



ARCHITECTURAL ENGINEERING-Associate in Applied Science Degree

CIP:15.0101 EPC:638

This program is open to the international student cohort only.

Students prepare for employment as architectural engineering technicians producing drawings for building permits, financial approval and construction. They work on actual residential design and drafting projects, prepare structural engineering documents to prove the integrity of building components, and interpret and apply building and energy codes while incorporating the Americans with Disabilities Act guidelines into the design of structures. Students are encouraged to apply for the Construction Document Technology (CDT) certificate offered through the Construction Specifications Institute.

CURRICULUM GUIDE -Associate in Applied Science Degree

GENERAL EDUCATION REQUIREMENTS		CREDITS
	100+ Level Human Relations	5
REQUIRED CORE		
ARCH	106 Architectural Design Principles	4
ARCH	101 Intro to Architectural Engineering	2
ARCH	102 Blueprint Reading	3
ARCH	103 Technical Math I	5
ARCH	105 Energy Codes I	2
ARCH	107 Fundamentals of Drafting	5
ARCH	108 Introduction to CAD Drafting	5
ARCH	109 Site Plans	3
ARCH	110 Floor Plans	3
ARCH	111 Elevations	3
ARCH	114 Foundation Plans	3
ARCH	115 Sections and Details	3
ARCH	116 Electrical, Mechanical and Plumbing Plans	3
ARCH	121 Applied English	3
ARCH	125 Applied English II	4
ARCH	201 American with Disabilities Requirements	2
ARCH	202 Energy Codes II	2
ARCH	204 Intermediate Computer Aided Drafting	5
ARCH	206 Strength of Materials	5
ARCH	209 Design Project	5
ARCH	211 Design Project II	5
ARCH	212 Design Project III	5
ARCH	221 Applied English III	4
ARCH	225 Applied English IV	4
	PROGRAM TOTALS	93



ARCHITECTURAL ENGINEERING

Course Descriptions

			HOURS	CREDITS
ARCH	101	Introduction to Architectural Engineering Students are introduced to the field of Architectural Drafting and Design. The students are given an overview of the industry and what it has to offer. Students will learn the different job opportunities and what each discipline contributes to the industry.	30	2
ARCH	102	Blueprint Reading Students learn to interpret architectural drawings using print reading skills and how to correct engineering plans using plan checking guidelines.	40	3
ARCH	103	Technical Math I The first of two units on occupational math, students learn and apply various fundamental math concepts to solve problems common to architecture. In this unit, students acquire the skills to operate industry measurement devices, and apply algebraic concepts.	70	5
ARCH	104	International Residential Codes I During this first of two units dealing with regulatory requirements, students are introduced to the International Building Code. They learn purpose, organization and content, and are introduced to the building permit process.	50	3
ARCH	105	Energy Codes I Students are introduced to Washington State Energy Code. The insulation values of individual building components and how to show compliance using the Prescriptive Path Option.	30	2
ARCH	106	Technical Math II During this math unit, students continue to learn and apply various math concepts to solve problems common to architecture and engineering. Practical applications include performing calculations using architectural units. Area and volumetric calculations are used on design situations and trigonometry is applied to derive solutions to triangulation problems.	70	5
ARCH	107	Fundamentals of Drafting Students are introduced to lettering styles, use of scales and	70	5

templates, and operating drafting equipment and tools. During this unit they learn drafting basics. This includes drafting standards and how to draw plans using a variety of graphic communication techniques.

ARCH	108	Introduction to Computer Aided Drafting From document management to design drafting, the student will be introduced to the concepts and practices used with Computer Aided Drafting. Students learn about coordinate systems, drawing commands, how to apply drawing aids, and edit drawings. Basic Text and dimensioning commands plus basic print/plotting are covered.	70	5
ARCH	109	Site Plans During this unit Site plans are studied. Simulated and actual real life projects are used for practical training of the design of architectural plans. All requirements for building department approval for construction permits are covered in detail.	50	3
ARCH	110	Floor Plans During this unit floor plans are studied. Simulated and actual real life projects are used for practical training of the design of architectural plans. All requirements for building department approval for construction permits are covered in detail.	50	3
ARCH	111	Elevations During this unit Elevation plans are studied. Simulated and actual real life projects are used for practical training of the design of architectural plans. All requirements for building department approval for construction permits are covered in detail.	50	3
ARCH	112	Floor Framing Plans During this unit Floor Framing plans are studied. Simulated and actual real life projects are used for practical training of the design of architectural plans. All requirements for building department approval for construction permits are covered in detail.	50	3
ARCH	113	Roof Framing Plans During this unit Roof Framing plans are studied. Simulated and actual real life projects are used for practical training of the design of architectural plans. All requirements for building department approval for construction permits are covered in detail.	50	3
ARCH	114	Foundation Plans During this unit Foundation plans are studied. Simulated and actual real life projects are used for practical training of the	50	3

design of architectural plans. All requirements for building department approval for construction permits are covered in detail.

ARCH	115	Sections and Details During this unit Sections and Details are studied. Simulated and actual real life projects are used for practical training of the design of architectural plans. All requirements for building department approval for construction permits are covered in detail.	50	3
ARCH	116	Electrical, Mechanical and Plumbing Plans During this unit Electrical, Mechanical and Plumbing Plans are studied. Simulated and actual real life projects are used for practical training of the design of architectural plans. All requirements for building department approval for construction permits are covered in detail.	50	3
ARCH	201	American with Disabilities Requirements Students are introduced to requirements of the American with Disabilities Act. Students learn to reference and apply the ADA requirements to architectural documents.	30	2
ARCH	202	Energy Codes II Students learn the Component Performance Option of showing compliance with the Washington State Energy Code. Building Envelope and Lighting compliance to the Non-residential Building Energy Code are also covered in this class.	30	2
ARCH	203	International Building Code Students learn about the International Building Code. They learn to reference and apply the codes to architectural documents.	90	5
ARCH	204	Intermediate Computer Aided Drafting Students will learn more advanced CAD concepts of text, dimensioning, layering, and how to create and use symbols. X-Ref and Layout space are also covered in this class.	80	5
ARCH	205	Construction Estimating Manual and computer estimating are applied to construction projects. This prepares students to manage products, materials, and labor.	70	4
ARCH	206	Strength of Materials Statics (forces in equilibrium) is covered to give students an understanding of forces and the reactions of these forces in the design of structures. Students will learn how to determine loads and apply structural design requirements for framing member sizing through the use of trade texts.	70	5

ARCH	207	Technical Writing/ Construction Specifications Students study the use of construction documents, organizational formats used in construction, and the interpretation of construction documents. Industry-standard construction document specifications for materials, construction, practices, procedures and authorities. Students learn the construction process, contract types, the modifications substitution process, rights, duties, and responsibilities of the contract parties, and contract provisions.	50	3
ARCH	208	Structural Engineering Students will learn how to perform stress analysis of structural components; they will engineer components for use in structures such as footings, support columns, floor beams, floor and ceiling joists, headers and roof rafters.	100	5
ARCH	209	Design Project I The student develops working drawings for a basic level project that is determined by both the instructor and the student. The project is based on prior course work and reflects the minimum requirements for plan approval on a simple structure.	90	5
ARCH	210	Advanced Computer Aided Drafting Using advanced modeling and/or BIM software the students learn how to model structures with 3D features, apply material attributes, assign lighting attributes, and render output.	90	5
ARCH	211	Design Project II The student develops working drawings for an intermediate level project that is determined by both the instructor and the student. The project is based on prior course work and reflects the requirements for plan approval on a more complex structure. More advanced requirements are included in this project.	90	5
ARCH	212	Design Project III The student develops working drawings for an more advanced level project that is determined by both the instructor and the student. The project is based on prior course work and reflects the requirements for plan approval on a more complex structure. More advanced requirements are included in this project. This project includes a 3d model and a materials estimate of the building design.	90	5
ARCH	292	Independent Projects This course offers students an opportunity to work independently on a project that is	20-100	1-5

determined by both the instructor and the student. The project should be based on prior course work and should result in the achievement of advanced learning in the subject area chosen.

ARCH 293 Independent Projects 20-100 1-5

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ARCH 292 Independent Projects 20-100 1-5

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ARCH 296 Work-based Learning Experience 30-540 1-18

Work-based learning (WBL) allows students to participate in on-the-job training in the field in which they are studying. They apply the skills they have learned in the classroom to specific areas of employment in a variety of businesses/industries in the area. The learning activity is based on a written agreement with the participating training provider.

ARCH 297 Work-based Learning Seminar 10-20 1-2

Students enroll in the work-based learning seminar in order to receive an orientation to the work-based learning experience. Faculty meet with the students to provide support and assistance during the experience.

ARCH 298 Work-based Learning – No Seminar 50-900 1-18

This course is provided for students who participate in a work-based learning experience but cannot meet for the weekly seminar. This usually applies to specialized areas where the worksite is outside of the geographical area.