

INDUSTRIAL DESIGN

Our Website (<http://www.industrialdesign.arch.vt.edu/>)

Overview

As described by the Industrial Designers Society of America, "Industrial Design (ID) is the professional service of creating and developing concepts and specifications that optimize the function, value and appearance of products and systems for the mutual benefit of both user and manufacturer.

Industrial designers develop these concepts and specifications through collection, analysis and synthesis of data guided by the special requirements of the users, client and manufacturer. They are trained to prepare clear and concise recommendations through drawings, models and verbal descriptions.

Industrial design services are often provided within the context of cooperative working relationships with other members of a development group. Typical groups include management, marketing, engineering and manufacturing specialists. The industrial designer expresses concepts that embody all relevant design criteria determined by the group.

The industrial designer's unique contribution places emphasis on those aspects of the product or system that relate most directly to human characteristics, needs and interests. This contribution requires specialized understanding of visual, tactile, safety and convenience criteria, with concern for the user. Education and experience in anticipating psychological, physiological and sociological factors that influence and are perceived by the user are essential industrial design resources."

The internationally recognized program at Virginia Tech, fully accredited by the National Association of Schools of Art and Design, prepares individuals to enter this dynamic field through a rigorous curriculum and an experienced, dedicated faculty.

Satisfactory Progress

University policy requires that students who are making satisfactory progress toward a degree meet minimum criteria toward the General Education (Curriculum for Liberal Education) (see "Academics (<https://catalog.vt.edu/undergraduate/academic-policies/>)") and toward the degree in Industrial Design.

Satisfactory progress requirements toward the degree can be found on the major checksheet by visiting the University Registrar website at <http://registrar.vt.edu/graduation-multi-brief/index1.html>.

- Industrial Design Major (<https://catalog.vt.edu/undergraduate/architecture-arts-design/industrial-design/industrial-design-bs/>)

Associate Professor of Practice and Chair: Martha Sullivan

Associate Professors: W. Green and B. Kennedy

Assistant Professors: J. Hauptman and E. Morshedzadeh

Adjunct Professor: B. Kirkland

Professor Emeritus: R. Kemnitzer and E. Dorsa

Undergraduate Course Descriptions (IDS)

IDS 1114 - Play to Make (3 credits)

Transdisciplinary practice in an inclusive, collaborative environment, through the lens of design, technology and creative expression, to describe and evaluate the convergence between art, technology, and human experience in the arts, sciences, humanities, and engineering. Exploration of play for creation of ideas and artifacts (including, but not restricted to multimedia narratives, learning simulations, immersive/performative experiences, and data exploration). Inclusive collaboration with peers and practicing professionals in diverse fields. Critical consideration of art and design and the impacts on history, society, cultures, individuals, and communities. Collaborative research, design, creation, and exhibition of a transdisciplinary project to identify and address a global challenge.

Pathway Concept Area(s): 6A Critique & Practice in Arts, 6D Critique & Prac in Design, 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

IDS 2015 - Industrial Design Laboratory II (5 credits)

Introduction to the discipline of Industrial Design. Emphasis on form generation, including: design theory, problem solving methodologies, conceptualization of ideas, and aesthetic sensibility. Secondary emphasis on skill development in 2 and 3 dimensions: awareness of materials and manufacturing processes, storyboarding, model making, written documentation of design process, and verbal presentation. IDS 2015 is taught in conjunction with IDS 3224: Topics in Design Competencies: Workshop and IDS 2065: Visual Design.

Prerequisite(s): ARCH 1016

Instructional Contact Hours: (3 Lec, 7 Lab, 5 Crd)

IDS 2016 - Industrial Design Laboratory II (6 credits)

Introduction to the discipline of Industrial Design. Emphasis on form generation, including: design theory, problem solving methodologies, conceptualization of ideas, and aesthetic sensibility. Secondary emphasis on skill development in 2 and 3 dimensions: awareness of materials and manufacturing processes, storyboarding, model making, written documentation of design process, and verbal presentation. IDS 2015 is taught in conjunction with IDS 3224: Topics in Design Competencies: Workshop and IDS 2065: Visual Design.

Prerequisite(s): IDS 2015

Instructional Contact Hours: (3 Lec, 9 Lab, 6 Crd)

IDS 2034 - Design Visualization (3 credits)

Visual communication, modes of representation techniques, freehand drawings, perspectives, axonometric techniques, computer modeling, and form analysis. Presentation of ideas through rapid sketching and communicating resolved designs through detailed hand drawings. Development of portfolio and skills to choose appropriate methods for tasks.

Prerequisite(s): ARCH 1016

Instructional Contact Hours: (3 Lec, 3 Crd)

IDS 2044 - Human Factors (3 credits)

This course examines human factors as it informs the design process, and as a tool to maximize the physical and psychological aspects of design toward the establishment of a human centered design. Frameworks of industrial design philosophy, research methods, standards and data, human issues, cultural context, and design outcomes.

Prerequisite(s): ARCH 1016

Instructional Contact Hours: (3 Lec, 3 Crd)

IDS 2114 - History of Industrial Design (3 credits)

Broad movements in the history of art and industrial design. Application and analysis of art and design elements, principles, and composition techniques. Materials, processes, and innovations in art and design in context of culture, geography, and perspective.

Pathway Concept Area(s): 6A Critique & Practice in Arts, 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

IDS 2124 - History of Modern Industrial Designers (3 credits)

Introduction to modern industrial design. Elements, principles, and composition techniques in art and design. Major movements from the 20th-century and how the values, ideals, and styles of designers influence the evolution of design. Comparative study of objects, design theory, and methodologies related to the changes in the profession and global perspectives.

Pathway Concept Area(s): 6D Critique & Prac in Design, 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

IDS 2214 - IDS Studio for Minors (6 credits)

Introduction to the discipline and the critical elements that contribute to the complexity of a work of design. Emphasis on intellectual discipline, skills development, communication of ideas, materials research, and a self-motivated search for critical issues. For registered Industrial Design Minors only.

Instructional Contact Hours: (3 Lec, 9 Lab, 6 Crd)

IDS 2304 - Computer Aided Industrial Design (3 credits)

An introduction to computer aided two and three- dimensional design and modeling as applied in industrial design using both solid and surface software modeling techniques.

Prerequisite(s): ARCH 1016

Instructional Contact Hours: (3 Lec, 3 Crd)

IDS 2974 - Independent Study (1-19 credits)

Instructional Contact Hours: Variable credit course

IDS 2984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

IDS 3015 - Industrial Design Laboratory III (6 credits)

Introduction to systematic processes in design. Introduction and application of Human Factors and systematic planning methods in the development of industrial products in the areas of work, education and health. Development of professional presentation skills and methods.

Prerequisite(s): IDS 2016

Instructional Contact Hours: (3 Lec, 9 Lab, 6 Crd)

IDS 3016 - Industrial Design Laboratory III (6 credits)

Introduction to systematic processes in design. Introduction and application of Human Factors and systematic planning methods in the development of industrial products in the areas of work, education and health. Development of professional presentation skills and methods.

Prerequisite(s): IDS 3015

Instructional Contact Hours: (3 Lec, 9 Lab, 6 Crd)

IDS 3124 - Materials and Processes (3 credits)

Current design processes, materials, manufacturing processes, techniques, and equipment used in the design of products for mass and rapid production. Variety of materials and manufacturing processes available to the industrial designer for mass production impact his/her design process. Emphasis placed on the relationship of processes and equipment, to the environment and the end user. Includes concepts of material science. Practical issues of material selection and application, process selection, and specification.

Instructional Contact Hours: (3 Lec, 3 Crd)

IDS 3204 - Topics in Professional Development (1-19 credits)

Issues of practicing in an industrial design professional environment: public speaking, portfolio presentation, client/civic engagement (service learning), interdisciplinary teamwork and leadership in the development process of industrial products. Repeatable with instructor permission. Variable credit and duration.

Instructional Contact Hours: Variable credit course

Repeatability: up to 99 credit hours

IDS 3224 - Topics in Design Competencies (1-19 credits)

Issues of industrial design competencies and expertise required in a professional design environment, for example: software; model making (both hand making and digital rapid prototyping); workshop (wood, metal and plastics); specialized product design areas (packaging, furniture or exhibit design). Repeatable with instructor permission Variable credit and duration.

Instructional Contact Hours: Variable credit course

Repeatability: up to 99 credit hours

IDS 3234 - Topics in Design Theory (1-19 credits)

Issues of industrial design theory required for advancement in a professional design environment, for example: Product Semantics; Design Ethics; EcoDesign/Sustainability; Universal Design. Repeatable with instructor permission. Variable credit and duration.

Instructional Contact Hours: Variable credit course

Repeatability: up to 99 credit hours

IDS 3514 - Design Research (3 credits)

The course looks at the question of research and the ongoing exercise of re-definition for designers using examples of current design research corporations.

Prerequisite(s): IDS 2016

Instructional Contact Hours: (3 Lec, 3 Crd)

IDS 3900 - Bridge Experience (0 credits)

Application of academic knowledge and skills to in a work-based experience aligned with post-graduation goals using research-based learning processes. Satisfactory completion of work-based experience often in the form of internship, undergraduate research, co-op, or study abroad; self-evaluation; reflection; and showcase of learning. Pre: Departmental approval of 3900 plan.

Instructional Contact Hours: (0 Crd)

IDS 3954 - Study Abroad (1-19 credits)

Instructional Contact Hours: Variable credit course

IDS 3984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

IDS 4015 - Industrial Design Laboratory IV (6 credits)

Detailed analysis, research and application of human factors to the design of equipment, work spaces and environments. Design and construction of full scale, interactive models and spaces. Introduction to group activities. Emphasis on the needs, the production and marketing factors of special populations, such as the elderly and disabled.

Prerequisite(s): IDS 3016

Instructional Contact Hours: (3 Lec, 9 Lab, 6 Crd)

IDS 4016 - Industrial Design Laboratory IV (6 credits)

Detailed analysis, research and application of human factors to the design of equipment, work spaces and environments. Design and construction of full scale, interactive models and spaces. Introduction to group activities. Emphasis on the needs, the production and marketing factors of special populations, such as the elderly and disabled.

Prerequisite(s): IDS 4015

Instructional Contact Hours: (3 Lec, 9 Lab, 6 Crd)

IDS 4044 - Professional Practice and Entrepreneurship (2 credits)

Focus on assembling multidisciplinary teams to engage in the process of bringing a product to market, building a business around a core competency in design, the structure of a design office, and the development and protections of intellectual property. Pre-requisite: Senior standing or permission of instructor.

Prerequisite(s): IDS 2015

Instructional Contact Hours: (2 Lec, 2 Crd)

IDS 4094 - Startup: Commercialization of Innovation (3 credits)

Work in interdisciplinary teams in an experiential environment replicating modern innovation environments. Engage in real world innovation commercialization opportunities. Individual experiences and projects involving actual inventions, innovations, technologies, intellectual property (e.g. patents) and market opportunities. Integrate design thinking, scientists, entrepreneurs, advisors and other potential collaborators. Create a representation of a plan for a minimum viable product for an innovative product or service based on customer and market feedback.

Pathway Concept Area(s): 3 Reasoning in Social Sciences, 10 Ethical Reasoning

Instructional Contact Hours: (3 Lec, 3 Crd)

Course Crosslist: ENGE 4094, MGT 4094

IDS 4954 - Study Abroad (1-19 credits)

Instructional Contact Hours: Variable credit course

IDS 4964 - Field Study (1-19 credits)

Instructional Contact Hours: Variable credit course

IDS 4974 - Independent Study (1-19 credits)

Instructional Contact Hours: Variable credit course

Repeatability: up to 99 credit hours

IDS 4974H - Independent Study (1-19 credits)

Instructional Contact Hours: Variable credit course

IDS 4984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

Repeatability: up to 99 credit hours

IDS 4994 - Undergraduate Research (1-19 credits)

Instructional Contact Hours: Variable credit course