ARCHITECTURE (ARCH)

ARCH A101 **1 Unit (18 lecture hours)**
Introduction to Environmental Sustainability
Grading Mode: Standard Letter
Transfer Credit: CSU

This course is an overview to environmental sustainability and will provide a fundamental understanding of the cultural, man-made and natural factors involved in creating ecological balance and ethical stewardship of natural resources. Focus will be on the building and design related aspects of sustainability. This course may also be offered online.

ARCH A102 **3 Units (54 lecture hours)**
Introduction to Environmental Studies
Grading Mode: Standard Letter, Pass/No Pass
This course is designed to present an overview of the environmental studies field to students from multiple disciplines. A basic understanding of issues related to the environmental components of air, soil and water; historic development of ecological issues; economic, political, and cultural concepts; regulations, and technology will be presented. An overview of career opportunities and paths within the environmental industry will also be covered.

ARCH A104 **1 Unit (14 lecture hours; 4 lab hours)**
Introduction to FrameCAD Steel Framing
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU

Introduction to FrameCAD Steel Framing is an overview of integrated steel panelization design and fabrication. Instruction includes entry level use of FrameCAD Structure and FrameCAD Detailer software as well as file export to FrameCAD Factory and machine. The class will produce and assemble a small sample project using the OCC FrameCAD F325iT.

ARCH A105 **2 Units (18 lecture hours; 54 lab hours)**
Architectural Drawing and Design Visualization 1
Grading Mode: Standard Letter
Transfer Credit: CSU.

This introductory course in architectural visualization techniques will focus on how to communicate a three-dimensional design using a two-dimensional medium. Subjects and techniques presented will include orthographic projection, paralines, plan views, elevations, sections, basic perspective drawing, rendering materials and tonal values, and an introduction to SketchUp and hand modeling.

ARCH A107 **1 Unit (20 lecture hours; 10 lab hours)**
Tiny House Design
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

Tiny House Design is a 5 week seminar course that introduces design concepts, codes, budgeting, and building strategies unique to Tiny Houses. The course is packed with guest speakers, hands-on demonstrations, and information resources. Students will plan out their own project and are encouraged to bring lots of ideas and questions. A field trip to experience a tiny house build will also be scheduled. No prior experience needed.

ARCH A110 **2 Units (36 lecture hours)**
Introduction to Architecture
Grading Mode: Standard Letter
Transfer Credit: CSU; UC.

This introductory course explores the professional and academic aspects of architecture and related professions. Lectures will include licensing, educational choices, history, practice, design, theory, structures, and personal goal setting; guest speakers and an office visit will give students a firsthand chance to observe multiple sides of the profession. This course may also be offered online.

ARCH A110H **2 Units (36 lecture hours)**
Introduction to Architecture Honors
Grading Mode: Standard Letter
Transfer Credit: CSU, UC.

This introductory course explores the professional and academic aspects of architecture and related professions. Lectures will include licensing, educational choices, history, practice, design, theory, structures, and personal goal setting; guest speakers and an office visit will give students a firsthand chance to observe multiple sides of the profession. This course may be offered online.

ARCH A115 **4 Units (54 lecture hours; 54 lab hours)**
Architectural Design and Theory 1
Advisory: ARCH A105.

Grading Mode: Standard Letter
Transfer Credit: CSU; UC

This beginning architectural design course includes the perceptual and physical study of three dimensional design theories, principles and compositional techniques used in the creation and manipulation of architectural form, space, and light. Focus will be on fundamental design skills and will progress to a complete architectural design project using models, drawings, and graphics to study and communicate the design.

ARCH A121 **2 Units (36 lecture hours; 12 lab hours)**
FrameCAD Studio 1
Advisory: ARCH A104.

Grading Mode: Standard Letter
Transfer Credit: CSU.

FrameCAD Studio 1 is a project-based course that develops design skills to produce a steel panel project using FrameCAD software. Basic steel frame design concepts will be covered as well as use of FrameCAD Structure and FrameCAD Detailer. Students will also receive basic machine safety and steel panel assembly experience.

ARCH A122 **2 Units (36 lecture hours; 12 lab hours)**
FrameCAD Studio 2
Advisory: ARCH A121.

Grading Mode: Standard Letter
Transfer Credit: CSU.

FrameCAD Studio 2 is a project-based intermediate course that develops design skills to produce a steel panel project using FrameCAD software. Students will be encouraged to design a project of choice and will work collaboratively to design and prepare each project for production. This is a continuation of FrameCAD Studio 1 and FrameCAD Structure and FrameCAD Detailer software will be used to design the projects and export to FrameCAD Factory software for production.

ARCH A141 **3 Units (54 lecture hours)**
Introduction to Resouse Management
Grading Mode: Standard Letter
Transfer Credit: CSU.

This course introduces the principles of environmental resource management. An overview of the global aspects of resources and waste, creative strategies for reclaiming resources, and an introduction to community and industry opportunities and skills needed for employment in green industries, sustainable advocacy and education will be presented and explained..

ARCH A142 **3 Units (54 lecture hours)**
Environmental Advocacy
Grading Mode: Standard Letter
Transfer Credit: CSU.

This course covers a range of environmental advocacy strategies and includes engaging community stakeholders towards improved environmental resource management goals. Students will have the opportunity to create and plan for environmental campaigns, educational programs, and a range of environmental advocacy activities, including writing effective proposals and grants.

ARCH A143 **3 Units (54 lecture hours)**
Resource Management and Zero Waste for Communities
Grading Mode: Standard Letter
Transfer Credit: CSU

This course will identify how resource management and zero waste policies and programs are developed within a community, what type of planning and facilities are needed, and how to finance the systems. Students will also learn business recycling tools, best practices for proposals and contracts, enforcement options, design for resource recovery parks, performance reporting and financial records, Extended Producer Responsibility and Local Producer Responsibility policies, and development of local markets and uses.

ARCH A144 **3 Units (54 lecture hours)**
Resource Management and Zero Waste for Business
Grading Mode: Standard Letter
Transfer Credit: CSU

This course will include a global overview of environmental resource management standards and provide hands-on knowledge and application tools for students to assess and propose resource management strategies for regional businesses, industries, and institutions. Studies and activities will include zero waste program design, implementation strategies, waste reduction and resource management practices, market and economic drivers and incentives, and regulatory policies. Case studies and projects will focus on local practices and community networking.

ARCH A150 **2 Units (27 lecture hours; 36 lab hours)**
CAD 2-D for Architecture
Grading Mode: Standard Letter
Transfer Credit: CSU.

This course introduces Computer Aided Drafting (CAD) as used to produce 2-dimensional architectural drawings. PCs with Autodesk Architecture and/or ArchiCAD will be used and instruction will focus on computer drawing a simple project to include the following drawing types: floor plan, site plan, elevation, and enlarged section/details. Students should have basic knowledge of computer operation and file management.

ARCH A155 **2 Units (27 lecture hours; 36 lab hours)**
BIM 1 for Architecture
Grading Mode: Standard Letter
Transfer Credit: CSU.

This course introduces Building Information Modeling (BIM) as used to produce a 3-dimensional architectural model with detailed construction information. PCs with Autodesk Revit, ArchiCAD, or Microstation will be used and instruction will focus on computer modeling a simple project and extracting construction documentation. Students should have basic knowledge of computer operation and file management.

ARCH A156 **2 Units (27 lecture hours; 36 lab hours)**
BIM 2 for Architecture
Advisory: ARCH A155 or comparable skills with BIM.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This course introduces Building Information Modeling (BIM) as used to produce a 3-dimensional architectural model with detailed construction information. PCs with Autodesk Revit, ArchiCAD or Microstation will be used and instruction will focus on computer modeling a simple project and extracting construction documentation. Students should have basic knowledge of computer operation and file management as well as construction.

ARCH A157 **2 Units (27 lecture hours; 36 lab hours)**
BIM Multidisciplinary
Advisory: ARCH A156 or equivalent skills.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This course uses Building Information Modeling (BIM) with multidisciplinary applications (Structural, Mechanical, Electrical, and Plumbing) and project management tools to create an integrated 3-dimensional architectural model. PCs with Autodesk Revit and other software will be used and instruction will focus on coordinating one or more disciplines in a collaborative environment.

ARCH A158 **2 Units (27 lecture hours; 36 lab hours)**
BIM Project Integration
Advisory: ARCH A156 or equivalent skills.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This course uses Building Information Modeling (BIM) in conjunction with prototyping and manufacturing software (such as Fusion 360 or FrameCAD) to integrate design, construction, and manufacturing applications for a small project. Autodesk Revit, Fusion 360, FrameCAD Structure and/or other software will be used in a collaborative team environment.

ARCH A160 **2 Units (27 lecture hours; 36 lab hours)**
3-D Modeling: SketchUp 1
Grading Mode: Standard Letter
Transfer Credit: CSU.

This course introduces Google SketchUp 3-D Modeling as used for architectural design visualization. Computers with SketchUp Pro will be used and instruction will focus on computer modeling a rectilinear design and exporting images and animation for design presentation. Students should have basic knowledge of computers and file management. This course may also be offered online.

ARCH A162 **2 Units (27 lecture hours; 36 lab hours)**
3-D Modeling: Rhino 1
Grading Mode: Standard Letter
Transfer Credit: CSU.

This course introduces 3-D Modeling for design visualization using Rhino software. Hands-on instruction will focus on digitally modeling a design with rectilinear and non-rectilinear geometry, including preparing files for fabrication and presentation. Students should have basic knowledge of computers and file management.

ARCH A163 **2 Units (27 lecture hours; 36 lab hours)**
3-D Modeling: Rhino 2
Advisory: ARCH A162.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

This course introduces fundamental skills of coding and 3-D computational design using Rhino software with additional plug-ins. Hands-on instruction will focus on parametrically modeling and testing design variations with rectilinear and non-rectilinear geometry, including preparing files for fabrication and presentation. Students should have basic knowledge of 3-D modeling.

ARCH A165 **2 Units (27 lecture hours; 36 lab hours)**
Presentation Graphics
Grading Mode: Standard Letter
Transfer Credit: CSU.

This course is for architecture/design students who want to improve their graphic communication skills. Emphasis is on improving personal presentations and portfolios using Adobe Creative Suite: Photoshop, Illustrator, In-design, and/or Acrobat. Students should have knowledge of computer operation and file management and projects to bring in.

ARCH A167 **1 Unit (18 lecture hours; 12 lab hours)**
Presentation Video
Grading Mode: Standard Letter
Transfer Credit: CSU

This course is for architecture/design students and professionals who want to use digital video to present creative projects. Emphasis will be on narrative story telling and communicating a message using Windows Movie Maker or Apple iMovie. Students should have knowledge of computer operation and file management and provide a USB drive.

ARCH A170 **1 Unit (18 lecture hours; 12 lab hours)**
Introduction to Design Fabrication
Grading Mode: Standard Letter
Transfer Credit: CSU.

This is a limited introduction to computer-assisted design fabrication, including simple operations and shop safety. Students will have the opportunity to use laser cutters, CNC routers, robotics, a 3-D printer, etc.

ARCH A171 **2 Units (27 lecture hours; 36 lab hours)**
Design Fabrication 1
Grading Mode: Standard Letter
Transfer Credit: CSU

This course introduces digital fabrication techniques for architecture and design, including shop safety. Emphasis is given to design iteration and fabricating basic projects using computer-assisted equipment (laser cutters, CNC routers, robotics, 3-D printers and scanners, etc.).

ARCH A172 2 Units (27 lecture hours; 36 lab hours)
Design Fabrication 2
Advisory: ARCH A171.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This course promotes intermediate digital fabrication techniques for architecture and design. Emphasis is given to independent project design and construction using computer-assisted equipment (laser cutters, CNC routers, robotics, 3-D printers and scanners, etc.).

ARCH A180 4 Units (36 lecture hours; 108 lab hours)
Architectural Construction Documents
Advisory: ARCH A105 and ARCH A115.

Grading Mode: Standard Letter
Transfer Credit: CSU.

A basic course focusing on representation skills as applied to digital and physical construction models and documents for a wood frame structure. Further emphasis is on architectural symbols and conventions, specifications, building codes, products, materials, equipment, and the development of a student-designed structure.

ARCH A185 4 Units (36 lecture hours; 108 lab hours)
Environmental Design Systems
Advisory: ARCH A180.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This intermediate design course focuses on the environmental, cultural, and physical forces that effect architecture. Students will research and utilize design approaches and building components/systems that respond to human needs and the natural and built environments. Study topics will include site design and cultural context, environmental/climate responsive approaches to design, maintaining structural design integrity, incorporating life safety and access, and ecologically minded approaches to design.

ARCH A190 1.5-2.5 Units (9 lecture hours; 60-120 other hours)
Environmental Studies Practium
Advisory: ARCH A141, ARCH A142, ARCH A143, and ARCH A144.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This course provides environmental studies students with a practicum cooperatively planned by a private, public or non-profit agency and environmental studies faculty. The focus is on providing students with an opportunity to apply environmental studies theory and zero waste applications in a realistic work setting and includes preparation and assistance in locating internship opportunities that may take place locally, nationally, or internationally.

ARCH A196 1.5 Units (27 lecture hours)
Green Building Codes
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

A complete analysis of the California Green Building Code. Special local Green Building ordinances are also covered along with a comparison of the International Green Building Code. Same as CNST A196; students completing ARCH A196 may not receive credit for CNST A196. May be taken for grades or on a pass/no-pass basis.

ARCH A197 1.5 Units (27 lecture hours)
California Energy Code
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

A complete analysis of the California Energy Code. Special local Energy Code ordinances are also covered along with a comparison of the International Energy Code. Explanation of the State's energy and compliance forms. Same as CNST A197; students completing ARCH A197 may not receive credit for CNST A197. May be taken for grades or on a pass/no-pass basis.

ARCH A199 0.5-4 Units (9-72 lecture hours; 0-54 lab hours)
Current Topics in Architecture
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU.

Current topics in Architecture may include cultural topics as well as architectural technology topics and could rotate through a variety of topics, such as field studies, design/build projects, design studies, and construction studies. May be taken for grades or on a pass-no pass basis.

ARCH A201 2 Units (27 lecture hours; 36 lab hours)
Design/Build 1 for Architecture
Grading Mode: Standard Letter
Transfer Credit: CSU.

This learn-by-doing course involves the design and construction of a transportable structure. Students will work in teams with an instructor. Projects will vary and are likely to involve off-campus assembly.

ARCH A201H 2 Units (27 lecture hours; 36 lab hours)
Design/Build 1 for Architecture Honors
Grading Mode: Standard Letter
Transfer Credit: CSU.

This learn-by-doing course involves the design and construction of a transportable structure. Students will work in teams with an instructor. Projects will vary and are likely to involve off-campus assembly.

ARCH A202 4 Units (48 lecture hours; 80 lab hours)
Design/Build 2 for Architecture
Advisory: ARCH A180.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This learn-by-doing course involves the design and construction of a structure or interior project. Students will work in teams with an instructor. Projects will vary and are likely to involve off-campus assembly.

ARCH A202H 4 Units (48 lecture hours; 80 lab hours)
Design/Build 2 for Architecture Honors
Advisory: ARCH A180.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This learn-by-doing course involves the design and construction of a structure or interior project. Students will work in teams with an instructor. Projects will vary and are likely to involve off-campus assembly.

ARCH A203 4 Units (48 lecture hours; 80 lab hours)
Design/Build 3 Architecture
Advisory: ARCH A180 or comparable course completion or work experience.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This learn-by-doing course involves the design and construction of a small structure with an emphasis on integrating digital fabrication and/or manufacturing techniques. Students will work in teams with an instructor. Projects will vary and could involve off-campus assembly.

ARCH A205 3 Units (36 lecture hours; 54 lab hours)
Architectural Drawing and Design Visualization 2
Prerequisite(s): ARCH A105.

Grading Mode: Standard Letter
Transfer Credit: CSU; UC

A continuation of Architecture A105, this advanced studio builds on a basic understanding of design communication, strengthening complexity and design intention in two and three-dimensional visualization techniques; including freehand sketching, graphic conventions, modeling, perspective and orthographic drawings, shade/shadow, color rendering, graphic presentations, and portfolio development.

ARCH A210 2 Units (27 lecture hours; 36 lab hours)
Environmental Design Field Studies
Grading Mode: Standard Letter, Pass/No Pass
The course is an active, on-site study of Architecture, Design, and Planning with an emphasis on sustainable environmental practices. Areas to be studied will be optimized based on the offered location site and will include a study of architectural design, planning and development patterns, analysis of resources, sustainable building techniques, sustainable lifestyle practices and culture, and may include design and/or construction of an improvement project. Students will participate in project-based learning opportunities and community service (where possible) and a multi-night field trip or travel abroad will be required.

ARCH A215 4 Units (36 lecture hours; 108 lab hours)
Architectural Drawing and Design Theory 2
Advisory: ARCH A115 or equivalent skill level.

Grading Mode: Standard Letter
Transfer Credit: CSU; UC.

This intermediate architectural design course teaches theories, principles, methods, and means to the creation of architectural space by manipulation of form, space, and light. Focus is on the critical consideration and communication of spatial sequence and organization, composition, hierarchy, structure, and meaning as an expression of human, aesthetic, and environmental determinants.

ARCH A220 4 Units (54 lecture hours; 72 lab hours)
Building Materials and Systems
Advisory: ARCH A180.

Grading Mode: Standard Letter
Transfer Credit: CSU.

This advanced course focuses on the materials, building systems, design, and construction methods used for non-residential construction. The course will include field studies and hands-on projects that explore the principles and properties of various building materials and systems and sustainable considerations.

ARCH A225 3 Units (54 lecture hours)
Land and Building Development
Grading Mode: Standard Letter
Transfer Credit: CSU.

A general survey of land development principles and procedures used prior to the actual construction of structures. Site analysis and planning, mapping, regulatory controls, obtaining entitlements, grading, road and street designs, utility systems, principles of real property value, and project financing will be covered. Same as Construction Technology 225. Students completing Architectural Technology 225 may not receive credit for Construction Technology 225.

ARCH A230 5 Units (54 lecture hours; 126 lab hours)
Architectural Design and Theory 3
Prerequisite(s): ARCH A215.

Advisory: ARCH A205.

Grading Mode: Standard Letter
Transfer Credit: CSU, UC.

This advanced architectural design course is a continuation of Arch A215, dealing with theories, principles, methods and means used in the creation of architectural space by manipulation of form, space & light in an urban context. Focus is on the conceptual design process of establishing and challenging design criteria, communication and editing of design narrative, and portfolio development.

ARCH A230H 5 Units (54 lecture hours; 126 lab hours)
Architectural Design and Theory 3 Honors
Prerequisite(s): ARCH A215.

Advisory: ARCH A205.

Grading Mode: Standard Letter
Transfer Credit: CSU, UC.

This advanced architectural design course is a continuation of Arch A215, dealing with theories, principles, methods and means used in the creation of architectural space by manipulation of form, space & light in an urban context. Focus is on the conceptual design process of establishing and challenging design criteria, communication and editing of design narrative, and portfolio development.

ARCH A241 2 Units (36 lecture hours; 12 lab hours)
FrameCAD Workshop 1
Advisory: ARCH A104.

Grading Mode: Standard Letter
Transfer Credit: CSU.

FrameCAD Workshop 1 is a project-based course that develops beginning level production skills needed to produce a steel panel framing system using FrameCAD software and a FrameCAD F325iT machine. Students will be introduced to FrameCAD machine operation and safety and will be able to visit a steel frame project or production facility. Students will assist in running production jobs and gain experience in panel assembly and workflow.

ARCH A242 2 Units (36 lecture hours; 12 lab hours)
FrameCAD Workshop 2
Advisory: ARCH A104 and ARCH A241.

Grading Mode: Standard Letter
Transfer Credit: CSU.

FrameCAD Workshop 2 is a project-based continuation of Workshop 1 that develops intermediate level production skills needed to produce steel panel framing systems using FrameCAD software and a FrameCAD F325iT machine. Students will review FrameCAD machine operation and safety and be involved in running production jobs and learning about panel assembly and fabrication workflow on the machine.

ARCH A243 2 Units (36 lecture hours; 12 lab hours)
FrameCAD Workshop 3
Advisory: ARCH A104, ARCH A241 and ARCH A242.

Grading Mode: Standard Letter
Transfer Credit: CSU.

FrameCAD Workshop 3 is a project-based continuation of FrameCAD Workshop 2 that develops advanced level production skills needed to produce steel panel framing systems using FrameCAD software and a FrameCAD F325iT machine. Students will review FrameCAD machine operation and safety and be involved in coordinating production jobs, panel assembly, and fabrication workflow on the machine.

ARCH A250 2 Units (36 lecture hours)
Building Codes and Standards
Grading Mode: Standard Letter
Transfer Credit: CSU.

Introduction to the codes and standards prevalent in the Southern California area. Concentration is on Title 24 and Americans With Disabilities Act regulations, and the Uniform Building Code and local enforcement as applied to building design.

ARCH A290 3 Units (54 lecture hours)
History of Architecture 1
Grading Mode: Standard Letter
Transfer Credit: CSU; UC.

The class is an introductory study of the development of architecture and urban environments from primitive shelters through the Early Baroque. The lectures and presentations focus on environments, architects, people of influence, and architectural movements of significance. Emphasis is placed on socio-political, economic, technological, and cultural influences in the evolution of architectural history.

ARCH A290H 3 Units (54 lecture hours)
History of Architecture 1 Honors
Grading Mode: Standard Letter
Transfer Credit: CSU, UC.

The class is an introductory study of the development of architecture and urban environments from primitive shelters through the Early Baroque. The lectures and presentations focus on environments, architects, people of influence, and architectural movements of significance. Emphasis is placed on socio-political, economic, technological, and cultural influences in the evolution of architectural history.

ARCH A296 3 Units (54 lecture hours)
History of Architecture 2
Grading Mode: Standard Letter
Transfer Credit: CSU; UC.

Introductory study of the history of world architecture and urbanism from the late 17th century to the present. Lectures and presentations focus on the architecture of various regions and historical periods, highlighting architects, buildings and environments of significance. Special emphasis is placed on the architecture of the 20th century and socio-political, economical, technological, cultural and global influences in the evolution of architecture.

ARCH A296H **3 Units (54 lecture hours)**
History of Architecture 2 Honors
Grading Mode: Standard Letter
Transfer Credit: CSU, UC.

Introductory study of the history of world architecture and urbanism from the late 17th century to the present. Lectures and presentations focus on the architecture of various regions and historical periods, highlighting architects, buildings and environments of significance. Special emphasis is placed on the architecture of the 20th century and socio-political, economical, technological, cultural and global influences in the evolution of architecture.