

# ADVANCED DIGITAL APPLICATION (MGFX1-GC)

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## **MGFX1-GC 2 Career Development/Demo Reel Clinic (0 Credits)**

*Typically offered occasionally*

In the format of workshops and a series of presentations by industry guests, students will learn about the various positions in the industry and their specific requirements. The objectives are to accomplish a professional demo reel, a focused written application and interviewing skills, which prepare students not only for the job search after graduation, but also for the presentation of their work to the numerous recruiters and company guest visiting the department.

**Grading:** GC SCPS Pass/Fail

**Repeatable for additional credit:** No

## **MGFX1-GC 1010 Visual Communication (3 Credits)**

*Typically offered occasionally*

From the startling innovations of the 1890s to contemporary digital video and mixed media, the world of moving images has had a tumultuous and spectacular evolution. In this course, students undertake a close reading of the development of the visual language as a tool for communication. Students study the first attempts at storytelling on film, including the discovery of the semantic value of the shot and the subsequent elaboration of montage as the central meaning that generates the force of film, the advent of sound, the modern film and deep focus, and finally, the detailed analysis of computer-generated imagery in the contemporary context. Students will study how to communicate complex subject matters clearly to different types of audiences in a variety of fields and communicate data through visualization.

**Grading:** GC SCPS Graded

**Repeatable for additional credit:** No

## **MGFX1-GC 1100 2D Production Studio (3 Credits)**

*Typically offered occasionally*

Students will learn the tools and the concepts of 2D motion graphics and digital design as well as basic compositing. Through a series of real-world examples in the form of class exercises and project-based work, the students will develop a strong understanding of advanced 2D software features and how to utilize them in context with a specific artistic challenge. As their final project students will be required to conceptualize and produce a short motion graphics piece in their area of interest.

**Grading:** GC SCPS Graded

**Repeatable for additional credit:** No

## **MGFX1-GC 1200 3D Production Studio (3 Credits)**

*Typically offered occasionally*

This studio class introduces students to the tools and the concept of 3D visual effects and animation production. As students get familiar with the various tools and functions, they will create their first projects as they apply to a variety of industries. The course creates a real world post-production experience, stressing the use of the appropriate tools and professional workflow. Students focus on high level object building, photo realistic texturing and lighting, the use of the computer camera, as well as basic layout and scene composition.

**Grading:** GC SCPS Graded

**Repeatable for additional credit:** No

## **MGFX1-GC 1300 Animation Concepts (3 Credits)**

*Typically offered occasionally*

This course explores the fundamental concepts and the traditional principles of animation and their influence on computer animated objects, characters and cameras. Students study the elements of complex motion and performance structure in order to create a believable animated performance expressing emotion and character. This course is the foundation for all forms of animation in the digital production environment as it applies not only to character animation, but also to all forms of visual storytelling through moving imagery.

**Grading:** GC SCPS Graded

**Repeatable for additional credit:** No

## **MGFX1-GC 2110 VFX Production and Compositing (3 Credits)**

*Typically offered occasionally*

This course is dedicated to the design of digital effects and the acquisition of the required live action footage. Students will learn how to break down an effect shot and plan its production considering live action elements, practical effects, 3D elements, 2D visual effects and compositing. The objective is to learn how to supervise the shoot of film and video for digital effects as they apply to a wide range of industries such as film, commercials and broadcast. The role of digital effects supervisor and compositor will be simulated and analyzed to give students a hands-on approach to each task involved.

**Grading:** GC SCPS Graded

**Repeatable for additional credit:** No

## **MGFX1-GC 2200 Advanced Asset Creation and Compositing (3 Credits)**

*Typically offered occasionally*

This advanced level course covers 3D production techniques related to modeling, animation, and 3D effects, as well as the breakdown and management of the production workflow. Students learn the use of the various parameter editors offered by the GUI, as well as the concept of compositing and working with scripts. Students continue to work on complex scenes refining their skills and adding sophisticated techniques used in full 3D Production.

**Grading:** GC SCPS Graded

**Repeatable for additional credit:** No

## **MGFX1-GC 2205 Live Action CG Integration (3 Credits)**

*Typically offered occasionally*

The first lesson of integration is to learn how to see reality and then how to manipulate it. Using high-end digital tools, student will learn to seamlessly integrate 3D objects into live action plates. The photo-real requirements of the film and architectural industries demand a sophisticated visualization standard. In this course students will study complex tracking, photo-real asset creation techniques, render pass compositing, and plate treatments to achieve production level integration. Students will be required to choose an appropriate combination of advanced techniques in modeling, texturing, animation, effects and lighting in order to develop a unique artistic style. Students will be expected to deliver a variety of projects within real-world production deadlines and constraints.

**Grading:** GC SCPS Graded

**Repeatable for additional credit:** No

**MGFX1-GC 2210 Media Production Design (3 Credits)***Typically offered occasionally*

This course explores the design and development of characters, props, interiors and environments for use in feature animation film, data visualization, information design and other areas. Based on the principles of analysis and synthesis students will learn to verbalize the specific design requirements in their area of interest, gather resources and develop design alternatives and a unique artistic style. Students will learn about the importance of design as a story telling device, develop styles corresponding to their subject matter and learn to work based on references. The course incorporates traditional techniques like sketching, drawing, paper and clay models as well as computer graphics.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 2250 TransMedia Aesthetics and Technology (3 Credits)***Typically offered occasionally*

Emerging industries in entertainment, visualization and simulation require that data be communicated to audiences in well-designed formats that speak to the specific needs of the user. This class will focus on the design and implementation of digital tools to create a range of interactive displays for multi-platform devices. Digital Publishing, Historical Visualization, Interactive Education, and Data Communication are just a fraction of possibilities for the use of game engine technology. Students will be introduced to creating interactive environments using a variety of artist friendly technology. Through a hands-on approach, students will combine narrative, sound, animation and digital graphics to create an interactive 3D user-experience for use on the web or mobile screen. Unity3, Cinema 4D and components of Adobe Creative Suite will be used as the primary tools of the course. In completing the course, students will have taken design treatments through the process of game level building and porting out to a mobile platform such as the iPhone.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 2260 Interactive InfoGraphic Design (3 Credits)***Typically offered occasionally*

The emerging field of user interface design offers students the opportunity to explore innovative forms of visual narrative and communication. In this course, students will learn how to conceptualize and design dynamic pieces that communicate to specific audiences. Students will study visual information patterns and trends to create a foundation of concepts in capturing, manipulating and driving user-experience. Students will also study the principles of communication and the formal design aspects of translating information into explanatory and persuasive visualizations and dimensional interfaces. The classes consist of lectures, case studies, and hands-on exercises as they focus on topics in perception, creative thinking, content development, and human interaction. 2D/3D digital tools, along with audio, video, and motion graphics will be appropriately applied to the needs of researched topics.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3010 Digital Compositing (3 Credits)***Typically offered occasionally*

This course covers high-level compositing for visual effects as used in film and video. Students will focus on the various tasks of a compositor and deepen their skills and knowledge of the technical aspects of image compositing. Projects will incorporate constructing scenes using scripted digital input, and then will proceed to develop the structural relationships of several types of illusions. Students will be encouraged to replicate traditional Hollywood visual effects using totally digital techniques. Students will study the key elements of compositing and apply what they have learned to footage taken from production sources. In doing so, they will be exposed to advanced keying, tracking, color correcting and animation techniques. It is the objective to develop a solid technical understanding and problem-solving skills allowing to breakdown shots into tasks and trouble shoot complex problems with the goal of creating photo-realistic moving imagery. Students will study topics such as HDRI acquisition, color space and linear-lighting pipeline techniques.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3035 PhotoRealistic Lighting & Rendering (3 Credits)***Typically offered occasionally*

This course will examine various advanced lighting and rendering techniques, as used in full CG production and digital effects. Students will create an artistic concept for the look of a scene determined by its color palette, the choice of materials and the lighting scenario. It is furthermore the goal to create a professional technical set up of lights and breakdown complex scenes into render passes. Students will explore the various render packages and rendering techniques in order to choose the appropriate technical solutions corresponding to the artistic goals and needs of the industry.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3070 Python for Advanced Applications (3 Credits)***Typically offered occasionally*

The ability to master technical solutions through scripting has become a key component and sought out skill of many production pipelines. In this course, students from various backgrounds will be guided through to a comprehensive array of skills using Mel and Python languages. Techniques will be used to automate complex tasks, as well as advanced level procedural animation and modeling. This course is designed to give students an edge in pushing the boundaries of standard software usage and the use of shell scripts in order to optimize the production workflow to meet production demands.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3215 Procedural Material Networks (3 Credits)***Typically offered occasionally*

This course is dedicated to the creation of rich and intriguing surface materials. The focus will be on procedural texturing, the mathematically controlled generation and combination of surface attributes, which allow materials to be resolution independent. The concepts of texture mapping and procedural materials will both be discussed and combined. Students will learn to create complex shader networks. This course will furthermore stress the observation of real world material details, their artistic interpretation in computer graphics and the translation of their qualities into technical attributes.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No

**MGFX1-GC 3220 Dynamics, Effects, and Fur (3 Credits)***Typically offered occasionally*

Students will learn various techniques utilizing particle animations and dynamic simulations in order to create nature effects, such as fire, smoke and water, as well as the complex interactions between objects and effects. The course will explore procedural animation techniques and the use of expressions, driven keys and script based animations in order to automate and control complex movements.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3235 Character Design and Animation (3 Credits)***Typically offered occasionally*

The character animator brings life to a computer-generated character and defines the range of emotional and non-verbal expressions, which eventually describe its personality. Students will learn how to create character through appearance, pose, movement, facial expression and unique behavior. The goal is to create a stylized character and develop a unique animation style. Observation and physical acting are critical to this process.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3300 Making a Digital Film (3 Credits)***Typically offered occasionally*

This project course offers students the team experience of the production of a digital short film incorporating digital visual effects from start to end. Starting with a script, students will develop the production design and the storyboard for the film. The group will learn how to plan and breakdown the shoot and the following postproduction process. Students will create technical tests and pre-visualize the film in forms of animatics and videomatics. A focus will be on the creation and appropriate use of visual effects in support of the story.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3460 Motion Design (3 Credits)***Typically offered occasionally*

This course will cover advanced aspects of the design, the art and the conceptualization of motion graphics pieces, as required for Broadcast, Title Design, Commercials and Mobile Adverts. Students choose their area of interest and learn to develop a concept based on subject matter, its cultural context, as well as the communication requirements of existing markets. This includes the creation of branding strategies, the breakdown of large projects and the production of motion graphics for various media.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3525 Digital Media Editing, Sound, & Picture (3 Credits)***Typically offered occasionally*

Sound and Image both are storytelling devices, which cannot be separated. This course will explore the recording and editing of sound and its interrelation with the moving images. Students will analyze examples of various subject matters and learn the tools and techniques of film and sound editing. It is the goal to understand the rhythm and the pace of visual effect sequences and how sound and picture manipulate the audience's perception.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3600 Advanced Topics in Emerging Technologies (1-3 Credits)***Typically offered occasionally*

This course offers students the opportunity to explore the latest trends in the industry, in design and cultural areas related to their artistic and professional interests. The variety of areas that already utilize digital imaging and technologies are subject to rapid change and progress. New areas of application, new production methodologies and distribution formats, but also the cultural context, in which we create content require us to constantly adapt and reflect on the ever changing language of visual communication. The presentation format of the course will change corresponding to the subject matter and the area of expertise of the instructor. It may include guest lectures by leading industry professionals, artists and researchers in their field, but also hands-on training of the latest artistic and technical tools and methodologies pertinent to this degree. With advisor approval, this course may be repeated with change in content.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3610 Production Studio Workshop (1-3 Credits)***Typically offered occasionally*

This professional learning series of graduate courses is designed for those individuals seeking a high-level of education in various areas of visual effects, motion design, visualization and traditional skill sets as they compliment the areas of the curriculum. The focus of these select hands-on studio courses is to add a depth of understanding and application of specialized areas of production. Each area will guide students with lectures, demonstrations, and hands-on exercises as needed by each discipline. Assignments and coursework will vary by topic as they relate to each students career goals. Course topics will vary per semester as they follow industry trends and areas of interest. With advisor approval, this course may be repeated with change in content.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3620 Digital Anatomical Sculpting and 3D Print (3 Credits)***Typically offered occasionally*

Anatomical Sculpting is an open studio course geared to familiarize students with a range of visual and structural techniques relevant to the executing representations of the human body within digital application contexts. This hybrid lecture/studio course focuses on Pixologic ZBrush as the primary digital sculpting package in conjunction to a broad range of tailored anatomical topics appropriate towards the process of developing naturalistic figurative forms. Advanced modeling and visualization students will develop a facility towards constructing the human figure through a series of hands-on exercises and weekly studio projects in order to develop fluid facility with the digital sculpting process. This professional course has relevance to applications of the human figure in medical, mobile, real-time interactive and visual effects industries.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No

**MGFX1-GC 3630 Additive Manufacturing Material Study (3 Credits)***Typically offered occasionally*

This is a hands-on studio course geared to expose students to a range of tools and techniques relevant towards rapid prototyping applications with an emphasis on multiple material 3D printing. By combining digital sculpting techniques with advanced rapid prototyping technology, new and emergent scenarios for additive manufacturing gain prominence within relevant contemporary design and visualization discourse. Students will focus on developing a facility with digital sculpting tools in order to augment their professional visualization workflow in regards to depicting material qualities graphically and sculpturally. The tools and techniques covered in this studio course will have direct application in mobile, interactive, video games, manufacturing/prototyping, fine art, and visual effects industries.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3700 Modeling, Optimization, and Rapid Prototyping (3 Credits)***Typically offered occasionally*

The objective of this course is to achieve complex models, which fulfill professional standards as outlined by the needs of professional industry. Students will study topics such as anatomy, form and volume to accurately depict digital renditions of hard-surface and organic objects. Rapid prototyping also known as 3D printing is the automatic construction of physical objects using additive manufacturing technology. This course will familiarize students with tools and techniques relevant to the task of visualizing and prototyping designs utilizing cutting edge 3D modeling software. Students will be taken through a series of hands-on class exercises where the final result will be the creation of a professional 3D product visualization sequence and a physical prototype model of the final design created with a 3D printer.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No**MGFX1-GC 3905 Independent Study (1-3 Credits)***Typically offered occasionally*

This course is reserved for the advanced student who wishes to expand on topics or techniques not offered in the current curriculum. Under supervision of an academic advisor, a student will independently research a topic in depth. The topic can be theoretical by nature and can also include a practice component. The student is required to write a comprehensive graduate level documentation about the research of the subject matter.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** Yes**MGFX1-GC 3910 Internship in Digital Imaging (1-3 Credits)***Typically offered occasionally*

This course is dedicated to an industry internship with companies, which require students to be registered in a degree program. Credit hours will be off site at an approved establishment that is in line with the student's technical focus and career goals. The students are required to keep a weekly journal and document their experience and work as an intern. As the final assignment, students will have to accomplish a short visual project related to their internship at a company.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** Yes**MGFX1-GC 3950 Special Projects: Digital Fine Arts (3 Credits)***Typically offered occasionally*

This course invites students to experience and accomplish a team project in the area of digital fine arts. The topic of the course is unique each semester, as a collaborating industry professional or company will guide and mentor the group. It is the objective to produce a project under real world conditions.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** Yes**MGFX1-GC 3960 Special Projects: Entertainment (3 Credits)***Typically offered occasionally*

This course invites students to experience and accomplish a team project in an area related to the entertainment industry, such as film and broadcast. The topic of the course is unique each semester, as a collaborating industry professional or company will guide and mentor the group. It is the objective to produce a project under real world conditions.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** Yes**MGFX1-GC 3965 Special Projects: Interactive (3 Credits)***Typically offered occasionally*

This course invites students to experience and accomplish a team project in the area of interactive game design. The topic of the course is unique each semester, as a collaborating industry professional or company will guide and mentor the group. It is the objective to produce a project under real world conditions.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** Yes**MGFX1-GC 4005 Digital Project Management (3 Credits)***Typically offered occasionally*

This course is dedicated to all aspects of pre-production planning, project management and presentation. Students will learn the technical fundamentals of computer graphics as they apply to a professional production pipeline. Focus areas of this course will include: concept development, research, bidding, budgeting / finance, production design, and technical testing. The goal of this course is to develop a full treatment and project plan as used in various professional design studios to communicate a visual treatment to clients and audiences from a variety of backgrounds. Students will make highly effective decisions that effect many areas of digital production for media projects. Areas including sound, motion, pre-visualized effects, design and specific style will be addressed through comprehensive treatment documentation, animatic, and animated styleframe.

**Grading:** GC SCPS Graded**Repeatable for additional credit:** No