UCF

Interactive Entertainment MS Graduate Program Handbook

Last updated **May 27, 2020**

Table of Contents

Interactive Entertainment MS

Together, the Graduate Student Handbook and your graduate program handbook should serve as your main guide throughout your graduate career. The Graduate Student Handbook includes university information, policies, requirements and guidance for all graduate students. Your program handbook describes the details about graduate study and requirements in your specific program. While both of these handbooks are wonderful resources, know that you are always welcome to talk with faculty and staff in your program and in the Graduate College.

The central activities and missions of a university rest upon the fundamental assumption that all members of the university community conduct themselves in accordance with a strict adherence to academic and scholarly integrity. As a graduate student and member of the university community, you are expected to display the highest standards of academic and personal integrity.

Here are some resources to help you better understand your responsibilities:

- Academic Honesty
- Academic Integrity Training - Open to all graduate students at no cost
- Plagiarism

Introduction

A graduate education at UCF's Florida Interactive Entertainment Academy offers a wealth of opportunities and advantages, such as:

- Intensive professor-student interaction
- Partnerships with various studios
- Access to Studio 500-one of the largest motion-capture studios on the East Coast, an adjacent sound stage, production offices and editing suites
- A blend of theoretical and applied education
- Working on real-world projects with milestones and tight deadlines

Disciplines

Art

In the FIEA art specialization, you work individually and in teams to sharpen your creative skills while creating memorable characters, animations, cinematics and interactive worlds utilizing industry-standard tools and equipment.

Semester I entails a challenging curriculum of character modeling and rigging, animation, environment and object modeling, texturing and lighting using Maya, Photoshop and ZBrush. Figure drawing classes are held weekly.

Semesters II and III are dedicated to advanced character rigging and animation, scripting and pipeline development, special effects and motion-capture editing using our world-class motion capture facility. You design and concept artwork for a game created in collaboration with production and programming students. You are encouraged to concentrate on an area of expertise such as modeling, technical art or animation and balance team-based projects with personal portfolio development.

Production

Throughout their time at FIEA, Producers will be exposed to a wide range of skills including game design, project management and organization, game development business, level design and scripting, as well as many of the basic software tools that are necessary in these endeavors.

For Producers, the first semester is where they are taught a creative thinking process, and sharpen their game design skills. Along with the game design classes, Producers also learn the basics of scripting and rapid prototyping techniques. By the end of the first semester, all producers will be required to give a formal game design pitch before the rest of the cohort. Winning pitches will be turned into full-fledged development projects in semesters 2 and 3.

In the second semester, Production focuses on project organization and management. Using tools like Project for Windows and Excel, and a variety of development methodologies, Producers will learn how to plan, schedule, and organize game development projects. Also discussed will be personnel management techniques.

In the third semester, Producers will learn the fundamentals of the business side of game development. The main deliverable for the semester will be a business plan for a fictional game development start-up studio.

Programming

In the first semester of the FIEA programming specialization you take Programming I, where we start with assembly and C and explore topics like optimization details, compression and game frameworks. By the end of the semester, you will have written your first game from scratch and ported it to the XBOX.

In the second semester, Programming II is about creating data-driven game engines and using C++ and design patterns common in the game industry to create your own cross-platform game engine. For the final project, you create a game using the engine you made with your classmates.

The third semester programming class focuses on topics current in the game industry. For example we recently taught shader programming as well as C# and memory management in this class.

Although the FIEA curriculum has these three main specializations, many FIEA students have skills in more than one area. For example some of the best producers are also great artists or programmers. As such, the FIEA curriculum is flexible enough to accommodate students with multiple skills. For that reason, we never schedule classes from two different specializations concurrently, so students can attend classes outside of their core discipline if they choose.

Each specialization director is available to address academic and track specific concerns as well as professional guidance and socialization, and other areas of academic and professional interest. The Admissions & Enrollment Coordinator is available to answer questions about overall academic requirements and university policies and procedures.

Curriculum

Please visit the [Graduate Catalog](#) to see the current curriculum for our program.

Timeline for Completion

Semester One (9 credit hours)

Production for Media (All Specializations)

To provide a fundamental understanding of the entire game development process, from pre-production to scheduling, budgeting, production, alpha, staffing, planning, and essential documentation. This cycle will view the development process across multiple delivery platforms. The class will focus on giving the Game Development student the knowledge and experience to operate in a professional and realistic environment. This will be a project-based experiential learning class. The class will have three components: lecture and discussion, practical examples (samples of games production planning), and hands-on production planning.

Rapid Prototype Production I (All Specializations)

The course objective is to gain experience working in multidisciplinary teams. Iteration is key as students master the life cycle of a project, collaborative brainstorming, how to learn new hardware/software platforms, and rapid prototyping through first-hand experience. Over the course of the semester you will produce several game prototypes which demonstrate your creativity and production talents. Most importantly, this course teaches you how to work in teams to achieve results far greater than the sum of the parts. In order to further the team-building, trust, risk-taking, brainstorming, and creative collaboration goals of this course, improvisational acting techniques will also be explored in a separate lab.

Project work dominates as students are divided into small inter-disciplinary teams to create several short productions. Project groups are shuffled each round, exposing students to a broad mix of teammates.

Art Specialization - Digital Asset Creation

This course has several objectives. In the common class, students will be introduced to the entire graphics workflow within the context of game production. With the exercises related to weekly discussions, the students will develop a working familiarity with the fundamental game workflow including 2D concepts, game engines, 3D modelling, materials, lighting, animation and visual effects. Focus will be given to deliver all work within context of a particular game engine. This course is comprised of a common core class for all artists in addition to three separate classes in areas of concentrations: 2D Art/3D Art, Technical Art, and Animation. All students will pick one concentration and will be required to participate in a drawing fundamentals class.

> **Art I Concentrations:**

- **2D/3D Art**
  This course has several objectives, to teach the fundamentals of 3D modeling, 3D Painting and 3D sculpting and to take the results of those processes and apply them to game ready art for a game engine. This course is comprised of multiple sections, the first section will focus on the creation of a prop, then we will focus on a small organic creature, we will then move onto a complex creature that is composed of multiple material types and finally move on to the creation of a mini game environment.

- **Animation**
  To arm the student with a fundamental understanding of 3D animation principles and techniques and motion capture data editing for both narrative and real-time contexts. Areas of focus will include the

body mechanics of locomotion, poses and timing for real-time, and multi character interaction. An introduction to the Motion Capture process will also be included with a real motion capture session.

- **Technical Art**
  This course will act as an introduction for the students in the discipline of Technical Art. Basic concepts of the game and film production workflow will be introduced with the role played by the Technical Artist/Technical Director. This course will provide the fundamental skills required for the student to successfully handle the curriculum continuing on to semesters two and three. Math skills which will be required for successful completion of the curriculum's later topics will be covered. Python will also be taught as a primer to programming languages needed by the technical Artist professional. Basic Tool design and creation will finish the training for this semester.

Programming Specialization - Game Programming Fundamentals

After laying a foundation in programming languages, students will explore meaningful projects which all game programmers should have exposure to, such as code optimization, compression, memory allocation, and file manipulation. It is important that students grasp the topics presented here to move on to larger game programming projects.

Production Specialization -Production and Design I

Theory and methodology for creation and communication of videogame designs. Students will focus on one of two areas: Game Design or Technical Design. Game Design provides the student with the basic building blocks, techniques, and methods of thinking that will enable them to methodically approach game design. Students will focus on isolating various specific facets of games, designing towards those facets, and the practicing presentation skills that will allow the student to communicate ideas effectively in a professional environment. Technical Design will allow students to build a solid backbone in C#, using the Unity game engine. Aimed at technically minded, but starting from ground zero, students without prior scripting experience can still succeed.

Semester Two (9 credit hours)

Preproduction and Prototyping (All Specializations)

The objective of this class is to show students how to progress from the prototype and plan that were made in the previous semester, into a finished product. Classes will be entirely status updates, where students must present their progress each week, and receive feedback from faculty and other students. This will be a project-based experiential learning class. While learning to polish and refine their prototype concepts, students will be required to explore multiple sources for feedback, measuring the efficacy of their games, and reacting to this feedback on the fly by incorporating it into their scheduling.

Experimentation, Application and Innovation in Games (All Specializations)

Game Lab is the survey and development of games being used in non-traditional applications, such as medical simulation, education and research. Each student will be required to prepare and deliver a presentation on a topic related to games being used in non-traditional applications. Students will break into self-defined groups and create an interactive game in one of these areas.

Art Specialization - Advanced Digital Asset Creation

A continuation of themes from Digital Asset Creation with separate concentrations.

Art II Concentrations

- **2D/3D Art II**

Students will take the tools and techniques learned in Semester 01 and expand on them. The first part of the semester will mainly be focused on how to take 3D and use it as a tool for generating design ideas and concepts. The second part of the semester will be a look at higher level tools for creating realistic materials and textures, the will lead into the students first major portfolio piece during their time here at FIEA.

- **Animation II**

  Building upon the "12 Basic Animation Principles" learned in Animation I, students will explore more advanced animation techniques such as quadruped runs, pantomime and lip sync. This semester the students will begin to move beyond basic techniques by incorporating personality and emotion in their animations. The course will begin with quadruped runs, and then move on to more advanced techniques for animating human characters. This will culminate in the final assignment of a dialogue test of no more than 10 seconds.

- **Technical Art II**

  Diving quickly into content creation, the Technical Artists will be thrust into an environment where they will start supporting artists and animators. The first portion of the semester will be devoted to Modern Rigging. After an Introduction to a state-of-the-art "Auto Rigger," the TAs will be introduced to the concepts of generating character skeletons, character skinning, basic rig creation and advanced rigging. The challenging topic of facial animation is then introduced. More than just an extension of the rigging module, the Technical Artists will not only be introduced to the theory and principles of facial animation but will also go through the process of generating their own facial animation rig. Similar to the Auto-Rigger, the Facial Rig will be treated as a semester project. The other portion of the semester will be devoted to the concepts and structure of writing modern 3D shaders compatible with rendering pipe lines.

Programming Specialization - Advanced Game Programming

This course will teach canonical components of game architecture and will require the student to implement several of them. The student will understand the requirements and caveats of those components, while focusing on software architecture, the object-oriented programming paradigm, design patterns and exemplary software engineering practices.

We can describe games (or any software) as a conglomeration of parts glued together, and this course will focus on the context of how parts fit into the architecture. We will construct a framework, identify and examine game engine components, implement a selected few and assemble them within the framework. By the end of the class, through project assignments, participants will have created a data-driven framework.

Production Specialization - Production and Design II

Advanced principles of game design and production including integrating development skills into level designs and complete games. Students will focus on one of two areas: Game Design or Technical Design. Game Design II equips the student with the skills of level design and editing. Both mechanics and aesthetics are stressed, including discussions of how to design for expansive open worlds. In addition to layout and flow, attention to strong narrative, backstory, and plot progression is also heavily encouraged. The primary objective is teach students how to envision a compelling world and bring it to like on their own. Technical Design II allows students to build on Technical Design I by adding principles of software architecture and design patterns to their work. Software construction problems are tackled head on to foster better code reuse and flexibility. Students continue to use C# in Unity but advance to producing small prototypes on their own. When the course concludes, students can work side-by-side with programmers to offer meaningful gameplay additions and revisions.

Semester Three (6 credit hours)

Interactive Entertainment Project (All Specializations)

This is the second half of the capstone project (the first half was Preproduction and Prototyping). The objective of this class is to show students how to progress from the prototype and plan that were made in the previous semester, into a finished product. Classes will be entirely status updates, where students must present their progress each week, and receive feedback from faculty and other students. This will be a project-based experiential learning class. While learning to polish and refine their prototype concepts, students will be required to explore multiple sources for feedback, measuring the efficacy of their games, and reacting to this feedback on the fly by incorporating it into their scheduling.

Art Specialization - Digital Asset Portfolio Development

This course is geared towards developing a professional portfolio for entry into the field of interactive entertainment and related fields. Common class topics include real time rendering, portfolio development, presentation acumen and capstone support. Concentration classes continue to refine skills within 4 disciplines of 2D, 3D, Animation and Technical Art.

Art III Concentration

- **2D/3D Art III**
  The objective of this course is to expand and execute on the fundamental principals in design, form and function through the use of 2D and 3D art that were learned in the previous semesters and build upon those principals using new tools and processes. Students will learn how to create functional game art, how to iterate on these designs, and build final professional art portfolio pieces.

- **Animation III**
  The objective of this course is to arm the student with a fundamental understanding of 3D animation principles and techniques and motion capture data editing for both narrative and real-time contexts. Areas of focus will include the body mechanics of locomotion, poses and timing for real-time, and multi character interaction. Advanced rigging and Unreal Engine 4 integration will also be explored. Student work from this class may be applied to team projects.

- **Technical Art III**
  Building upon on the curriculum introduced in the first two semesters, this course will introduce advanced topics the students may encounter as a Technical Artist in the game community or a Technical Director in the film environment. These topics will cover issues such as Production Management, Advanced Rendering, Facial Animation and Advanced Technical Art subjects. This course will inspire the confidence required for the student to successfully adapt to any environment or requested task encountered in the professional community.

Programming Specialization - Applied Programming Mechanics

A deep understanding of modern graphics programming using DirectX 11 and HLSL, model and animation rendering in C++, and memory management. Ability to demonstrate that understanding through an extensive code base of shaders and a C++ rendering engine, as well as converse in detail on the subject of modern 3D rendering. You will implement a large library of vertex and pixel shaders using HLSL. These shaders will encompass various lighting and texture mapping techniques, and will be incorporated into a custom C++ rendering engine. This rendering system will be used to draw static and animated models to exercise your shaders "in-game" and allow for the creation and manipulation of lights. In the last section of this course you will implement a custom memory management system.

Production Specialization - Media Distribution

Theory and practical application of videogame messaging, advertisement and distribution. Students will focus on one of two areas: Game Design or Technical Design. In Game Design III, students will grasp a thorough understanding of the game development industry from a marketing perspective, as well as develop additional tangible assets for their personal portfolios. Students will learn about marketing requirements by embarking upon the process of writing a marketing plan for their capstone projects. Students will learn basic level construction skill

through lectures and creation of a personal level, as well as targeted advanced design through a game design documentation assignment. Technical Design III will continue bolstering programming skills but also move beyond into other abilities. System design, game balance, and artificial intelligence are added. Assignments are small gam projects that stress the value of learning an additional programming language, how to implement a third party API, and working with other people's code.

Semester Four (6 credit hours)

Students must select one practicum:

Digital Venture Practicum

Stimulate a start-up venture, whether it is a small team or a sole proprietorship. Provide an environment whereby students can learn through experimentation and feedback from peers and target market sampling. The final will include an investor business plan and product presentation. Course attendance will include lectures, presentations, workshops and reviews. Individual team meetings will be assigned with faculty and advisors. Enable students to understand the many moving parts of a legal entity or business; whether the market and distribution complexities, software licensing choices, fixed assets, IP, contract and financial management. Assist students in building a discipline of continuous testing and improvement.

Game Design Practicum

Students can do a supervised internship in interactive entertainment industry in an approved work setting. Your actual work hours will be determined by your intern employment contract. At the conclusion of your internship, you will present a self-assessment of your work to your peers.

Financial Support

Graduate students may receive financial assistance through fellowships, tuition support, or loans. For more information, see finaid.ucf.edu/, which describes the types of financial assistance available at UCF and provides general guidance in planning your graduate finances.

Key points about financial support:

- If you are interested in financial assistance, you are strongly encouraged to apply for admission early. A complete application for admission, including all supporting documents, must be received by the priority date listed for your program under "Admissions."
- You must be admitted to a graduate program before the university can consider awarding financial assistance to you.
- If you want to be considered for loans and other need-based financial assistance, review the UCF Student Financial Assistance website at finaid.ucf.edu/ and complete the FAFSA (Free Application for Federal Student Aid) form, which is available online at fafsa.ed.gov/. Apply early and allow up to six weeks for the FAFSA form to be processed.
- UCF Graduate Studies awards university graduate fellowships, with most decisions based on nominations from the colleges and programs. To be eligible for a fellowship, students must be accepted as a graduate student in a degree program and be enrolled full-time. University graduate fellowships are awarded based on academic merit and therefore are not affected by FAFSA determination of need.
- Please note that select fellowships do require students to fill out a fellowship application (either a university fellowship application, an external fellowship application, or a college or school fellowship application). For university fellowship applications, see UCF Graduate Fellowships.

Graduate Student Associations

Graduate Student Association

The Graduate Student Association (GSA) is UCF's graduate organization committed to enrich graduate students' personal, educational and professional experience. To learn more or get involved, please visit facebook.com/groups/UCFgsa/. For individual department or graduate program organizations, please see program advisor.

Professional Development

FIEA provides on-site Resume, Cover Letter, Oral Communication, and Interview Skills workshops for all students. Faculty and staff are also available for individual assistance with further professional development opportunities.

Pathways to Success Workshops

Coordinated by the College of Graduate Studies, the Pathways to Success program offers the following free development opportunities for graduate students including workshops in Academic Integrity, Graduate Grantsmanship, Graduate Teaching, Personal Development, Professional Development, and Research. For more information and how to register, please visit graduate.ucf.edu/pathways-to-success/.

Job Search

Please see your advisor for individual assistance with job search activities.

Career Services and Experiential Learning

UCF's Career Services department offers a wide range of programs and services designed to assist graduate students. These services include evaluation and exploration of career goals, preparation for the job search and job search resources. To learn more, visit their website at career.ucf.edu/.

Forms

- [College of Graduate Studies Forms and References](#)
  A complete listing of general forms and references for graduate students, with direct links, may be found here.
- [Graduate Petition Form](#)
  When unusual situations arise, petitions for exceptions to policy may be requested by the student. Depending on the type of appeal, the student should contact his/her program adviser to begin the petition process.
- [Traveling Scholar Form](#)
  If a student would like to take advantage of special resources available on another campus but not available on the home campus; for example, special course offerings, research opportunities, unique laboratories and library collections, this form must be completed and approved.

Useful Links

- [Florida Interactive Entertainment Academy](#)
- [Nicholson School of Communication and Media](#)
- [College of Sciences](#)
- [College of Graduate Studies](#)
- [Academic Calendar](#)
- [Bookstore](#)
- [Campus Map](#)
- [Counseling Center](#)

- [Financial Assistance](#)
- [Golden Rule Student Handbook](#)
- [Graduate Catalog](#)
- [Graduate Student Association](#)
- [Graduate Student Center](#)
- [Housing and Residence Life](#)
- [Housing, off campus](#)
- [Knights Email](#)
- [Library](#)
- [NID Help](#)
- [Pathways to Success](#)
- [Recreation and Wellness Center](#)
- [School of Visual Arts and Design](#)
- [Shuttles Parking Services](#)
- [Student Health Services](#)
- [Thesis and Dissertation (ETD)](#)
- [UCF Global](#)
- [University Writing Center](#)

Graduate Faculty

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