

DESIGN (DES)

DES 210 Industrial Science (Units: 3)

Nature, properties, and processing of common industrial materials used in the design and production of today's manufactured products: metallics, plastics, wood, paper, fibers and textiles, ceramics, coatings, and composite materials. (Plus-minus letter grade only) [Formerly DAI 210]

DES 220 Introduction to Drawing for Designers (Units: 3)

Introduction to drawing for design professions: graphic design, industrial design, digital media, and marketing. Learning to draw as learning to see and understand two- and three-dimensional objects, to give form to design ideas and to communicate these ideas to others. (Plus-minus letter grade only) [Formerly DAI 220]

DES 222 Introduction to 2D Digital Design (Units: 3)

Digital software and design processes for creating and editing digital images, illustration, documents for print and digital applications. Topics include design vocabulary, conceptualization methods, and text formatting. Students will develop and apply their knowledge through analysis, critique, projects and exercises. This course is for prospective Design majors. Activity. (Plus-minus letter grade only) [Formerly DAI 222]

DES 226 Modern Letterpress Printing: Traditional and Digital Techniques (Units: 3)

Integration of centuries-old methods of letterpress into contemporary design processes. Direct, hands-on work with digital and letterpress proofing press to explore typographic principles, technical methods, lettering, vector illustration, photographic images, and more. Work is project-driven, featuring demos, critique, field trips. May be repeated for a total of 6 units. (Plus-minus letter grade only) [Formerly DAI 226]

Course Attributes:

- C1: Arts

DES 227 Rethinking Digital Visual Media: History, Technology, and Content (Units: 3)

Digital visual media (computer animation, interactive multimedia, Internet, virtual worlds) viewed through the lenses of history, cultural impact, technology, and production techniques. [Formerly DAI 227]

DES 256 Design and Society: Contemporary Design Issues and Applications (Units: 3)

Introduction to contemporary design issues, applications, and professions; exploration of design's wide-ranging social impacts from visual communication to product design, transportation to city planning, green design to design for social good. (Plus-minus letter grade only) [Formerly DAI 256]

Course Attributes:

- C1: Arts

DES 300 Design Process (Units: 3)

Prerequisites: Upper division standing; restricted to DES majors; DES 323, DES 356, and DES 370 with a grade of C or better; or consent of instructor.

Creativity and the design process. Individual and group creative problem solving related to graphic communications and product design/development for industry. Activity. (Plus-minus letter grade only) [Formerly DAI 300]

DES 305 Lab Safety Basics (Unit: 1)

Prerequisite: Restricted to DES majors and graduate students in product design/development area.

Introduction to basic power and hand tools in the product design labs to ensure safe operation of tools for the duration of the student's program of study; proper dress, techniques, and protective equipment. May be repeated for a total of 2 units. (CR/NC grading only) [Formerly DAI 305]

DES 310 Product Design I (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 323, DES 356, DES 370, DES 305, DES 320, and DES 321 with a grade of C or better; or consent of instructor.

Industrial manufacturing processes related to the development of three-dimensional objects for product and interior designers and manufacturing personnel. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 310]

DES 320 Drafting and Sketching for Design (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 323, DES 356, and DES 370 with a grade of C or better; or consent of the instructor.

Mechanical and freehand drawing, the reproduction of drawings, and interpretation of graphic projections. Perspective drawing and the common elements of technical illustration. Signs and symbols of design and drafting. Required for BSID majors. Activity. Extra fee required. [Formerly DAI 320]

DES 321 Technical Drawing I: Introduction to CAD (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 323, DES 356, and DES 370 with a grade of C or better; or consent of instructor.

Fundamentals of two-dimensional geometric image generation techniques to familiarize the student with computer-aided drafting (CAD). Microcomputer CAD hardware and software. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 321]

DES 322 Computer Graphic Imaging (Units: 3)

Prerequisites: Restricted to DES majors; upper-division standing; DES 323*, DES 356*, DES 370* with grades of C or better; or consent of the instructor.

Comprehensive studies in computer imaging process and production: digital image generation, image conversion processing, image assembly, and image production and reproduction. Selected computer graphic applications and software packages. Activity. Extra fee required. [Formerly DAI 322]

DES 323 Visual Design Literacy (Units: 3)

Prerequisites: Upper division standing; restricted to DES majors; ENG 214 or equivalent with a grade of C or better; or consent of instructor.

Fundamental visual design principles, vocabulary, and applications in design. Topics relevant to 2D and 3D design techniques for both tangible and virtual results. (Plus-minus letter grade only) [Formerly DAI 323]

DES 324GW Research and Writing for Design - GVAR (Units: 3)

Prerequisites: Restricted to Design majors; DES 323, DES 356, DES 370, and ENG 214 with grades of C or better.

Critical examination of works across the industry sub-disciplines of product design, visual communication, and new media. Authoring design concepts and shaping visual presentations. (ABC/NC grading only) [CSL may be available] [Formerly DAI 324GW]

Course Attributes:

- Graduation Writing Assessment

DES 325 Graphic Design I: Introduction (Units: 3)

Prerequisites: Restricted to upper-division DES majors; DES 322*, DES 323*, DES 356*, and DES 370* with grades of C or better; or consent of the instructor.

Design principles and problem-solving for visual communication. Basic digital production tools and techniques for creating print and screen media. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 325]

DES 327 Interactive Design I (Units: 3)

Prerequisites: Restricted to upper-division Design majors; DES 322, DES 323, DES 356, DES 370 with grades of C or better; or consent of instructor.

Introduction to digital media design focusing on Web design. Conceptual approaches to structuring information and interaction, basic graphic design considerations germane to networked media, and basic production skills. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 327]

DES 330 Industrial Design Outreach (iDo) (Units: 3)

Prerequisites: Upper division standing; restricted to DES majors; DES 323, DES 356, and DES 370; or consent of instructor.

Development and delivery of industrial design educational experiences to underserved high school students; providing hands-on interdisciplinary design projects to help foster curiosity, creativity, and build self-confidence. Activity. May be repeated for a total of 6 units. (Plus-minus letter grade only) [CSL may be available] [Formerly DAI 330]

DES 332 Electricity and Electronics (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 323, DES 356, and DES 370 with a grade of C or better; or consent of instructor.

Fundamentals of DC/AC circuits theory and basics of semiconductor devices. Principles of power generation, distribution and applications. Application of theory to practical applications in home and industry. Lecture, 2 units; activity, 1 unit. Extra fee required. [Formerly DAI 332]

DES 340 Design and Materials (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 323, DES 356, DES 370, and DES 305 with grades of C or better; or consent of instructor.

Properties of industrial materials related to design and manufacture of contemporary products; design process of material properties and traditional technologies relative to the form and function of design objects. Lecture, 2 units; activity, 1 unit. (Plus-minus letter grade only) [Formerly DAI 340]

DES 342 Metals Manufacturing (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 321, DES 323, DES 356, and DES 370 with a grade of C or better; or consent of instructor.

Contemporary metals design and manufacturing processes. Evolution of metal forming practices from traditional to computer-based automated processes. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 342]

DES 344 Plastics for Design (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 323, DES 356, and DES 370 with a grade of C or better; or consent of instructor.

History and development of the plastics industry; basic materials, processes, technology, and application for design. Activity. Extra fee required. [Formerly DAI 344]

DES 356 A History of Design and Technology (Units: 3)

Prerequisites: Upper division standing; restricted to DES majors; ENG 214 or equivalent with a grade of C or better; or consent of instructor.

History of modern design and attendant technology issues. Antecedents of modern design in product design, visual communications, and allied sectors in design. (Plus-minus letter grade only.) [Formerly DAI 356]

DES 360 Model Development Laboratory (Units: 3)

Prerequisites: Restricted to DES majors; DES 300 or equivalent, DES 323, DES 356, DES 370, and DES 305 with a grade of C or better; or consent of instructor.

Rudiments of model building for the industrial designer. Production of various levels of models including presentation-grade models. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 360]

DES 370 Introduction to Design (Unit: 1)

Prerequisites: Restricted to Design majors and minors; upper-division standing; ENG 214 or equivalent with a grade of C or better; or consent of the instructor.

Orientation to major program and concentrations, resources, and extracurricular opportunities. Issues and trends in design, technology, and industry. Selecting a faculty adviser and developing a program of major study. Vocational outlooks and opportunities for graduate study. (CR/NC grading only) [Formerly DAI 370]

DES 405 How to Develop, Patent, and Market an Idea (Units: 3)

Prerequisite: Upper division standing or consent of instructor.

Presentations by experts from the field concerning consumer trends, procedures, pitfalls, advantages, and disadvantages involved in developing, patenting, and marketing new ideas or products. [Formerly DAI 405]

DES 410 Product Design II (Units: 3)

Prerequisites: Restricted to DES majors; DES 300, DES 305, DES 310, DES 321, DES 420; or consent of instructor.

Introduction to the product design and development process: people, process and product. User/market research, product development documentation, concept visual, models and applications. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 410]

DES 420 Rapid Visualization (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 370 with a grade of C or better.

Illustration of product and graphic design ideas. Three-dimensional sketching and rendering techniques. Lecture, 2 units; activity, 1 unit. (Plus-minus letter grade only) [Formerly DAI 420]

DES 421 Technical Drawing II: 3-D Solid Modeling (Units: 3)

Prerequisites: Restricted to upper-division DES majors; DES 321 or equivalent; or consent of the instructor.

Industry standard computer-aided drafting. Use of digital computer to develop working drawings in architectural and industrial design. Practice with industrial input and output device. Activity. (Plus-minus letter grade only) [Formerly DAI 421]

DES 425 Graphic Design II: Typography (Units: 3)

Prerequisites: Restricted to upper-division Design majors; DES 325 with a grade of C or better; or consent of the instructor.

Typographic design and its use in the problem-solving process of layout design. Classic design exercises and experimentation in contemporary applications of type and letterforms as design elements. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 425]

DES 427 Interactive Design II (Units: 3)

Prerequisites: Restricted to upper-division Design majors; DES 327 with a grade of C or better; or consent of the instructor.

Rich media design strategies and authoring techniques featuring graphical interaction, motion graphics, sound and video content for Web and mobile platforms. Activity. (Plus-minus letter grade only) [Formerly DAI 427]

DES 430 Industrial Controls (Units: 3)

Prerequisites: Restricted to DES majors; DES 332; or consent of instructor.

DC/AC concepts associated with motors, generators, transformers, control devices, and electrical distribution systems as they pertain to industry applications. Lecture, 2 units; activity, 1 unit. (Plus-minus letter grade only) [Formerly DAI 430]

DES 456 Design Thinking Principles and Practices (Units: 3)

Prerequisite: for DES 756: Graduate standing or consent of the instructor. Prerequisites for DES 456: Restricted to Design majors; upper-division standing; DES 323, DES 356, and DES 370 with grades of C or better; GPA of 3.0 or higher; or consent of the instructor.

Design thinking is a method for problem-solving and innovation that promotes an understanding of and empathy for the needs of the end user of the product or service, and that emphasizes an iterative, process-based approach to problem-solving. Introduce design thinking methods including user-based research techniques and prototyping, offer opportunities to apply these methods to class projects, and examine case studies. (Plus-minus letter grade only)
(DES 456/DES 756 is a paired course offering. Students who complete the course at one level may not repeat the course at the other level.)

DES 460 Rapid Prototyping and Manufacturing Systems (Units: 3)

Prerequisites: Restricted to Design majors; DES 300*, DES 310*, and DES 321* or equivalents; or consent of the instructor.

Design applications for Rapid Prototyping and Computer Integrated Manufacturing (CIM) systems; Manufacturing Resource Planning (MRP), integration methodologies and flexible manufacturing systems. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 460]

DES 470 Portfolio Development (Unit: 1)

Prerequisite: Restricted to upper division DES majors or consent of instructor.

Development, types, containers of visual materials for showing the products of a student in a handy format, ready for presentation upon completion of schooling. May be repeated for a total of 2 units. (Plus-minus letter grade only) [Formerly DAI 470]

DES 475 Topics in Design (Units: 3)

Prerequisites: Restricted to upper-division Design majors; DES 300* and DES 322* or equivalents; or consent of the instructor.

Directly supervised special topic design study taking various forms including teaching assistantship, group project, etc. Topics to be specified in Class Schedule. May be repeated for a total of 9 units when topics vary. [Formerly DAI 475]

DES 505 Senior Design Project (Units: 3)

Prerequisites: Restricted to senior Design majors; all Design core requirements.

Culminating Design problem-solving experience. Initiating an industrial research and development project; conducting all phases of the design development, from initial research, testing, and prototyping, along with feasibility analysis and presentation. Activity. (Plus-minus letter grade only) [CSL may be available] [Formerly DAI 505]

DES 510 Product Design III (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 300, DES 310, DES 321, DES 410, DES 420; and/or consent of instructor.

Integration of design skills established in introductory courses and designing for human needs. Activity. (Plus-minus letter grade only) [Formerly DAI 510]

DES 521 Technical Drawing III: Advanced Modeling and Rendering (Units: 3)

Prerequisites: Restricted to DES majors; DES 321 and DES 421; or consent of the instructor.

Advanced techniques in solid and surface modeling and rendering, using computer-aided design software and rendering programs to create accurate and visually compelling 3-D models; rapid prototyping component. Activity. (Plus-minus letter grade only) [Formerly DAI 521]

DES 523 Information Design I: Data Visualization (Units: 3)

Prerequisites: Restricted to upper division DES majors or minors; DES 323, DES 356, DES 370, and DES 300, DES 322, DES 325, DES 327; or consent of instructor.

Introduction to the field of information design focusing on data visualization problems for digital media, print, and environmental communication. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 523]

DES 524 Information Design II: Exhibit Design (Units: 3)

Prerequisites: Restricted to upper division DES majors or minors; DES 300, DES 305, DES 322, DES 323, DES 356, DES 370, and DES 310 or DES 325 or DES 327 with a grade of C or better; or consent of instructor.

Development of multimedia materials for presentations and exhibits. Methods of communicating diverse subject matter through various media, three-dimensional devices, and representative models. Activity. [Formerly DAI 524]

DES 525 Graphic Design III: Advanced (Units: 3)

Prerequisites: Restricted to DES majors; DES 425 with a grade of C or better; or consent of instructor.

Application of design principles in the solution of complex design projects. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 525]

DES 527 Interactive Design III (Units: 3)

Prerequisites: Restricted to Design majors; DES 427 with a grade of C or better; or consent of the instructor.

Focused experimentation and production in topics such as motion graphics, digital compositing, and interaction design. Activity. (Plus-minus letter grade only) [Formerly DAI 527]

DES 532 Applied Digital Electronics (Units: 3)

Prerequisites: Restricted to upper division DES majors or minors; DES 332 or consent of instructor

Study of basic Transistor-Transistor-Logic (TTL) gates, combinational logic systems, counters, registers, encoders, decoders, Analog/Digital (A/D), D/A, and the tools/techniques used for analysis and application of digital circuits. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 532]

DES 560 Prototyping Smart Devices (Units: 3)

Prerequisites: Restricted to upper division DES majors or minors; PHYS 101, DES 310, DES 321, DES 360.

Computer programming and electronic hardware design as applicable to product design practice. Use of microcontrollers, sensors, digital I/O devices and various programming environments. Techniques of prototyping interactive electronic "smart" products for demonstration and evaluation. Activity. Extra fee required. (Plus-minus letter grade only) [Formerly DAI 560]

DES 570 Professional Practices for Designers (Units: 3)

Prerequisites: Restricted to senior DES majors; DES 300, DES 322, DES 325, DES 327; or consent of instructor.

Professional standards and practices of design. Development of an entry-level design portfolio and supporting documentation. Investigation of design and related roles in industry, employment opportunities, professional associations, design ethics, and interview skills. Hybrid components. Activity. (Plus-minus letter grade only) [Formerly DAI 570]

DES 575 Workshop (Units: 3)

Prerequisites: Restricted to upper-division Design majors and minors; DES 323, DES 356, and DES 370.

Supervised study and activities including teaching assistantship, independent study, group project, etc. Topic to be specified in Class Schedule. May be repeated when topics vary. Activity. Extra fee may be required. [CSL may be available] [Formerly DAI 575]

DES 576 Practical Experience: Internship (Units: 3)

Prerequisites: Restricted to upper-division Design majors; DES 323, DES 356, and DES 370.

In-service experience in a special field. Directed experience in teaching and/or industry. Lecture, 1 unit; activity, 2 units. May be repeated for a total of 9 units. (CR/NC grading only) [CSL may be available] [Formerly DAI 576]

DES 627 Advanced Projects in Visual Communication Design (Units: 3)

Prerequisite: Restricted to upper-division Design majors and minors or consent of the instructor.

Development of a student-driven project in advanced areas of digital and/or print media. Topics may include programming in design, physical computing, mobile media, corporate identity, and information design. Activity. May be repeated for a total of 6 units. Extra fee required. (Plus-minus letter grade only) [CSL may be available] [Formerly DAI 627]

DES 628 Design Gallery: Exhibitions and Communications (Units: 3)

Prerequisites: Restricted to upper division DES majors; DES 322, DES 356 with a grade of C or better; or consent of instructor.

Theory and production of exhibitions, symposia, and publications for the Design Gallery, including planning, preparation, annotation, and critique. Activity. May be repeated for a total of 6 units. (Plus-minus letter grade only) [Formerly DAI 628]

DES 700 Seminar in Design Research (Units: 3)

Prerequisite: Restricted to DES graduate students; Graduate Essay Test, which must be taken within six months of starting the graduate program.

Seminar in research methodology and introduction to the graduate program. Must be completed in the first semester of enrollment. (Plus-minus letter grade only) [Formerly DAI 700]

DES 701 Seminar: Trends and Issues (Units: 3)

Prerequisite: Graduate standing in Consumer and Family Studies or School of Design.

Trends and issues in discipline-specific fields affecting individuals, families, and communities. Review of research; and application of findings to problems. (This course is offered as CFS 700 and DES 701 [formerly DAI 701]. Students may not repeat the course under an alternate prefix.)

DES 724 Graduate Research Methods and Scholarly Writing for Creative Disciplines (Units: 3)

Prerequisite: DES 700 with a passing grade or consent of instructor.

Overview and practicum of graduate level research methods and scholarly writing forms, such as literature review, methods, abstracts, chapter outlines, in preparation for graduate creative work and thesis projects. Specific methods, techniques, and strategies for students in creative disciplines. (Plus-minus AB/NC) [Formerly DAI 724]

DES 750 Seminar in Industrial Design Education (Units: 3)

Prerequisites: Restricted to DES graduate students; DES 700; or consent of the instructor.

Principles and practices for teaching industrial design curriculum including planning of curriculum, design of content and creation of learning tools with consideration for experiential learning methods. (Plus-minus letter grade only) [Formerly DAI 750]

DES 755 Seminar in Design Management (Units: 3)

Prerequisites: Restricted to DES graduate students; DES 700; or consent of the instructor.

Students create a production using their project management skills throughout the experience. (Plus-minus letter grade only) [Formerly DAI 755]

DES 756 Design Thinking Principles and Practices (Units: 3)

Prerequisite: for DES 756: Graduate standing or consent of the instructor.
Prerequisites for DES 456: Restricted to Design majors; upper-division standing; DES 323, DES 356, and DES 370 with grades of C or better; GPA of 3.0 or higher; or consent of the instructor.

Design thinking is a method for problem-solving and innovation that promotes an understanding of and empathy for the needs of the end user of the product or service, and that emphasizes an iterative, process-based approach to problem-solving. Introduce design thinking methods including user-based research techniques and prototyping, offer opportunities to apply these methods to class projects, and examine case studies. (Plus-minus letter grade only)

(DES 456/DES 756 is a paired course offering. Students who complete the course at one level may not repeat the course at the other level.)

DES 800 Seminar in Design Topics (Units: 3)

Prerequisites: Restricted to DES graduate students; DES 700 or equivalent.

Design theory and practice. Special techniques in individual and group approaches to problem-solving. (Plus-minus letter grade only) [Formerly DAI 800]

DES 805 Seminar in Design Methodology (Units: 3)

Prerequisite: Restricted to DES graduate students or consent of the instructor.

Research-driven design projects using advanced methodologies related to user-centered design, market/consumer research, human factors, product development, etc. Topics to be specified in Class Schedule. May be repeated when topics vary. (Plus-minus letter grade only) [Formerly DAI 805]

DES 852 Directed Experience in Design and Industry (Units: 3)

Prerequisite: Consent of graduate major adviser, supervising faculty member, and department chair.

Specified activities related to studies in industrial and technology education, design, or industrial technology. May be repeated for a total of 6 units. [CSL may be available] [Formerly DAI 852]

DES 894 Creative Work Project (Units: 3)

Prerequisites: Consent of instructor and departmental graduate committee; and approval of Advancement to Candidacy (ATC) and Culminating Experience (CE) forms by Graduate Studies. ATC and Proposal for Culminating Experience Requirement forms must be approved by the Graduate Division before registration. (CR/NC, RP grading only) [Formerly DAI 894]

DES 898 Master's Thesis (Units: 3)

Prerequisites: Consent of instructor and major adviser and approval of Advancement to Candidacy (ATC) and Culminating Experience (CE) forms by Graduate Studies. ATC and Proposal for Culminating Experience Requirement forms must be approved by the Graduate Division before registration. (CR/NC grading only) [Formerly DAI 898]

DES 899 Independent Study (Units: 3)

Prerequisite: Enrollment by petition approved by the supervising instructor, the major adviser, and the department chair.

Special study of a particular problem in industry or industrial education conducted under the direction of a faculty member. May be repeated. [CSL may be available] [Formerly DAI 899]