Three-Dimensional Design Courses (Art and Art History)  
(TDSN)

This is a list of all 3-D design courses. For more information, see Art and Art History.

**TDSN:2205 Art and Engineering** 3 s.h.  
Collaborative, interdisciplinary, cutting-edge opportunity to gain real world engineering experience while learning to think creatively and analytically to create engaging works of art; interdisciplinary collaboration and creative methodologies that enhance life-long creative practice of artists and engineers; basic electronics and Arduino prototyping platform to create programmable, sensor-driven, responsive circuits. Prerequisites: MTLS:2910 or CERM:2010 or SCLP:2810 or TDSN:2210. Same as CEE:2120.

**TDSN:2210 Problems in 3-D Design** 3 s.h.  
Materials, their formal and structural possibilities. Prerequisites: ARTS:1510 and ARTS:1520.

**TDSN:2240 Digital Drafting with AutoCAD** 3 s.h.  
Basic principles of 2-D and 3-D computer-aided drafting; use of AutoCAD software to draw plans, elevations, and sections for objects and interior spaces. Prerequisites: CERM:2010 or SCLP:2810 or TDSN:2210 or MTLS:2910. Same as CEE:2240.

**TDSN:2250 Computer Modeling with 3ds Max** 3 s.h.  
Basic knowledge and practical technical skills using 3ds Max studio software; experience creating and manipulating basic forms and working with texture, background, light, and camera viewpoints; basic animation. Prerequisites: TDSN:2210.

**TDSN:2270 Digital Forming** 3 s.h.  
Introduction to process of design; work with 3-D virtual digital tools to create objects and forms printed with rapid prototyping technology; use of Leonar3D software, 3-D glasses, and a bird device that functions as a mouse to create forms in space; virtual modeling techniques that allow creation and manipulation of shapes in the air; design development on Leonar3D, improved with 3ds Max, and saved for 3-D printing. Prerequisites: CERM:2010 or SCLP:2810 or MTLS:2910 or TDSN:2210.

**TDSN:3200 Product Design** 4 s.h.  
How objects are designed and structured; modeling, graphic skills necessary for basic project development. Prerequisites: TDSN:2250.

**TDSN:3201 Advanced Computer Modeling with 3ds Max** 3 s.h.  
Creation of rendered and animated environments using advanced modeling techniques. Prerequisites: TDSN:2250.

**TDSN:3205 Advanced Robotics** 3 s.h.  
Advanced peripheral integration and control, including stepper motors, solar power, audio playback, and live data manipulation through physical sensors; advanced fabrication (e.g., printed circuit boards and wiring harness design); for students with previous experience in robotics and electronics. Prerequisites: SCLP:3840.

**TDSN:3210 Furniture Design I** 4 s.h.  
Human interaction with interior and exterior environment. Prerequisites: TDSN:3200.

**TDSN:3215 Furniture Design II** 4 s.h.  
Continuation of TDSN:3210; design of virtual environments. Prerequisites: TDSN:3210.

**TDSN:3220 Interior Design** 4 s.h.  
Relationship of interior space to its architecture, environment, human element; color, materials, furnishings, lighting; projects. Prerequisites: TDSN:2250.

**TDSN:3230 Color for Interior Design** 4 s.h.  
Use of color for interior spaces; principles of color theory reviewed and applied to 3-D environments; color as a compositional element and psychological tool. Prerequisites: TDSN:2250.

**TDSN:3240 3-D Computer-Aided Design (arr.)**  
Three-dimensional computer-aided drafting; use of AutoCAD software. Prerequisites: MTLS:2910 or SCLP:2810 or CERM:2010 or TDSN:2210.

**TDSN:3250 Bicycle Design** 4 s.h.  
Drafting software, bicycle design, and history of bicycle from velocipede to mountain bikes; development of bicycle design as new materials, fabrication techniques, and ergonomics were applied; use of BikeCad, a parametric software, to design bicycles and bicycle components. Prerequisites: ARTS:1510 and ARTS:1520. GE: Engineering Be Creative.

**TDSN:4210 Digital Animation and Visual Art** 3 s.h.  
Assimilation of digital animation into realm of traditional fine art mediums; exploration of fundamental skills (storyboarding, rotoscoping, stop motion, motion graphics, 3-D animation); Adobe Photoshop, After Effects, and 3ds Max techniques and software that are industry standards in the careers of animators, storyboard artists, roto artists, digital compositors, and motion graphic artists; production of a show reel of student work for group showing and final critique. Prerequisites: ARTS:1510 and ARTS:1520.

**TDSN:4250 Fabrication and Design: Hand-Built Bicycle** 4 s.h.  
Building a bicycle frame by hand; use of CAD modeling and development of fabrication skills to create a modern-day work of art. Prerequisites: TDSN:2240.

**TDSN:4255 Hand-Built Bicycles in the Rockies** 1 s.h.  
Building a titanium hand-built bike; use of hand-built fabrication techniques and tools; translation of CAD design into first full-suspension titanium fat bike; aspects of metal technology, concept development, fabrication geometry and design, metal properties and selection, tool selection, brazing and TIG welding, jig setup and use, and mitering; travel to Fort Collins, Colorado to work for one week at Black Sheep Bikes (two-time winner of the North American Hand Built Bike Show). Prerequisites: ARTS:1510 and ARTS:1520.

**TDSN:4260 3-D Computer Graphic Art** 3 s.h.  
Three-dimensional modeling; emphasis on movement in form and function; advanced modeling techniques in polygonal and NURBS modeling to generate fundamentally sound models used for rapid prototyping, visualization, and animation; Box modeling, NURBS modeling, rigging, materials, bump maps, normal maps, and rendering; fundamental skills of computer graphic artists working in the fields of animation, architectural visualization, video game modeling, industrial design, and engineering design. Prerequisites: TDSN:2250.
TDSN:4270 Problems in 3-D Design: Locative Art Practice    4 s.h.
How our relationship to Earth has changed with new forms of locating place in it; new forms of representation used to express exploration of that relationship; designing a locative research project; exploration of four major course concepts (geo-annotation, locative inscription, GPS drawing, alternative cartography) using portable, networked, and location-aware computing for mapping relationships. Prerequisites: ARTS:1520 and ARTS:1510.

TDSN:4299 Undergraduate Individual Instruction arr.
Individual instruction in 3-D design for advanced students.

TDSN:4980 Topics in Computer Science II    3 s.h.
Complements material in other courses. Prerequisites: CS:2210 with a minimum grade of C- and CS:2230 with a minimum grade of C-. Same as CS:4980.

TDSN:6295 Design for Production and Business    4 s.h.
Special issues and topics in design. Prerequisites: TDSN:3200.

TDSN:6299 Individual Instruction in 3-D Design arr.
Individual instruction in 3-D design for advanced students.