be used in the design and pre-construction industry.

Notes

A large area of the page is filled with horizontal stripes, alternating between light purple and light yellow, intended for taking notes.