

PRODUCT DESIGN (PDES1-CE)

PDES1-CE 9063 3D Printing, Scanning, and Rapid Prototyping (3.5 Credits)

Considered by industry front-runners to be the next life-changing technology, 3D printing is ushering in a new era of manufacturing. The objective of this intensive course is to gain an understanding of additive manufacturing, scanning, and rapid prototyping. Learn how 3D printing works, where it's being used, and what digital tools are available to enhance the product development cycle. This course also introduces a new way of production. Gain insight into industry applications and an outlook on what the future holds for various industry segments, while learning about the processes, filaments, and materials used to produce 3D printed items. Moreover, you are taken through a series of real-life case studies that showcase the use of additive manufacturing by Fortune 500 companies, small- to medium-sized businesses, and individuals to increase their efficiency and reduce their product time to market. The course includes a tour of NYU's 3D printing facility, LaGuardia Studio, which has multiple fabrication systems and technologies, as well as other 3D printing outlets in New York City.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9064 Product Design Fundamentals: From Conception to the Physical Product (0 Credits)

Every product that hits the market, from iPads to industrial machinery, passes through rigorous phases of design and prototyping before it ever goes into production. Learn how product development starts, and see how management, engineering, and industrial design converge in the conception and design of a physical product. Employing a user-centered design approach, develop a simple prototype, identify customer needs, define a product's architecture, and use proven methodologies to design for manufacturing. A visit to the ION Design offices will offer a special behind-the-scenes look at the operations of a product design firm.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9070 Digital Sculpting with Sculptris: Cryptids and Creatures (1 Credit)

Sculptris is a free digital sculpting and 3D modeling program used in the visual effects, animation, and video game fields. With the growing accessibility of 3D printing technology, many artists have begun to use digital sculpting as a tool for digital fabrication, creating everything from prototypes to molds to fine art sculptures. However, many digital sculpting programs can be challenging due to their intricate interface and specific approach for developing 3D form. Sculptris's pared down interface is easy to learn and optimized for the types of forms that are the focal point of this course. Throughout this intensive workshop, we will break down this exciting but complex medium through topics on efficient sculpting methods that are catered toward creating your own organic creatures and monsters. Beginners to 3D design and digital sculpting will greatly benefit from taking this course. Sculptris is available for free for both PC and Mac, and students may use it on either operating system. No prior 3D design experience is expected.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9071 Polygon Modeling and Digital Visualization (2.5 Credits)

Before an object can be 3D printed, it must be converted to a polygonal mesh format. Thus, every 3D designer will benefit from knowing the fundamentals of and the cutting-edge applications for polygon modeling. It is important to establish a solid understanding of polygonal mesh development in order to manipulate, troubleshoot, optimize, and repair 3D design files before printing them. In this studio course, become familiar with the workflow and standard tools for polygon modeling and learn the basics of building complex 3D mesh forms. Topics to be covered include NURBS modeling methods, procedural design practices, deformers, subdivisions, and mesh decimation. Also, acquire the skills to develop rendered images of your own 3D design projects. These visualizations, combined with blueprint 2D drawings and physical 3D prints, will provide you with a clearer representation of all aspects of a 3D design project. Take this course as an introduction to the 3D design industry or to work on your own 3D project. No previous experience in 3D is required.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9072 3D Printing and Digital Fabrication (3 Credits)

In this introductory hands-on course, study the foundational tools of digital fabrication, which include 3D printing and 3D scanning, and learn how to select the appropriate tools to meet 3D design challenges. Once you understand the 3D printing process, you then will learn about the technical and creative applications of high-end 3D printers, which are provided by the LaGuardia Studio. Studio topics include current 3D print materials, multimaterial 3D printing, surface resolution considerations, color printing variables, archivability, and sustainable best practices. Course lectures focus on case studies regarding the developing field of additive manufacturing as well as the creative possibilities of trending digital fabrication technologies. You will be expected to use this course to develop concepts for your final capstone project by exploring ideas through drawing and other visual media. Take this course to gain an introduction to the 3D design industry or to work on your own 3D project. No previous experience in 3D is required.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9085 Emergent Technologies Seminar (0 Credits)

The opportunities for creative exploration with regard to real-world objects are expanding thanks to the growth of 3D modeling, 3D printing, and rapid prototyping technologies. Become familiar with the process and potential applications of 3D modeling, digital sculpting, 3D scanning, and 3D printing technology. Applications range from jewelry design, medical device design, and product design to entrepreneurial inventions, packaging, and even fashion. This hands-on, exploratory seminar exposes you to the scope of these emergent technologies.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9087 Product Development (0 Credits)

What factors shape the evolution of a product design? How can a designer navigate through the necessary stages without losing the essence of the original concept? Learn how to steer a product in a creative and innovative way through the different phases of production, including market research, consumer analysis, concept generation, materials, design, prototyping, sourcing, manufacturing, pricing, and presentation. Through simulated real-world conditions, discover how your original product could be developed professionally and successfully.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9088 Design Drawing and Visual Development (2.5 Credits)

Drawing is an essential skill that allows a designer to work through design problems and communicate ideas and concepts. Develop and improve industrial design sketching skills for both analog and digital applications. Learn methods of representation, communication, development of form, perspective, and iteration. As a means of design thinking, students will incorporate various rendering techniques for translating their ideas into 3D forms and objects.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9089 Materials and Manufacturing Processes (0 Credits)

From silicone rubber to carbon steel, materials influence design and shape the consumer landscape in which we live. Learn how products are manufactured—from blow molding to injection molding—and how these different processes contribute to a product's aesthetic. Find out why one method is chosen over another and how to design in accordance with manufacturing methods. Through analysis, this course explores important questions about the environment, industry, and industrial design.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9090 SolidWorks Intensive (0 Credits)

If you are an aspiring product or package designer, learn the interface and basic functionalities of SolidWorks and increase your product design skills in this one-week intensive. Convey product ideas while discovering the role SolidWorks plays in the design process through its rendering capability and ease in generating high quality technical drawings. Through a series of focused exercises and projects, learn how to build a detailed 3D representation of a specific part, assemble components in a 3D space to create a final product, generate 2D plans, and how to generate a photorealistic image of a product using PhotoWorks.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9093 SolidWorks (0 Credits)

SolidWorks is the industry-standard software for industrial and product design due to its powerful 3D modeling capabilities. This course starts with an introduction to the program interface and the sketching and modeling tools, and then explores the planes and orientation of the 3D model space. Learn how to translate a 2D sketch into a 3D model, to execute multiple 3D models, and to combine them within an assembly file. Understand how to draft 2D and 3D drawing documents for design communication purposes.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9095 SolidWorks II (0 Credits)

Building on the fundamental concepts covered in *SolidWorks I*, this intermediate-level course explores the advanced modeling tools and features of the program. Receive an introduction to the built-in rendering program PhotoView 360, and explore best practices for rendering objects for presentations. Acquire tips for enhancing workflow and optimizing creative solutions.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9099 3D Printing: Rapid Prototyping (0 Credits)

This rapid prototyping (3D printing) course is geared toward artists and designers interested in developing a digital skill set in visualizing design concepts. As a toy designer, concept artist, industrial designer, character artist, product designer, or hobbyist, take part in a series of hands-on class exercises using cutting-edge 3D modeling software such as Maya, Cinema 4D, ZBrush, and Mudbox. The rapid prototyping and visualization techniques covered also have relevance in other creative manufacturing industries, including architecture, jewelry design, illustration, and fine arts. Complete the course with an optimized 3D model ready for optional 3D printing at the NYU Advanced Media Studio.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9100 3D Printing--Rapid Prototyping Intensive (0 Credits)

Turning creative ideas and designs into realistic models has been made possible by the explosion of 3D printing technology. Industries such as architecture, fine art sculpture, dentistry, medical device design, education, and product design are enhanced by visualization techniques—as are toys, collectibles, jewelry, and other consumer products. Design projects, create objects using 3D software, and learn how to optimize cost-effective printing. Discuss copyright and distribution, and create an optimized 3D model ready for optional 3D printing at the NYU Advanced Media Studio.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9106 Digital 3D Scanning (0 Credits)

3D scanning is a trending technology that opens doors to many entrepreneurial and traditional applications within the medical, product design, and entertainment industries. Learn how to acquire and manipulate 3D point cloud data from a range of hardware and software options for the purpose of generating digital objects from real-world sources. Become familiar with potential applications of 3D scanning and digital visualization techniques, including 3D printing and rapid prototyping. Topics include acquiring raw scan data, cleanup, enhancement, and integration with popular professional 3D software packages.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9107 Packaging (0 Credits)

A vital function of packaging is to protect the product for its intended use, yet a visually appealing and informative package should also encourage potential buyers to purchase the product. Package design starts by identifying all the requirements: marketing plans, shelf life, end-use, and environmental concerns. This hands-on course explores how design criteria, time targets, resources, and cost constraints impact the viability and success of a design.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9108 3D Design and Fabrication Intensive (12.5 Credits)

Digital fabrication is revolutionizing how we invent, create, design, and bring to market new products, while also stimulating art, technology, creativity, and ingenuity. Learn from leading 3D industry experts in an immersive experience that provides a comprehensive introduction to the elements critical to the 3D digital workflow: modeling, optimization, visualization, and fabrication. Daily lectures that situate digital techniques in contemporary design practice are followed by hands-on tutorials. The first week of this intensive course dives deep into the elements of product design, conceptualization, and research methodology. Week two provides operative knowledge of the many geometry types, and it covers modeling and scanning techniques and simulation tools that you practice hands-on using SolidWorks and Cinema 4D. The final week introduces visualization and fabrication techniques of additive manufacturing and rapid prototyping. In class, concentrate on producing, refining, and finalizing printed designs. Intensive course work is enhanced and supported by visits to leading industry manufacturers and design studios and by frequent guest lecturers who impart practical and conceptual insights into consumer and industrial applications and an outlook on what the future holds for different industry segments.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9109 ZBrush for 3D Artists and Designers (3 Credits)

ZBrush is an award-winning digital sculpting and 3D modeling program that is heavily used in the visual effects, animation, and video game industries. Due to the growing accessibility of 3D printing technology, many artists have begun to use ZBrush as a 3D design tool for digital fabrication. In this hands-on course, learn to use the essential features and intuitive sculpting tools unique to ZBrush in order to create a final project of your own design. Topics include efficient sculpting methods, topology management, surface refinement, and 3D printing best practices. Students are not required to have prior 3D experience. 3D professionals and 3D design students of all levels can benefit from taking this course.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9200 Photorealistic Rendering and Visualization with KeyShot (0 Credits)

In this hands-on course, learn the fundamentals of photorealistic rendering using industry-standard software Luxion KeyShot. Topics covered include the principles for creating realistic lighting, materials, and visual elements for visualizing design concepts. Learn to troubleshoot and optimize real-world rendering and visualization projects for speed and efficiency, while gathering a comprehensive sense of the professional challenges that you may face in the field. The course concludes with discussions regarding the use of techniques in compositing applications, such as Adobe Photoshop, to enhance the final look of rendered 3D designs. This practical course provides the tools to breathe life into your project ideas, whether for product design, architecture, entertainment, fine art, or an entrepreneurial venture.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes

PDES1-CE 9509 ZBrush for 3D Artists and Designers (0 Credits)

ZBrush is an award-winning digital sculpting and 3D modeling program that is used frequently in the visual effects, animation, and video game industries. Due to the growing accessibility of 3D printing technology, many artists have begun to use ZBrush as a 3D design tool for digital fabrication. In this hands-on course, learn to use the essential features and intuitive sculpting tools unique to ZBrush in order to create a final project of your own design. Topics include efficient sculpting methods, topology management, surface refinement, and 3D printing best practices. Students are not required to have prior 3D experience. 3D professionals and 3D design students of all levels can benefit from taking this course.

Grading: SPS Non-Credit Graded

Repeatable for additional credit: Yes