

# INDUSTRIAL DESIGN (IND)

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## **IND-541 CAID: Solid Works - (2 Credits)**

A thorough overview of Computer-Aided Industrial Design (CAID), from simple software programs for PC-type hardware to high-end, state-of-the-art workstations. Field trips and guest lecturers provide in-depth presentations about this newly developing area of industrial design. CAID is evaluated in relation to traditional industrial design methodologies. Students are introduced to desktop CAID with PC-type hardware and a product-drafting program.

## **IND-542 CAID II: Solid Works/Pro E. - (2 Credits)**

Students learn an advanced, two-dimensional drafting software program running on high-end, PC-type equipment. Differences between product and environmental drafting are reviewed. Students learn to develop a library of component parts and patterns which are used as standard symbols for material specification. In addition to producing a complete set of product drawings, text formatting, specification layout, technical documentation, and presentation manuals relating to the draftings are covered.

## **IND-600 Graduate Design Studio I - (3 Credits)**

Graduate Design Studio is a theoretical and practical course that addresses real-world problems of considerable complexity. Students are expected to push the limits of design to realize projects that are of professional quality and scope. All students are required to present their projects to an external professional audience for critique and defense.

## **IND-601 Graduate Design Studio II - (3 Credits)**

Graduate Design Studio is a theoretical and practical course that addresses real-world problems of considerable complexity. Students are expected to push the limits of design to realize projects that are of professional quality and scope. All students are required to present their projects to an external professional audience for critique and defense.

## **IND-612 Industrial Design Technology I - (3 Credits)**

The objective of this course is to convey the information required in the design of products. A manufacturing process is analyzed and used as the basis of design. During the semester, students review specific materials and processes. Course includes guest lectures, field trips, and video presentations. A project report will be required.

## **IND-613 Industrial Design Technology II - (3 Credits)**

The objective of this course is to convey the information required in the design of plastic products. A plastic product is analyzed and designed. During the semester project, students review specific materials and processes related to the development of a design; assess alternative processes; and discuss a number of topics related to industrial design through guest lectures, field trips, and video presentations. A project report will be required.

## **IND-614 Graduate Color Workshop I (2-D) - (2 Credits)**

This course is an analysis of human perception and the modes and attributes of light and color. The study of simultaneous contrast, or the way we perceive color changes as a continuous physical and psychological process, will be the key to the controlled experimental studies. Various media will be used in the process of developing creative methods for exploring ways we can manipulate the various aspects of color and light that affect our psycho-physiological equilibrium in challenging ways. Color vocabulary and glossary will accompany stages in development.

## **IND-615 Model Shop - (2 Credits)**

This is an accelerated design shop course presenting the use of tools and the processes of forming, cutting, joining, and finishing. Subjects covered will also include the description of models - soft, presentation, and working. The student will be expected to work on group and individual projects, utilizing appropriate tools, materials, and processes. All work will be photographed, and a presentation document of all projects will be required.

## **IND-616 Graduate Color Workshop II (3-D) - (2 Credits)**

The course explores color and light phenomenology in the three-dimensional world. Relationships between color and light as they affect our visual perception of size, shape, and proportion are explored from both practical and aesthetic perspectives. Projects examine color and light on forms such as product and packaging as well as in space, as in display and interiors.

## **IND-617 Toy Design - (3 Credits)**

This course deals with design techniques related to toy design, encompassing building, color, graphics, simple mechanics, and drafting. These will be applied through use of plastic, wood, foam, wire, paint, pencils, markers and vacuum forming. Special consideration is given to the understanding of the child. The safety concerns as well as the educational and fun value of the toy will be considered. Children will judge the student's toy at the end of the semester.

## **IND-643 Digital Ideation - (3 Credits)**

Digital Ideation provides students with theoretical principles and practical examples of a wide variety of digital technology, tools, software and methods which designers are likely to encounter in current practice. These include solid and surface modeling, 3-D rendering, animation, and output for rapid prototyping. This course will afford students the ability to make the best use of digital tools and methods suited to a particular project. Emphasis is placed on ideation skill in the digital environment, bringing initial concepts to sophisticated realization.

## **IND-651 Prototypes I - (3 Credits)**

This course is offered to seniors who wish to pursue their own special talents or inventive faculties. The resulting forms must be designed and built as complete, full-size, and useful prototypes - that is, the first of a series. The only restrictions on form are simple and logical: to be able to execute the project with available materials, tools and personal finance. Furniture, mass production ceramics, lighting, portable structures, and textiles are potential projects.

## **IND-652 Prototypes II - (3 Credits)**

This course is offered to seniors who wish to pursue their own special talents or inventive faculties. The resulting forms must be designed and built as complete, full-size, and useful prototypes - that is, the first of a series. The only restrictions on form are simple and logical: to be able to execute the project with available materials, tools and personal finance. Furniture, mass production ceramics, lighting, portable structures, and textiles are potential projects.

## **IND-656 Special Projects - (3 Credits)**

Course work and/or special projects are assigned on an individual basis. A variety of topics are offered. Refer to specific registration schedule of courses for offerings and to appropriate bulletins for descriptions.

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**IND-658 Special Projects - (1 Credit)**

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**IND-660 Design Research - (3 Credits)**

Individual or team investigations are conducted and related to selected topics under faculty direction. Students develop thesis proposals in second semester.

**IND-661 Thesis Formulation - (3 Credits)**

Individual or team investigations are conducted and related to selected topics under faculty direction. Students develop thesis proposals in second semester.

**IND-666 Global Innovation Design Seminar I - (2 Credits)**

This is part one of a seminar that serves the crucial function of positioning industrial design in a global context. The course will address the expansion of the field to encompass new areas of design not previously considered "industrial" in terms of professional practice, such as globalization, culture, branding, and research.

**IND-667 Global Innovation Design Seminar II - (2 Credits)**

This is part two and a continuation of IND 667A, building on the necessity of positioning industrial design in a global context. This course will consider the field in terms of professional practice and interdisciplinary research, taking into account the diverse backgrounds and skills of the students.

**IND-669 Business of Design - (2 Credits)**

Entrepreneurship is a complex process that requires broad knowledge and detailed planning. This course will provide the information and resources concerning protection of intellectual property and business structures that are common to new ventures that seek to bring innovative consumer products to market.

**IND-670 Design Issues in the 21st Century - (2 Credits)**

The seminar course aims towards a re-thinking, re-making, and re-designing a future concerned for collective survival and well-being, a renewal of culture in a larger anthropological context. The course explores the future responsibilities and meanings of designers as humanists.

**IND-672 Graduate 3-D I - (2 Credits)**

Students are introduced to an ordered sequence of purely visual experiences to develop a recognition of the abstract elements in any design situation. The goal is to become so familiar with the principles of abstraction that one automatically thinks of a visual problem in terms of organized relationships.

**IND-673 Graduate 3-D II - (2 Credits)**

Students are introduced to an ordered sequence of purely visual experiences to develop a recognition of the abstract elements in any design situation. The goal is to become so familiar with the principles of abstraction that one automatically thinks of a visual problem in terms of organized relationships.

**IND-687 Sustainability and Production - (3 Credits)**

This course explores issues of sustainability and social responsibility in product design with an emphasis on materials and supply chain flows. The importance of the designer's role in understanding the environmental and social consequences of creating and producing products will be emphasized. Studies on the impacts of production and consumption will be covered through readings, class discussions, and lecture materials. Student's critical, analytical, and research skills will be developed by evaluating the environmental impacts of various materials and processes. Coupled with an advanced academic rigor and contemporary dialogue, these evaluations will be used to create baseline models; their findings will be used to develop alternative concepts that reduce environmental impacts of products.

**IND-690 Industrial Design Workshop - (3 Credits)**

Workshops are offered in two distinct areas: process and concept. Both strive to develop one's individual vision as a designer and enhance problem-solving abilities. Process workshops focus on research, priorities, and understanding context and dialogue as a part of the design process. Students step through project development, including sketching, model making, fabrication, and formal presentations. Concept workshops follow an abstract and often lateral creative process designed to expand the students' visual, aesthetic, and conceptual framework. Resulting projects are typically sculptural in nature and become expressions of the relationship between the individual, the artist, and the designer.

**IND-691 Thesis Seminar - (2 Credits)**

This seminar is a forum for students to present and critique each other's thesis work in progress, with particular emphasis on integration design knowledge, professional practice, entrepreneurship, presentation, and the broadest possible perspective of industrial design.

**IND-692 Thesis seminar II - (2 Credits)**

The seminar course will be devoted to planning, researching, and implementing the applied aspects of student's thesis project, with a particular emphasis on written thesis book and on visualization and presentation of the project to a wider public audience. Instructors of this course will work with students in small groups or on an individual basis, and in close communication with student's Thesis Advisors.

**IND-694 Drawing I - (2 Credits)**

General drawing is based on perception of form in natural growth: cellular, geometric, and organic. In the analytical learning process, drawing as a thinking tool serves to reveal the dynamic relationships between natural and manmade systems. Exercises in drawing stress the intuitive, visual, and analytical learning processes.

**IND-695 Drawing II - (2 Credits)**

Intensified drawing studies in natural and manmade forms, including the figure, still-life, and structures. Advanced techniques involving concepts of mechanical objects rendering, delineation, and graphics are covered. Employment of different drawing media encourages professional flexibility.

**IND-696 Advanced Design Drawing - (2 Credits)**

This course refines and extends the scope of the students' design drawing skills through demanding skill-building exercises, the repetition of drawings, the use of the human figure in design drawings, and intensive classroom drawing sessions. A complete set of concept, development and presentation drawings for a new or existing student design is executed and developed. Drawing techniques for the design of portfolio layouts are introduced, resulting in a developed portfolio design for a project previously done by each student.

**IND-698 Thesis I - (3 Credits)**

Independent problems based on individual thesis proposals, submitted by the candidate and approved by the thesis advisor. Projects must represent a meaningful contribution to the field of design and must show mature correlation between all phases of design and construction based on supportive research.

**IND-699 Thesis II - (3 Credits)**

Independent problems based on individual thesis proposals, submitted by the candidate and approved by the thesis advisor. Projects must represent a meaningful contribution to the field of design and must show mature correlation between all phases of design and construction based on supportive research.

**IND-700 Thesis In Progress - (0 Credits)**

If the thesis course is not completed in the initial semesters, students can continue working in IND-700 for no more than five semesters.

**IND-9600 GR IND Internship Course Internship Course - (0 Credits)**

The internship is a learning experiences at a discipline-related professional site. It provides students with an opportunity to apply academic knowledge and skills in a practical setting, while obtaining new knowledge and skills in preparation for professional work or graduate school. Students experience the application of coursework lessons into a real-life context, thus enriching their education. They deepen their knowledge about important applied aspects of their discipline, enhance their professional skills in a real-world context, build their professional network, and inform their career choices. Additional faculty-supervised activities provide the opportunity for an in-depth reflection on the internship experience.

**IND-9601 GR IND Internship Course Internship Course - (1 Credit)**

The internship is a learning experiences at a discipline-related professional site. It provides students with an opportunity to apply academic knowledge and skills in a practical setting, while obtaining new knowledge and skills in preparation for professional work or graduate school. Students experience the application of coursework lessons into a real-life context, thus enriching their education. They deepen their knowledge about important applied aspects of their discipline, enhance their professional skills in a real-world context, build their professional network, and inform their career choices. Additional faculty-supervised activities provide the opportunity for an in-depth reflection on the internship experience.

**IND-9602 GR IND Internship - (2 Credits)**

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**IND-9603 GR IND Internship Course - (3 Credits)**

The internship is a learning experiences at a discipline-related professional site. It provides students with an opportunity to apply academic knowledge and skills in a practical setting, while obtaining new knowledge and skills in preparation for professional work or graduate school. Students experience the application of coursework lessons into a real-life context, thus enriching their education. They deepen their knowledge about important applied aspects of their discipline, enhance their professional skills in a real-world context, build their professional network, and inform their career choices. Additional faculty-supervised activities provide the opportunity for an in-depth reflection on the internship experience.