

Department of

Architecture & Construction**Garth Jensen, Department Chair**

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<http://www.byui.edu/ArchitectureandConstruction//>

Department of Architecture and Construction

The Architecture and Construction Industry encompasses a wide range of career options. There are many excellent employment opportunities within this dynamic and growing industry. The Educational programs offered by the Architecture and Construction Department are designed to prepare students to fulfill challenging employment opportunities within the industry.

The department offers two degree programs; an Applied Associates of Science Degree in Architectural Technology (345) and an Integrated Bachelor of Science Degree in Construction Management (605). Both degrees offer a range of options that will allow students to customize their course of study to fulfill future employment ambitions. Both degrees also require a high level of academic and technical abilities and students should have developed good math, science, art, and manual skills prior to enrollment in the program.

Graduation Requirements

To receive either an AAS in Architectural Technology or a BS in Construction Management, a student will need to complete the prescribed course of study with a minimum GPA of 2.25 or higher. No grade less than a C will be accepted for any major course requirement. Students wishing to complete a BS in Construction Management are required to complete at least two semester long full time internships (Const 398 & Const 498). The internships are to be completed on the students "off track" between their Sophomore/Junior and Junior/Senior years. Students who complete an AAS in Architectural Technology are also required to complete an internship.

General Interest Courses.

The department also offers woodworking classes of general interest open to the student body and community.

AAS in Architectural Technology (345)

Take required Foundations courses

Major Requirements

No Double Counting of Major Courses - No Grade Less Than B- in Major Courses

<p><i>Take these courses:</i></p> ARCH 100 3 ARCH 110 3 ARCH 160 3 ARCH 210 3 ARCH 260 3 ARCH 270 3 ARCH 280 3 ARCH 300 3 CONST 120 3 CONST 260 3 CONST 330 3 ENG 319 3 MATH 111 2 <u>38</u>	<p><i>Take 5 credits:</i></p> CONST 210 3 CONST 230 3 CONST 240 3 CONST 250 3 CONST 320 2 CONST 340 3 CONST 350 3 CONST 370 3 CONST 380 3 CONST 390R 0.5 CONST 450 3 HFED 140 3 HORT 230 3 ME 115 <u>2</u> 5	<p><i>Take 1 course:</i></p> ART 101 3 ART 102 <u>2</u> 2	<p><i>Program Notes:</i></p>
<p><i>Take this course for 2 credits:</i></p> CONST 398R 1-2 <u>2</u>		<p><i>Take these courses:</i></p> GEOL 102 1 GEOL 104 <u>3</u> 4	
		<p>OR</p> <p><i>Take these courses:</i></p> GEOL 111 3 GEOL 111L <u>1</u> 4	
		<p>OR</p> <p><i>Take these courses:</i></p> PH 105 <u>4</u> 4	

Total Major Credits=51

This major is available on the following tracks:

Fall-Winter---- YES

Winter-Spring---- YES

Spring-Fall---- YES

BS in Construction Management (605)

Take required Foundations courses

Major Requirements

No Double Counting of Major Courses - No Grade Less Than B- in Major Courses

<p><i>Take these courses:</i> (Students are required to complete 2 credits each of Const 398 and Const 498R)</p> ARCH 100 3 CONST 120 3 CONST 260 3 CONST 320 2 CONST 330 3 CONST 350 3 CONST 370 3 CONST 380 3 CONST 398R 1-2 CONST 420 3 CONST 430 3 CONST 450 3 CONST 498R 1-2 ENG 319 3 MATH 111 2 <u>41</u>	<p><i>Repeat 4 times:</i></p> CONST 390R <u>0.5</u> 2	<p><i>Take 12 credits:</i></p> ARCH 110 3 ARCH 270 3 ARCH 280 3 ARCH 300 3 CONST 210 2 CONST 230 3 CONST 240 3 CONST 250 3 CONST 340 <u>3</u> 12	<p><i>Program Notes:</i></p> <p>Students majoring in Construction Management are required to select either the Business Management Minor or a Business Management Cluster. If a Business Management cluster is chosen, an additional cluster must be chosen from the CM clusters list, which includes Commerical Construction, Residential Construction and Architectural clusters. Students wishing to “custom design” clusters will need to counsel with their Advisor.</p>
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Total Major Credits=55

This minor is available on the following tracks:

Fall-Winter---- YES

Winter-Spring---- YES

Spring-Fall---- YES

Architecture & Construction

Brigham Young University-Idaho 2009-2010

Architecture and Construction Pre-approved Clusters

(For Construction Management Majors Only)

Construction Management Business Management		
<i>Choose 1 Option</i>		
Accounting Option A		
<i>Take 1 course:</i>		
ACCTG 180	Survey of Accounting	3
ACCTG 201	Financial Accounting	3
ACCTG 202	Managerial Accounting	3
<i>Take 1 course:</i>		
B 101	Introduction to Business	3
B 283	Entrepreneurship Skills	3
OR		
Accounting Option B		
<i>Take these courses:</i>		
ACCTG 201	Financial Accounting	3
ACCTG 202	Managerial Accounting	3
AND		
<i>Enrichment - Take 2 courses:</i>		
B 201	Introduction to Finance	3
B 220	Business Communication	3
B 247	Principles of Marketing	3
B 370	Human Resource Management	3
B 380	Introduction to Internatioanal Business	2
B 413	Real Estate (Prereq B 201)	3
ECON 112	Economic Principles and Problems - Micro	3
FDMAT 221	Business Statistics	<u>3</u>
Total Credits		12

NOTE: Students may choose from one of the CM clusters or they may establish a Specialized Cluster by selecting 12 credits from any of the other CM clusters. Clusters using classes that are not in the CM cluster lists need to be approved and signed by your academic advisor before beginning the coursework.

Commercial Construction		
<i>Take 12 Credits:</i>		
ARCH 270	Specifications	3
ARCH 300	Sustainable Design and Construction	3
CONST 340	Fundamentals of Land Survey	3
CONST 350	Soils and Equipment	3
CONST 400	Advanced Estimating	3
ME 105	Basic Welding	4
SPAN	Any Spanish Course	<u>3-4</u>
Total Credits		12

Architecture		
<i>Take 12 Credits:</i>		
ARCH 110	Architectural Computer Aided Design	3
ARCH 160	Architectural Design and Drafting	3
ARCH 210	Advanced Architectural CAD	3
ARCH 260	Rendering and Perspective	3
ARCH 270	Specifications	3
ARCH 280	Building Information Modeling	3
ARCH 300	Sustainable Design and Construction	3
ME 115	Computerized Technical Illustration	<u>2</u>
Total Credits		12

Residential Construction		
<i>Take 12 Credits:</i>		
ARCH 300	Sustainable Design and Construction	3
CONST 210	Finishing Systems	3
CONST 230	Mechanical Systems	3
CONST 240	Electrical Systems	3
CONST 250	Steel Structural Systems	3
CONST 350	Soils & Equipment	3
CONST 460	Residential Construction Practice	2
ME 105	Basic Welding	4
SPAN	Any Spanish Course	<u>3-4</u>
Total Credits		12

Course Descriptions

Credits*

ARCH 100 Construction Documents

(3.0:3:1)

Prerequisite: None

Introduction to blueprint reading and UDS symbology, CSI specifications, construction terminology, codes, and the construction process. Evaluation of working drawings, specifications, and codes.
(Fall, Winter, Spring)

ARCH 110 Architecture Computer Aided Design

(3.0:2:4)

Prerequisite: ARCH 100 and Arch 102, Const 120 or concurrent enrollment.

This is an introductory course in the use of computer aided design in Architecture. Through the use of computer graphics systems and industry standard software, students will learn to draw with CAD, develop building models; produce floor plans, sections, elevations, details, plot plans, and schedules. Learning is project focused with the various commands and features being taught as needed to complete the assigned projects. The student will develop useful strategies for life-long learning that will enable them to approach new CAD versions or programs with confidence.
(Fall, Winter, Spring)

ARCH 160 Architectural Design and Drafting

(3.0:2:4)

Prerequisite: Arch 100 and Arch 110 (Arch 110 could be taken simultaneously)

Construction document preparation of residential and commercial projects using the design process, sketching, and manual drafting skills. A major emphasis of this course will be the schematic design phase of the design process.
(Every other semester)

ARCH 210 Advanced Architectural Computer Aided Design

(3.0:2:4)

Prerequisite: Arch 160

This is an advanced course in the use of Computer Aided Design in architecture. Through the use of computer graphics systems and industry standard software (AutoCAD and Revit Architecture) students will learn to develop and refine a complete set of construction documents. This course will also examine various construction materials and methods and their relationship to specific design intentions. The course will begin with the initial functional/conceptual diagram and examine its refinement through building codes, structural principles, material properties, and systems integration. Learning is project focused with the various software commands and features being taught as needed to complete the assigned projects. Students will work both individually and in groups.
(Every other semester)

ARCH 260 Rendering

(3.0:2:4)

Prerequisite: Arch 100

Rendering and perspective is a course dealing with basic perspective fundamentals required for freehand perspective drawing. It also includes the technical principles of perspective required to layout precise perspective constructions. The course will help build basic light, color, and rendering vocabulary required for quality drawing presentations.
(Every other semester)

ARCH 270 Specifications

(3.0:3:0)

Prerequisite: Arch 160, Const 120, Sophomore status

This course will provide in-depth information about the preparation and content of documents within a project manual. It will define and explain different types of contracts and specifications. How to write specifications will be taught and practiced during the course of the class. It will include, but not limited to, subjects like coordinating drawings and specifications, bidding requirements, construction contracts, methods of specifying, substitutions, and warranties. This information is required to take and pass the Construction Document Technology (CDT) certification test.
(Every other semester)

ARCH 280 Building Information Modeling

(3.0:2:4)

Prerequisite: Arch 110, Const 120, and Const 330

Building Information Modeling (BIM) means to create a virtual model of a building that can be used for quantity take offs, design decisions, interference checking, construction document generation, rendering, and presentation, etc. You will use standard building components (families), modify standard components, and create your own components. Each building component is represented by smart objects that "know how" to relate to one another and can contain extensive information about their own characteristics. You will create schedules (detailed lists) of components that can be used for quantity take offs and estimating. You will create rendered views of your model. Basic knowledge of 2D and 3D CAD, Excel spreadsheets, and construction methods is assumed. Learning is project focused with the various commands and features being learned as needed to complete the assignments. You will develop useful strategies for life-long learning that will enable you to approach new CAD versions or programs with confidence.
(Fall, Winter)

ARCH 300 Sustainable Design & Construction

(3.0:3:0)

Prerequisite: ARCH 100, CONST 120, CONST 330

This course is an overview of sustainable design and construction and gives basic green building foundation principles as it applies to commercial, institutional, and residential buildings. This course will help students develop competencies in applying technical LEED concepts in preparation for the LEED professional exam.
(Fall, Winter, Spring)

CONST 100 Basic Woodworking

(3.0:2:2)

Fee: \$40.00

Basic woodworking is a study of woodworking skills for both the novice and more advanced woodworker. The course will study project planning and design, wood and wood products, safe operation of hand and power tools, and joinery techniques.

CONST 120 Framing Systems

(3.0:2:2)

Prerequisite: An in-depth understanding of construction documents or concurrent enrollment in Arch 100 is necessary.

A study of construction materials and methods of constructing structures. Classroom, lab experiences and construction site tours give students an understanding of building frame parts, procedures and applications of materials. Construction tool safety, codes, blueprint reading and application, conventional and innovative framing technology for residential and commercial construction will be emphasized.
(Fall, Winter, Spring)

CONST 200 Advanced Woodworking

(3.0:2:4)

Prerequisite: Const 100

Advanced woodworking is a study of practices, materials, methods, and techniques used in the design and construction of fine wood furniture. Emphasis will be placed on materials and fine joinery techniques.
(Fall, Spring)

CONST 210 Finishing Systems

(3.0:2:3)

Prerequisite: CONST 120 and Arch 100.

The purpose of this course is to give the student a basic understanding of the design, materials, and methods of finishing systems used in the building construction industry.
(Fall, Winter, Spring)

CONST 230 Mechanical Environmental Systems

(3.0:2:2)

Prerequisite: Arch 100

Materials design, installation, and applications of building service systems, including supply systems, waste removal systems, heating ventilation, air conditioning, heating loads, air distribution, equipment selection, energy efficient, and solar construction, building codes.
(Fall, Winter, Spring)

CONST 240 Electrical Systems

(3.0:2:2)

Prerequisite: Arch 100

Study of materials, design of circuits and inspection for electrical heat, light and power installation in homes and small buildings. The class covers the National Electrical Code (NEC) and applicable local codes. The course applies the NEC as a standard for the layout and installation of residential electrical systems. Basic electrical theory will be presented and applications and basic wiring skills will be introduced.
(Fall, Winter, Spring)

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CONST 250 Steel Structural Systems

(3.0:2:2)

Prerequisite: ARCH 110

A study of steel construction technology including steel frame construction of light gauge and heavy structural and tube steels. Classroom and lab experiences will include construction methods, materials, connection design, prints, symbols, tools and equipment, joining methods, welding processes and skills, coded, specifications, quality, safety and nomenclature.

(Fall, Winter)

CONST 260 Statics & Strength of Materials

(3.0:3:0)

Prerequisite: Arch 100 and Math 111

The course provides an introduction to force systems in static equilibrium and an elemental understanding of strengths of material, or the relationship between applied loads and the internal forces and deformations induced in the structural element. Major topics that are covered in the course include forces, moments, couples, free body diagrams, trusses, frames, centroids, moment of inertia, stress, strain, deformation and load, shear and moment diagrams.

(Fall, Winter, Spring)

CONST 290 Special Problems

(1-4:0:0)

Prerequisite: Approved after consultation with Instructor in charge.

Selected problem solving in a variety of construction and architectural areas. May involve special assignment, laboratory, and on-the-job experience.

CONST 300 Cabinetmaking

(3.0:2:3)

Cabinetmaking is a study of the materials and methods used in professional cabinetmaking. The class will study designing, planning, cost estimating, materials, and construction techniques for kitchen, bathroom, and other built-in type of cabinets using both traditional and metric construction methods. It will also cover the safe setup and operation of professional cabinetmaking equipment.

CONST 320 Construction Safety

(2.0:2:0)

Prerequisite: Arch 100, Const 120

This course introduces students to OSHA policies, procedures, and standards, as well as construction safety and health principles. Topics include scope and application of OSHA construction standards. Special emphasis will be placed on the most common safety hazards in the construction industry. Upon successful course completion, the student will receive an OSHA construction safety and health 30-hour course completion card.

(Fall, Winter, Spring)

CONST 330 Construction Estimating

(3.0:2:4)

Prerequisite: CONST 120, ARCH 100

The purpose of Const 330 (Construction Estimating) is to introduce the student to the principles of construction cost estimates, including organizing and planning an estimate, developing material and labor databases, preparing accurate quantity takeoffs, and developing an understanding of overhead and profit.

(Fall, Winter, Spring)

CONST 340 Land Surveying

(3.0:3:0)

Prerequisite: Math 111

Theory and use of instruments dealing with measurements pertaining to plane surveying. Application of surveying methods of practical problems.

(Fall, Winter, Spring)

CONST 350 Soils & Equipment

(3.0:2:2)

Prerequisite: Arch 100

Theory and use of instruments dealing with measurements pertaining to plane surveying. Application of surveying methods of practical problems.

(Fall, Winter, Spring)

CONST 370 Concrete and Masonry Construction

(3.0:2:2)

Prerequisite: Const 260

This course is a hands-on introduction to the construction materials called concrete and masonry. Topics of study include: fundamentals of concrete, cement manufacturing, hydrations, cement types, admixtures, mixing reinforcement, placement, finishing, curing testing, shrinkage, and hot and cold weather applications. Our study of concrete also includes a look at concrete elements such as footings, foundations, beams, slabs, and framing systems. Although concrete and masonry are designed by engineers and tested in the field by technicians, construction managers should understand what these professionals do in order to properly oversee construction practice so as to meet project specifications. Both classroom and laboratory experiences will assist students in gaining knowledge and skills in concrete masonry technology. The knowledge and skills developed during the course will be both theoretical as well as practical.

(Fall, Winter, Spring)

CONST 380 Project Management

(3.0:3:0)

Prerequisite: Const 260, Const 330, or concurrent enrollment

Construction Project Management Teaches the basic fundamental tasks and responsibilities of a project manager or project engineer as well as provide practical application through course assignments. Although, this class emphasized more commercial building construction, the same principles apply to other disciplines of construction.

(Fall, Winter, Spring)

CONST 390R Construction Seminar

(0.5:1:0)

Prerequisite: Completed 45 hours coursework. Sophomore status

An internship is a cooperative program between BYU-Idaho Architecture and Construction Department and approved Experience Providers (employers). Professional internships correlate actual work experience in the building construction industry with the architecture and construction coursework. Internships approved by the internship coordinator provide students with knowledge of career opportunities and actual work experience in preparation for employment after graduation. The ideal internship would take place during the students off-track semester and be a full time, paid, employment opportunity. The length of time for your internship experience is intended to be equal to a 14 week semester, 40 hours per week or approximately 560 hours. Students should not wait until after graduation to complete their internship courses and are encouraged to begin as early as possible.

(Fall, Winter, Spring)

CONST 398 Junior Internship

(1.0-2.0:0:0)

Prerequisite: For students with less than 90 credit hours or instructor approval

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(Fall, Winter, Spring)

CONST 400 Advanced Estimating & Bidding

(3.0:2:2)

Prerequisite: Const 330

The purpose of Const 400 Advanced Estimating is to help students contemplating a career as an estimator to further gain knowledge and skills required to estimate in building construction. An in depth analysis of estimating methods, fundamental skills, the estimator's responsibilities and computer software applications for construction cost estimates, are covered. Evolving estimating methods will also be introduced. (Every other semester)

CONST 420 Construction Scheduling

(3.0:2:2)

Prerequisite: Const 330, Const 380

This course is an introduction to concepts of construction project scheduling, including: planning and developing efficient construction schedules, methods of preparing construction schedules, and using schedules to efficiently manage job resources and control costs.

(Fall, Winter, Spring)

CONST 430 Construction Law

(3.0:3:0)

Prerequisite: Const 330, Const 498

The purpose of this course is to provide an introduction to contract law and the legal requirements and regulations associated with the operation of a construction company and execution of construction projects.

(Fall, Winter, Spring)

CONST 450 Construction Management

(3.0:3:0)

Prerequisite: Const 380, Const 498

This course provides an introduction to organizing, controlling and directing the operations of construction companies. The topics covered include business ownership and management, company organization, business methods, bonds, insurance, safety and labor relations.

(Fall, Winter, Spring)

CONST 460 Residential Construction Practices

(2.0:2:0)

Prerequisite: Const 330.

An overview of construction management practices in residential construction. Focuses on construction and contracting methods, productivity, work activity sequencing, and company organizations. Leadership and communication skills, construction ethics will also be covered.

(Every other semester)

CONST 498 Internship

(1.0-2.0:0:0)

Prerequisite: Const 380

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(Fall, Winter, Spring)