

Department of

Design and Construction Management



Reed Nielsen, Department Chair

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<http://www.byui.edu/design-construction-management>

Department of Design and Construction Management

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 this 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.

Department Learning Outcomes

These statements are based on the philosophy of the Department of Architecture and Construction. The outcomes state what the students will be able to do as a result of their participation in the program. Graduates of the Architecture and Construction Management will:

1. Be able to perform professional responsibilities independently, as a team member, and as part of a multi-disciplinary team.
2. Be able to apply sound communication, business, financial and ethical principles in the management of people and/or resources in the design and construction environment.
3. Understand architecture/construction processes, sciences, technology, materials and methods, and system assemblies and requirements.
4. Value the concept of life-long learning and continue to grow intellectually while keeping informed of new concepts and developments in architecture and/or the construction process.
5. Be prepared to make an immediate contribution to their chosen professions in a positive and meaningful way.

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. The internships are to be completed on the students "off track". 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.

Design and Construction Management

Brigham Young University-Idaho 2013-2014

BS in Construction Management (605)

Take required Foundations courses

Major Requirements

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

Construction Management Core	Technical Elective Courses	Management Emphasis Courses		<i>Program Notes:</i>	
<i>Take these courses during your first 2 semesters:</i>	<i>Take 9 credits:</i>	<i>Select and complete 1 of the following options:</i>			
ARCH 100 3	ARCH 120 3	Option 1 - 24 credits Complete Business Minor 189 (See the Business Department of the catalog) <u> 24</u>	Option 2 - 24 credits Complete this cluster 6010 - Construction Management Business Management AND Complete 1 cluster 6001 - Commercial Construction 6003 - Residential 6012 - Construction Documents		
CONST 120 3	ARCH 190 3				
CONST 260 3	ARCH 270 3				
CONST 280 3	ARCH 290 3				
MATH 111 2	ARCH 300 3				
14	CONST 210 3				
	CONST 250 3				
	CONST 320 2				
	CONST 340 3				
	CONST 350 3				
<i>Take these courses:</i>	9				
CONST 230 3					
CONST 240 3					
CONST 330 3					
CONST 370 3					
CONST 380 3					
CONST 398R 1					
CONST 400 3					
CONST 420 3					
CONST 430 3					
CONST 450 3					
CONST 460 2					
CONST 498R 1					
31					

Total Major Credits=78

Additional Elective Credits Required for Graduation=2

This major is available on the following tracks:

Fall-Winter---- YES

Winter-Spring---- YES

Spring-Fall---- YES

Construction Management Concentration (D 134)

Concentration Requirements

No Grade Less Than C- for Concentration Courses / No Double Counting of Concentration Courses

Core Courses	Construction Technology Electives	<i>Program Notes:</i>
<i>Take these courses:</i>	<i>Take 4 courses:</i>	
ARCH 100 3	CONST 210 3	
CONST 120 3	CONST 230 3	
CONST 260 3	CONST 240 3	
CONST 280 3	CONST 250 3	
CONST 330 3	CONST 300 3	
CONST 380 3	CONST 320 2	
IDS 398R 1-3	CONST 340 3	
IDS 499 2	CONST 350 3	
MATH 111 2	CONST 370 3	
23	CONST 400 3	
	CONST 420 3	
	11	

Concentration Credits=34

This concentration is available on the following tracks:

Fall-Winter---- YES

Winter-Spring---- YES

Spring-Fall---- YES

Design and Construction Management

Brigham Young University–Idaho 2013-2014

Architecture and Construction Pre-approved Clusters

No Double Counting of Major, Minor or Cluster Courses

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Design and Construction Management

Brigham Young University-Idaho 2013-2014

Course Descriptions

Credits*

ARCH 100 Introduction to Design and Construction

(3:3:1)

Repeatable Course: may earn maximum of 3 credits

Previously taught as ARCH 100

This course is an introduction to Architecture and Construction and will give the student an introductory experience and familiarity with the construction documents and allow for communication in the construction industry.

(Fall, Winter, Spring)

ARCH 120 Computer Aided Design 1

(3:3:2)

Prerequisites: DCM 100

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 180 Architectural Graphic Representation

(3:2:4)

Prerequisites: DCM 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.

(Fall, Winter, Spring)

ARCH 190 Building Information Modeling 1

(3:2:2)

Previously taught as Arch 280

An introductory course designed to give students experience using computer modeling software. Students will learn more about BIM and its use in the architecture industry to create 3D geometric modeling, 2D view generation, and presentation rendering using Autodesk Revit. Learning is project focused with the various commands and features being taught as needed to complete the assigned projects.

(Fall, Winter, Spring)

ARCH 201 Architecture Design Studio

(3:2:4)

Prerequisites: DCM 100; ARCH 120

Arch 201 is an exploration of the architectural design process through a series of studio exercises and a semester long project. The student will employ various physical materials and architectural ordering systems to learn the basics of architectural design.

(Fall, Winter, Spring)

ARCH 220 Computer Aided Design 2

(3:2:2)

Prerequisites: DCM 100

Previously taught as Arch 160

Designed to teach the more advanced functionality of CAD software, striving to increase student proficiency and introduces more advanced techniques. Emphasizes architectural knowledge, practices, and drafting procedures needed to prepare a set of construction documents for a commercial building. Skills required for the architectural examination will be emphasized. Learning is project focused with the various software commands and features being taught as needed to complete the assigned projects. The course will be operated in the same manner as a typical architectural firm.

(Fall, Winter, Spring)

ARCH 270 Specifications

(3:3:0)

Prerequisites: DCM 100; DCM 120

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.

(Fall, Winter, Spring)

ARCH 290 Building Information Modeling 2

(3:2:2)

Prerequisites: ARCH 190

Designed to teach the collaborative functionality of BIM software, striving to increase student proficiency in 3D modeling and focus on the role of BIM to improve construction productivity. Emphasizes the virtual modeling using Autodesk Revit and information management using Navisworks Manage that can be used for making design decisions, document generation, quantity takeoffs, scheduling, and interference checking.

(Fall, Winter, Spring)

ARCH 300 Sustainable Design and Construction

(3:3:0)

Prerequisites: DCM 100

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)

ARCH 310 Advanced Modeling

(3:2:4)

Prerequisites: ARCH 180

An advanced course in the use of Computer Aided Design in architecture. Students will learn to develop and refine a complete set of construction documents through the use of computer graphics systems and industry standard software. The course will also examine various construction materials and methods and structure beginning with the initial function/conceptual diagram and examine its refinement through the architectural design process, building codes, materials, and aesthetics. The end product of course projects will be 3D digital models, renderings and digital animated walkthroughs to showcase the design. 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.

(Fall, Winter, Spring)

CONST 100 Basic Woodworking

(3:2:2)

Total Course Fees: \$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.

(Fall, Winter, Spring)

CONST 120 Construction Management Fundamentals

(3:2:2)

Concurrent: DCM 100

Previously taught as CONST 120

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 Furniture Making

(3:2:4)

Advanced study and practices of woodworking techniques used in design and construction of fine furniture. Emphasis will be placed on the design, materials, and joinery techniques utilized in the creation of heirloom quality furniture.

(Every other semester)

CONST 210 Finishing Systems

(3:2:3)

Prerequisites: DCM 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.

(Every other semester)

CONST 230 Mechanical Environmental Systems

(3:2:2)

Prerequisites: DCM 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)

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CONST 240 Electrical Systems

(3:2:2)

Prerequisites: DCM 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)

CONST 250 Steel Structural Systems

(3:2:2)

Prerequisites: DCM 100

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, codes, specifications, quality control, safety, and structured steel nomenclature.

(Every other semester)

CONST 260 Statics and Strength of Materials

(3:3:0)

Prerequisites: DCM 100; DCM 120; (MATH 111 or MATH 109 or FDMAT 112)

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 280 Methods and Materials

(3:3:0)

Prerequisites: DCM 100; DCM 120

A study of building construction materials, methods and equipment.

(Fall, Winter, Spring)

CONST 290R Special Problems

(0.5-3:0:0)

Repeatable Course: may earn maximum of 3.5 credits

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

(Fall, Winter, Spring)

CONST 300 Cabinetmaking

(3:2:3)

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.

(Every other semester)

CONST 320 Construction Safety

(2:2:0)

Prerequisites: DCM 100; DCM 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

(3:2:4)

Prerequisites: DCM 100; DCM 120; CONST 260

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

(3:2:3)

Prerequisites: MATH 111

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

(Fall, Spring)

CONST 350 Soils

(3:2:2)

Prerequisites: DCM 100

The purpose of this course is to introduce students to the nature of soils and to illustrate how soil materials may influence certain construction operations. This course is an introduction to soil materials, soil methods, the materials presented in this course will provide the basic background for understanding soil behavior and how construction specifications relate to it. The cost and control of excavating, hauling, grading, compacting, lifting and the use of other heavy equipment will also be discussed.

(Fall, Spring)

CONST 370 Concrete and Masonry Construction

(3:2:2)

Prerequisites: 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 and 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

(3:3:0)

Prerequisites: CONST 330

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. Ability to run MS Word and MS Excel, version 2003 or later, is required for personal laptops. Similar software is not acceptable.

(Fall, Winter, Spring)

CONST 390R Construction Seminar

(0.5-2:0:0)

Repeatable Course: may earn maximum of 2 credits

Construction 390R is a Junior/Senior level lecture series which will introduce students to relevant topics and leaders within the construction industry. Possible topics to be covered include: estimating, safety, team building, sales, and marketing. Additional topics such as developing internship and employment opportunities, interviewing, resume and letter writing, and salary negotiations will also be covered.

(Fall, Winter, Spring)

CONST 398R Beginning Internship

(1:0:0)

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 student's 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 400 Advanced Estimating and Bidding

(3:2:2)

Prerequisites: CONST 330

The purpose of Const 400 Estimating and Bidding 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.

(Fall, Winter, Spring)

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CONST 420 Construction Scheduling

(3:2:2)

Prerequisites: 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

(3:3:0)

Prerequisites: CONST 380; 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

(3:3:0)

Prerequisites: 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 Principles and Practices

(2:2:0)

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

CONST 498R Advanced Internship

(1:0:0)

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 student's 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)

DCM 110 Design Thinking and Innovation

(3:3:0)

Design Thinking is quickly becoming the problem-solving method used by leading consulting firms such as IDEO®, Frog Design®, and Adaptive Path® to produce innovative solutions to complex human-centered problems. This course introduces students to the process used in the Design Thinking mindset in a relaxed and creative atmosphere. Aesthetic or artistic ability is not required to successfully achieve the learning outcomes of this course. (Fall, Winter, Spring)

DCM 130 Design Relevance

(3:3:0)

This course is designed to give students a contextual foundation in the who, what, why, where, when, and how in the creation of qualitative solutions to design problems. In this course students will develop aesthetic and logical judgment as they explore problem solving scenarios throughout history. Students will experience and discuss human interface as it relates to the products and services they use every day. (Fall, Winter, Spring)

DCM 140 Visualization and Communication

(3:3:0)

This course will provide students with the tools to communicate effectively, individually or in groups, within any discipline. Students will learn the visual communication skills of drawing and sketching, brainstorming and mind mapping, and building rapid prototypes from diverse materials and tools. Students will also be introduced to the concept of communication using logic, order, process, negotiation, and compromise. (Fall, Winter, Spring)

DCM 300 Collaborative Design and Innovation Studio

(3:1:5)

Prerequisites: DCM 110; DCM 130; DCM 140

This capstone course is designed to test the students' abilities to "design think," communicate effectively, and apply aesthetic and logical judgment as the solve real-world problems. Students will work in small diverse groups in an open laboratory of innovation. The level of complexity will increase for each design problem leading up to the "wicked problem" that has incomplete, contradictory, and changing requirements. (Fall, Winter, Spring)

The BA degree in Interior Design will no longer be offered; as a result, will not be accepting new students or offering freshman level courses.

ID 100R Design Seminar

(1:0:2)

Total Course Fee: \$70.00

Prerequisite: Majors only

Required each semester for all Interior Design majors, this course is designed to strengthen and enrich Interior Design courses and expose students to the professional design world. Arranged class presentations by guests and other activities support the ASID (American Society of Interior Designers) Student Chapter, the NKBA (National Kitchen and Bath Association) Student Chapter, and EGB (Emerging Green Builders). Membership in the ASID Student Chapter is included; membership in other supported organizations are voluntary. Student service (peer teaching and learning experiences and participation in a portfolio review are required each semester. (Fall, Winter, Spring)

ID 300 Presentation Studio Skills 2

(1:0:2)

Prerequisite: ID 101, ID 137, ID 238

Majors only

Series of mini-classes designed to introduce students to topics and skills of specialization not focused on in other courses. Special topics is a group of rotating mini-classes whose subjects will be determined based on the needs of the Department and the students. (Fall)

ID 341 Space Planning 3

(3:1:4)

Fee: \$15.00

Prerequisite: ID 250, ID 276

Majors only

An intermediate course designed to provide students experience in research development, programming and schematic design development, problem solving, space planning, furniture layout, fabric and finish material selection/calculation/specification, and practical competencies in residential design. Barrier-free, passive solar, and the use of sustainable products will be addressed. Contract design considerations will be introduced. (Fall)

ID 355 Contract Design 1

(3:1:4)

Total Course Fee: \$15.00

Prerequisite: ID 341, ID 380, ID 395

Majors only

This course is designed to give students intermediate experience in research development and practical competencies in contract design. Accessibility guidelines and building codes will be emphasized with special attention to restaurant and health care occupancies. Sales training and presentation skills and practiced throughout the course. (Winter)

ID 380 Historical Architecture and Furniture

(3:3:0)

Total Course Fee: \$5.00

Majors Only

A survey of the historical development of architecture, furniture, and furnishings from prehistory to the Industrial Revolution. (Fall)

ID 381 Contemporary Architecture and Furniture

(3:3:0)

Total Course Fee: \$5.00

Prerequisite: ID 380

Majors only

A survey of the development of contemporary architecture, furniture, and furnishings from

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the Industrial Revolution to the present. (Winter)		semester for graduation. (Winter)
ID 384 Advanced Visual Presentation	(2:0:4)	
Total Course Fee: \$10.00 Majors only This advanced course is designed to give students experience creating and photographing architectural models. A foundation in techniques and material selection will be taught. Projects will include computer generated and hand crafted models (Fall)		
ID 385 Business Principles	(3:3:0)	
Prerequisite: ID 276, ID 341 Majors only This course is designed to introduce the student to the business aspect of interior design. Information will be presented regarding procedural forms and professional practices for the interior designer, i.e., ethics, contracts, fee bases, purchase orders, letters of agreement, business formations, and terminology relating to the interior design business practice. Resume writing, interviewing and job seeking skills for the job market will also be addressed. (Winter)		
ID 398R Internship	(3:0:0)	
Majors only Four-week (160 hours) supervised work experience with a professional design firm. For those specializing in kitchen and bath design, internship is recommended with a certified kitchen designer (CKD) or bath designer (CBD). (Spring)		
ID 460 Contract Design 2	(3:1:4)	
Total Course Fee: \$15.00 Prerequisite: ID 355 Majors only This course is designed to provide students advanced experience in contract design and research development. The course will begin with a basic space planning methodology, and culminate in a group design project. Topics addressed will include systems furniture, Green building design, building systems, and building codes including ADA. (Fall)		
ID 465 Portfolio	(2:0:4)	
Majors only Preparation of portfolio for the job search. Twelve projects required. Resume included. Required last semester prior to graduation. Digital format required. (Winter)		
ID 499 Comprehensive Project	(4:3:2)	
Total Course Fee: \$10.00 Prerequisite: ID 381, ID 385, ID 460 Majors only A capstone course designed to prepare the student for the NCIDQ Examination through lecture review of all previous design courses, written exams, and completion of a timed design practicum. Local community design project(s) involvement required. Required last semester for graduation. (Winter)		
ID 465 Portfolio	(2:0:0:4)	
Prerequisite: (Majors Only) Preparation of portfolio for the job search. Twelve projects required. Resume included. Required last semester prior to graduation. Digital format required. (Winter)		
ID 499 Comprehensive Project	(4:0:3:2)	
Fee: \$10 Prerequisite: (Majors only) ID 381, ID 385, ID 460 A capstone course designed to prepare the student for the NCIDQ Examination through lecture review of all previous design courses, written exams, and completion of a timed design practicum. Local community design project(s) involvement required. Required last		