

# Virtual Reality

The AAS degree in Virtual Reality is a pioneering program for artists and creative technologists. Students will learn to create immersive content and experiences for a wide range of industries in an exploding market projected to grow to a \$40 billion industry by 2020.

Those enrolled in the Virtual Reality program will study in a range of areas including photography, digital imaging, computer science and narrative storytelling in virtual, augmented and mixed reality. This program emphasizes concept-based approaches to this new and exciting form to create engaging experiential projects. Over the course of the program, students will learn the tools to shape technology creatively.

## Degrees

### General Education Foundation

COMMUNICATION	6
ENG-111 English Composition I	
ENG-112 English Composition II	
MATH-SCIENCE-TECHNOLOGY	8
MAT-120 Mathematics for Liberal Arts or MAT-13(Probability and Statistics Laboratory Science	
SOCIAL SCIENCE OR HUMANITIES	3
Choose from General Education course list	
GENERAL EDUCATION COURSES	3
PHO-113 History of Photography	
General Education Foundation Credits	20
<b>Photography &amp; Imaging Core (40 CR)</b>	
PHO-115 Photography I	3
CMP-128 Computer Science I	3
CMP-129 Computer Science II	3
CMP-150 Game Programming	3
PHO-204 Digital Imaging I	3
IMG-101 Introduction to Computer Generated Art	1
IMG-112 X-R Principles	3
PHO-117 Color Photography I	3
PHO-216 Studio Lighting I	3
PHO-224 Moving Images	3
IMG-214 X-R Studio	3
IMG-201 Narrative and Storytelling in X-R	3
PHO-226 Portfolio Preparation	3
PHO-227 Professional Studio Photography	3
Photography & Imaging Core (40 CR) Credits	40
<b>Total Credits</b>	<b>60</b>

## Faculty

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## Courses

### PHO-101. Introduction to Analog Photography Techniques. 1 Credit.

LECT 15 hrs

This 7-week, 1-credit introductory course introduces students to B&W photography darkroom techniques. Students will learn how to operate an analog 35mm film camera, develop B&W negative film and create B&W darkroom prints of appropriate density and contrast. Students should own or have unrestricted access to an analog 35mm film camera. Note: This course is offered only in the Fall semester. Photography majors taking a Photography 1 course during Fall semester must take this course as a co-requisite. If a photo major takes their Photography 1 course in the Spring or Summer semester, this course must be taken prior to enrolling in Photography 2 (PHO-116). Special permission required for non-photo majors.

**Corequisites:** PHO-115.

### PHO-102. Artwork and Product Photography. 1 Credit.

LECT 15 hrs

This 7-week, 1-credit course introduces students to product and artwork photography. Students will learn how to photograph 2D and 3D artwork and products using continuous and strobe lights in a studio setting.

### PHO-103. 2D Digital Design. 3 Credits.

LECT 30 hrs LAB 45 hrs

This studio course provides an introduction to 2D digital design principles and develops creative problem-solving skills. In this course, you will use raster- and vector-based software (Adobe Creative Cloud desktop and/or mobile apps) to apply design principles and develop elements of professional practice. Visual sensitivity and a working knowledge of design elements is developed by solving a series of creative visual problems, employing a variety of digital media.

**PHO-105. Forensic Photography. 3 Credits.**

LECT 30 hrs LAB 45 hrs

This studio photography course teaches the techniques needed to successfully document evidence as well as crime and accident scenes in a professional manner. Students will examine the theory and techniques of forensic photography as a tool to aid in crime scene investigations, surveillance techniques, and presentation of photographic and imaging proof at trial. Students will be introduced to basic photographic techniques such as the mechanics of exposure, depth-of-field, motion control, and simple lighting.

**Additional Fees:** Course fee applies.**PHO-110. Photography Appreciation. 3 Credits.**

LECT 45 hrs

Through lectures, discussions, written analysis, projects and presentations, the student will gain an understanding and appreciation of the global and cultural impact of photography. Students focus on the formal development of photography and the role it plays in social and cultural production, gaining insight into how photographs produce visual representations across cultures and reflect social values. Students learn the fundamental visual elements of photographic form, critical skills necessary to interpret a variety of visual representations and to enhance visual literacy. Note: This is a lecture based course, not a studio art course and is not acceptable for majors of Photography, Graphic Design, or Fine Arts.

**PHO-113. History of Photography. 3 Credits.**

LECT 45 hrs

A survey of photographic history from its origin to the present day. Topics include the invention of photography, the photograph as document, the photograph as art, the natural landscape, the portrait, color photography and contemporary photography. Course requirements may include extensive use of Blackboard and other online components.

**PHO-114. Photographic Processes. 3 Credits.**

LECT 30 hrs LAB 45 hrs

In this course, students will be introduced to a diverse range of photographic processes, both historical (analog), and contemporary (digital). The class will use traditional darkroom, digital lab, and shooting studio to explore and experiment. As students engage directly with the materials, they will be challenged with a variety of critical thinking questions: How could unpredictable historical processes serve as an antidote to digital perfection? What is a difference between a handmade and a machine-made print? Is there a way to thoughtfully combine different photographic processes to create one complex piece or collection of images? In this course, students will also investigate ways in which the creative process informs their intention.

**Prerequisites:** PHO-115.**PHO-115. Photography I. 3 Credits.**

LECT 30 hrs LAB 45 hrs

In this entry level photography course, students will be introduced to a basic digital photography workflow: from image capture to output. Through a series of technical exercises and creative assignments, students will explore the fundamentals of photography as a visual language. Assignments will emphasize the key elements of photographic form (light, composition, time, vantage point, symbolism), and the basics of industry standard imaging software - all in service of transforming reality into a complex photograph. Students will discuss aesthetic, technical, historical, and formal issues through demonstrations, exercises, and critiques.

**Additional Fees:** Course fee applies.**PHO-116. Photography II. 3 Credits.**

LECT 30 hrs LAB 45 hrs

In this intermediate photography course, students will advance their knowledge of traditional darkroom B&W photography. In addition to a 35mm film camera, students will actively use medium and large format camera systems. Focusing on a semester-long project, students will learn how different camera formats (small, medium, and large) influence the way photographers see and capture the world. In addition to developing a personal project, students will be introduced to analog and digital visual research. They will learn how to seek inspiration within oneself, as well as by exploring the works of a diverse group of artists. Participation in critiques and discussions will broaden vocabulary and visual analysis skills to formally and conceptually review and critique photographs.

**Prerequisites:** PHO-101 and PHO-115**Additional Fees:** Course fee applies.**PHO-117. Color Photography I. 3 Credits.**

LECT 30 hrs LAB 45 hrs

In this advanced photography course, students will learn how to properly capture, process, and use the color of light and color of materials in their image-making process. Students will apply advanced digital imaging techniques to their work and critically examine the effects that color has on the ways photographers see and make photographs. Students will emerge with advanced photography skills, allowing them to create technically sound digital files and large-format inkjet prints, in which color was used effectively.

**Prerequisites:** PHO-115**Additional Fees:** Course fee applies.**PHO-119. Contemporary Photography. 3 Credits.**

LECT 45 hrs

This course fosters a critical understanding of the development of photography since 1950, as both a fine art and medium of communication. Students will gain an understanding of the philosophies that have shaped the current uses of the photographic image. During the semester, students will view and discuss diverse bodies of photographic work in relation to their historical, social, and artistic context. PLEASE NOTE: This course contains explicit content. These works are included because they are significant to the history of photography. These bodies of work present important challenges to artistic traditions and conventions, social norms, standards of beauty and taste, and ultimately, to definitions of photography. Moving towards a critical and social analysis is a key component of this course.

**PHO-203. 3D Digital Design. 3 Credits.**

LECT 30 hrs LAB 45 hrs

In this course, students will generate images, both still and moving, for use with industry-standard 3D software. Students will use several methods to create 3D models and learn the basics of polygonal modeling, texturing, lighting, and rendering. Composite and green screen techniques will combine 3D models with still photography and video elements. Students will emerge with a strong understanding of the principles of three-dimensional digital design.

**PHO-204. Digital Imaging I. 3 Credits.**

LECT 30 hrs LAB 45 hrs

An introductory studio course providing an overview of various digital post production software applications used for digital photography. Non-destructive vs. destructive image manipulation, color management, workflow and image compositing basics are several of the topics covered in this course. Current software applications employed in the course include Adobe Photoshop and Adobe Lightroom. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.

**Prerequisites:** PHO-115**Additional Fees:** Course fee applies.**PHO-213. Documentary Photography. 3 Credits.**

LECT 30 hrs LAB 45 hrs

This course explores the complex idea of the photograph as a document, and it introduces students to a diverse range of documentary practices: from traditional to contemporary. Through the study of key photographers, artists, and relevant writings, students will gain a broad perspective into the multiple ways the photograph manifests as a document, including the photograph as witness, evidence, memory, and activism. Practice-based assignments will enable students to plan, engage, and complete in-depth documentary projects that explore personal, political, and social issues. Students will scrutinize the question of objectivity vs. subjectivity, broadening and stretching the definition of a document. Photography Technology majors must complete PHO-116 before registering for this course.

**Additional Fees:** Course fee applies.**PHO-214. Integrative Studio. 3 Credits.**

LECT 30 hrs LAB 45 hrs

Is there more than one way to approach an assignment and investigate an idea? In this course, students will expand on a purely photographic body of work to create a complex multimedia project. Students will be introduced to a diverse range of media in order to consider the expressive possibilities of visual and non-visual language. How are these different media used to communicate an idea or position? Students will actively: question, observe, visualize, play, fail, reframe, experiment, fabricate, and reflect in order to explore interdisciplinary and collaborative process. The studio actively integrates learning from other courses in order to create layered and complex projects. Student will explore ways in which multimedia projects could be used to communicate an idea or position and engage a community. There are no pre-requisites for students who are not Photography majors. To enroll into this course, please contact Art & Design Department.

**Prerequisites:** PHO-114.**PHO-216. Studio Lighting I. 3 Credits.**

LECT 30 hrs LAB 45 hrs

In this course, students will be introduced to a variety of lighting techniques, both in the studio and on location. In a sequence of hands-on exercises, students will learn how to see, shape, and control natural and artificial lighting for a range of applications: commercial, fashion, still life, photojournalism, contemporary art photography etc. Combining lighting technical skill set with an ideas-based practice, students will complete assignments to advance their understanding of image-making possibilities across all areas of photography. There are no pre-requisites for students who are not Photography majors. To enroll into this course, please contact Art & Design Department.

**Prerequisites:** PHO-105 or PHO-115**Additional Fees:** Course fee applies.**PHO-221. Photography and the World-Critical Perspectives. 3 Credits.**

LECT 30 hrs LAB 45 hrs

Photography is a global phenomenon. It is integrated in every aspect of our lives, from social media to art and commerce, across the world from Tokyo, Japan, to Randolph, NJ. Photographs are visual products of the cultures from which they emerge. Through them, we could learn about the world's most pressing social, political, and cultural issues. In this course, students will learn how research, visual analysis, and critical thinking become essential components of a creative process. Students will research and analyze images found in electronic media, visit galleries and museums, and meet photographers from different cultures around the world. Students will use that global perspective to create visual works that could reach broader audience. There are no pre-requisites for students who are not Photography majors. To enroll into this course, please contact Art & Design Department.

**Prerequisites:** PHO-115.**PHO-224. Digital Imaging II. 3 Credits.**

LECT 30 hrs LAB 45 hrs

This studio course is designed for experienced digital imaging users. Focusing on a semester long project, students learn how different media influence the way we see and capture the world. As technology and the role of the photographer evolve, methods of manipulation and presentation are explored. Course requirements may include extensive use of Blackboard and other online components including, but not limited to, photo sharing sites.

**Additional Fees:** Course fee applies.**PHO-225. Moving Images. 3 Credits.**

LECT 30 hrs LAB 45 hrs

In this studio course, students will be introduced to the principles, techniques, and aesthetics of video and film production. They will examine all aspects of the production, including pre-production (planning, screenplay writing etc.), and post-production (editing). Through a series of assignments, students will explore different video and film genre, ranging from commercial to documentary and experimental. In class, screenings of the works of relevant contemporary figures in film and video will complement the hands-on experience. Working individually, with the instructor, and peers, students will be given the space and guidance to develop and articulate a thoughtful, creative voice.

**Additional Fees:** Course fee applies.

**PHO-226. Portfolio Preparation. 3 Credits.**

LECT 30 hrs LAB 45 hrs

During this intensive studio course, students will conceptualize, create, and exhibit their thesis project. The thesis projects will exhibit mastery of photographic skills acquired during students' course of study in the Photography Technology Program. Through a series of in-class exercises, students will perfect all steps of a creative process: from an initial concept to final exhibition. The studio part of the course will reinforce theoretical knowledge and will focus on the execution of the thesis project. During regular critiques, students will be encouraged to shape their projects in a way that is both personal and relatable for its connection to the world at large. To execute their thesis project, students can use any medium and technique - from large format to point-and-shoot camera, from black and white to color, from analog to digital, from still images to video, from sculptural works to sound etc. as long as the medium complements the project. In addition to creating the thesis project, students will master their writing and presentation skills. Through a series of drafts and critiques, students will write their artist statement that will support the thesis project. At the end of the semester, students will present the final portfolio and the artist statement to the portfolio committee. This course should be taken in the student's last semester.

**Prerequisites:** PHO-216**Corequisites:** PHO-227**Additional Fees:** Course fee applies.**PHO-227. Professional Studio Photography. 3 Credits.**

LECT 30 hrs LAB 45 hrs

In this course, students will design and execute complex lighting diagrams specific to their area of interest. Students will use multiple lights setups to master professional lighting techniques and concepts. This course will focus on developing problem-solving skills that address technical and creative methods to achieve powerful visual communication. Part of this course will focus on developing specific tools and abilities required to navigate students' first steps as professional photographers. Upon completing this course, students will conceptualize and design their studio branding build a website, and write a resume to match their desired photography employment goals.

**Prerequisites:** PHO-216**Additional Fees:** Course fee applies.**PHO-228. Cooperative Work Experience-Photography. 3 Credits.**

COOP 45 hrs

Open to Photography Technology (3550) majors only. Students work in photography-related jobs, receiving training. Photography Technology faculty members individually supervise students.

**Prerequisites:** PHO-116**Corequisites:** PHO-229.**PHO-229. Cooperative Work Experience- Photography Related Class. 1 Credit.**

LECT 15 hrs

Open to Photography Technology (Program 3550) majors only. Related class designed to supplement Cooperative Work Experience. Weekly meetings include discussion, written assignments and critical analysis of the work experience.

**Prerequisites:** PHO-116**Corequisites:** PHO-228.**PHO-290. Independent Study I in Photography. 3 Credits.**

LECT 30 hrs LAB 45 hrs

A project designed with a faculty advisor. The student is responsible for developing a statement of goals and objectives and submitting a summary project.

**Prerequisites:** Permission of department chair**Additional Fees:** Course fee applies.**PHO-291. Special Topics in Photography. 3 Credits.**

LECT 30 hrs LAB 45 hrs

Topics in photography which are not included in the regularly scheduled curriculum. May include studio work, technical topics and/or critique.

**Prerequisites:** PHO-115**Additional Fees:** Course fee applies.**PHO-292. Special Topics in Photography. 3 Credits.**

LECT 30 hrs LAB 45 hrs

Studio work in selected topics or issues in photography.

**Prerequisites:** PHO-115**Additional Fees:** Course fee applies.**PHO-293. Special Topics in Photography. 1 Credit.**

LECT 15 hrs

Studio work in selected topics or issues in photography.

**Prerequisites:** PHO-115**Additional Fees:** Course fee applies.