DIGITAL ARTS (DDA)

DDA-500 Special Topics - (3 Credits)
This course offers students the opportunity to explore emerging developments in digital art technologies and subject matter. These may include either specialized topics or special project opportunities. Content may be either developmental, practical, or both, depending on current objectives. Prerequisites for this course vary by section. Students are required to obtain the permission of the chairperson in order to register for this course.

DDA-510 Artist's Books in the Electronic Age - (3 Credits)
This course provides students with the skills necessary to produce an artist's book with a computer graphics system. The course covers all areas of book production, including concept development, writing of text, layout, image making, printing, and building. This course is based on the premise that computer technology has revived the Renaissance model of a single individual in charge of all aspects of book creation, printing, and publishing.

DDA-513 3D Lighting and Rendering - (3 Credits)
In this intermediate level course, students learn the principles and techniques of virtual 3-D lighting and rendering. This includes utilizing materials, textures, cameras, shadows, special effects, and rendering tools. Students complete projects dealing with green screen shooting, matching live action, and rendering CG film frames to match real footage.

DDA-514 Storyboarding & Storytelling Animation - (3 Credits)
This course targets all areas of pre-production and design for computer animation in preparation for hands-on modeling and animation classes. The course focuses on the fundamental skills of design for computer animation beginning with basic conceptual scripting and storyboarding techniques and ending with the development of a complete technical breakdown ready to be animated. The art of storytelling is explored from logo treatments to character animation. Students should come prepared to draw, write, pantomime, analyze, and invent. By the end of the course, students conceive, design and execute their own storyboard for animation, including a technical breakdown of timing and strategies that can be applied in subsequent computer animation courses.

DDA-515 3D Character Design - (3 Credits)
This class addresses the movement of the animated character with a focus of historical study of character design, and the techniques for building an effective 3D CG character model.

DDA-517 3D Character Animation - (3 Credits)
This course explores character animation using the Maya software package as an example. Coming into the course students should already have some mastery of three-dimensional modeling, rendering, and animation, be familiar with the Maya software package, and have some experience with character animation.

DDA-519 3D Character Rigging - (3 Credits)
This course is designed to teach the complete rigging process for 3-D computer graphics character models. 3-D characters will be rigged with an Inverse Kinematics-Forward Kinematics skeletal and control system to simplify the animation process. Upon completion of this class students will be prepared to do 3-D animations with properly constructed and rigged characters.

DDA-555 Subverting Digital Media - (3 Credits)
Students learn to explore their creative and potentially non-conformist ideas within the context of digital media practices. Students engage in a self-directed practical as well as theoretical inquiry into digital media.

DDA-572 Electronic Music and Sound - (3 Credits)
Students examine works of seminal figures in electronic music and incorporate the aesthetics and structural concepts learned to original musical compositions. Special attention is given to crafting transparent music mixes, using reverberation, automation, compression, and equalization. The course is divided into two segments: hard disk recording and MIDI-based recording. The goal is to create music compositions that encompass the worlds of digital audio and MIDI.

DDA-577 Advanced Video Editing Graphics - (3 Credits)
This class focuses on the use of 2-D digital video technologies in the creation of full-screen moving video. The course begins with a review of cinematic and analog video technology, but focuses on the creation and manipulation of full-screen digital video imagery. The class will cover the process of editing video using a digital non-linear editing system; including compositing, keying, color correction, layering, special effects, audio, and titling. All students enrolled in this class must have completed CG-575 (Video Editing for Computer Graphics) or have sufficient experience with analog and digital video systems.

DDA-590 Compositing & Special Effects - (3 Credits)
This course focuses on the techniques required to integrate a variety of source materials seamlessly into a single unique image. Compositing is used to create unusual visual effects in motion pictures, television commercials, broadcast banding, and network identification, as well as in video game production. Students learn the correct use of filters, traveling mattes, rotoscoping, layering, and blue screen. Color theory is also addressed.

DDA-595 Motion Graphics - (3 Credits)
This course focuses on the art of motion design and compositing, including limited 2-D animation and mixed media. Using images, graphics, video footage, and sound, students explore the relationships of motion, pacing, textures, transparency, transitions, design, and composition in space and time.

DDA-606A Graduate Seminar I - (3 Credits)
This course is designed to immerse students in the critical discourse and practice of digital art. The students will formulate and hone their thesis ideas and studio practice as they gain theoretical fluency. The course format will combine seminar sessions, guest lectures, student presentations and field trips. Guest critics will be visiting throughout the year. Students will begin to consider their thesis work at the beginning of this semester which they will continue to explore and develop throughout the first year. Students will be given a required summer reading list with which they will be immediately engaged at the beginning of the semester.

DDA-606B Graduate Seminar II - (3 Credits)
This course is designed to immerse students in the critical discourse and practice of digital art. The students will formulate and hone their thesis ideas and studio practice as they gain theoretical fluency. The course format will combine seminar sessions, guest lectures, student presentations and field trips. Guest critics will be visiting throughout the year. Students will begin to consider their thesis work at the beginning of this semester which they will continue to explore and develop throughout the first year. Students will be given a required summer reading list with which they will be immediately engaged at the beginning of the semester. In this second semester, students continue critical and theoretical development while assembling a body of work and preparing to present their project) ideas to their Thesis committee.

DDA-607A Graduate Animation Seminar I - (3 Credits)
This course is designed to immerse students in the critical discourse and practice of digital animation. Students formulate and sharpen their thesis ideas as they gain theoretical fluency for using both linear and non-linear story structures. The course format combines lectures, viewings, discussions, student presentations and field trips. Students immediately begin to consider their thesis work at the beginning of this semester and create an animatic by semester's end, which they will continue to explore and develop throughout the first year. Weekly readings and/or projects are assigned throughout the semester.

DDA-607B Graduate Animation Seminar II - (3 Credits)
Graduate Animation Seminar II is designed to immerse students in refining the story and creating a preproduction plan for their Thesis film. The culmination of the course is a detailed, polished animatic and 20 second vertical slice of their project. Students present their Thesis Animatic in a formal presentation at the end of the semester to the DDA faculty.

DDA-610 Digital Arts Practicum Graphics - (3 Credits)
This course addresses the creation of conceptual work in various digital media while building critical discourse around contemporary digital practices. Students bring their individual strengths to bear in individual and group studio projects culminating in a gallery exhibition.

DDA-614 3D Modeling I - (3 Credits)
An intensive introductory course for graduate students in 3D modeling, texturing, lighting, rendering, compositing, and virtual environment design. Students will learn how to design and execute complex, photorealistic and stylized 3D worlds for use in narrative and experimental animation. A central question of the course will be how can I use an environment to tell a story? Students will also develop visual research techniques through presentations and critiques aimed at the creation of more authentic and effective virtual film worlds. The ultimate goal of the course is to put students in a position to build beautiful and narratively effective environments for their future films.

DDA-615 Dimensional Printing for Artists - (3 Credits)
This studio art course emphasizes artistic and aesthetic creativity utilizing Digital 3D modeling, 3D printing and other digital output methods. Students will apply current digital arts theory to the creation of a personal body of work while exploring digital and mixed media processes unique to 3D printing. Course goals will be achieved through the production of artwork, critiques, reading, and the hands on use of state-of-the-art 3D printers.

DDA-617 Languages - (3 Credits)
This course is an introduction to programming as a means of artistic expression. The focus is on developing computer languages literacy with an emphasis on techniques and applications to the visual arts. Range of programming languages will be introduced in parallel (e.g. Processing, Python, MaxMSP, ActionScript), underlining fundamental principles and common approaches.

DDA-622 Interactive Media I - (3 Credits)
This course introduces students to the principles of computer-based interactivity. Students combine two-dimensional imaging and graphics authoring as well as audio and visual technology for achieving interactivity from multiple source media. Interface design and scripting tools are covered.

DDA-624 Three-Dimensional Computer Animation Workshop - (3 Credits)
This course introduces students to the principle of three-dimensional computer animation. Basic 3-D modeling ability is required. Students learn how to develop storyboards as well as key frame, interpolation and rendering techniques. Students are required to complete a short animated piece.

DDA-625 Video Editing - (3 Credits)
Introduces video editing as a creative tool for digital arts students interested in its application to motion graphics, animation, and interactive genres. It offers a thorough technical understanding of nonlinear editing on the Final Cut Pro system. Through editing exercises, students learn to manipulate time, space, sound, and emotions to create subjective narrative and experimental works.

DDA-626 Audio for Digital Media - (3 Credits)
Covers the aesthetic, conceptual, and technical aspects of using audio and music with various electronic media, such as 2-D/3-D animation, video, and the World Wide Web. The course includes lectures on the physical properties of sound, music instruments, music notation and musical styles, and emphasizes critique of audio design techniques.

DDA-631 3D Animation Studio I: First Film - (3 Credits)
This course is designed to teach essential directing tools as well as the complete production pipeline for the creation of a 3D animated short. Students study the use of camera, editing, lighting, audio and acting as storytelling tools and create an animated short based on their own original story and character(s). Students begin with pre-production, create storyboards and produce, first, a 2D animatic, followed by a 3D animatic. The 3D animatic is revised and finalized until all animation is completed, fully rendered and treated in post-production. The process finishes with a screening of the final short films.

DDA-632 3D Animation: Expressive Motion - (3 Credits)
3D Animation: Expressive Motion covers the 12 principles of animation and enables students to establish character believability through expressive posing and motion. Through this process, students will gain a proper understanding of timing, weight, acting, and the ability to create a character that an audience will be able to empathize with. The course will also covers an introductory overview of character rigging techniques. Classes will consist of lectures, in-class exercises and critiques, homework assignments and a research project.

DDA-633 3D Animation Studio Ii: Performance & Acting - (3 Credits)
This course is designed to teach advanced techniques in visual storytelling and character animation. Students will take their favorite novel or story and adapt a section of it into a completed animation focused on performance and acting.

DDA-635 Motion Dynamics - (3 Credits)
Students explore motion dynamics animation using the Maya software package. Students will learn the principles and practice of rigid-body dynamics, particle systems, and cloth dynamics. Advanced undergraduates may enroll only by permission of the instructor and the CGIM office.

DDA-637 3D Character Modeling and Rigging - (3 Credits)
This is a course in character design, modeling, texturing, and rigging, aimed at the production of quality rigs that can be easily animated. Students will learn to design and model complex characters that can seamlessly be integrated into animated projects. The course will focus on the development of character models that have clean topology, even polygonal distribution and good edge loop flow for clean and appealing deformation.

DDA-638 3D Lighting & Rendering - (3 Credits)
In this graduate-level course, students learn the principles and techniques of virtual 3D lighting, surface treatment, rendering and compositing. Topics covered include the use of shading networks, materials, textures, light types and rendering tools with the goal to apply lighting and rendering tools in the creation of engaging traditional and experimental narratives.

DDA-640 The Internet As Art Medium - (3 Credits)
This course is aimed at those who wish to expand their artistic ambition and creative vision by exploring this new venue in the arts, and in turn, produce substantial projects through Internet technology. Its primary focus will be the aesthetics arising from the advent of a Web culture and an examination of where and how this new medium may fit into the context of today's and tomorrow's art-making.

DDA-643 Digital Animation Studio - (3 Credits)
This advanced-level course allows MFA students in the Digital Animation and Motion Arts emphasis to work independently on a variety of their digital animation projects. Under the guidance of the instructor, each student designs and realizes either one or two animations during the course of the semester. Students may work either individually on their own personal animation, or collaboratively with several other students in the class on an animation project. Students may take the class a maximum of four times, provided the student receives a minimum grade of B in the previous DDA-643 class.

DDA-645 Digital Imaging Studio - (3 Credits)
This capstone course allows students in the Digital Imaging minor to work independently on a variety of their digital imaging projects. Under the guidance of the instructor, each student designs and realizes one or more substantial imaging projects during the course of the semester. Students must have substantial skills, both technically and aesthetically, in the field of digital imaging prior to enrolling in this course. Students may take this course a maximum of four times provided they achieve a grade of B or better in prior sections of DDA-645.

DDA-646 Interactive Arts Studio - (3 Credits)
This is a project -based Studio course in which students may work on group projects or smaller individual works in series in pursuit of their artistic goals in the DDA MFA program.

DDA-647 Physical Computing - (3 Credits)
This course provides the foundation for using electronics and micro-controllers as engines for interactive art. It covers the basic theory of electronics and introduces the Arduino hardware platform and programming language through robotics and physical computing applications. It prepares students to research and adopt emerging technologies as a means for artistic expression.

DDA-648 Interactive Installations - (3 Credits)
In this studio course students explore the field of interactive installation art, producing and installing works for exhibition and critique in the DDA Gallery. The focus is on expanding students' digital toolsets to manifest themselves in the physical space of a professional gallery. Additionally, students present and lead discussions on research related to their creative agenda, and learn effective practices for creating documentation of installed work.

DDA-650 Thesis Research - (3 Credits)
Computer graphics MFA thesis candidates are required to define the objectives of their thesis/final project as well as the methodology they plan to use. Students work in close collaboration with their faculty advisor and are required to do all the research necessary to present a coherent, realistic and acceptable thesis proposal.

DDA-653 Post Production - (3 Credits)
This studio course convers the concepts, tools, and techniques associated with completing and outputting a time-based project. Students mix animation, video audio, rendering and compositing tools to finished projects properly.

DDA-660A Thesis I - (6 Credits)
This is the first of two thesis courses for all MFA candidates in Digital Arts. It is the fourth course in the DDA MFA thesis process, following the completion of DDA-606B Graduate Seminar II, and it is a pre-requisite for DDA-660B Thesis II.

DDA-660B Thesis II - (6 Credits)
This is the culminating course for all MFA candidates in Digital Arts. It is the fourth and final course in the Digital Arts MFA thesis process, following the completion of DDA-660A Thesis I. Students are expected to complete and present a significant original contribution to the field of Digital Arts in the form of a visual project and a written documentation of the entire process, from research through completion.

DDA-660C Thesis II - (6 Credits)
This is the third of three thesis courses for all MFA candidates in Digital Arts. It is the fifth course in the DDA MFA thesis process, following the completion of DDA-606B Graduate Seminar II.

DDA-700 Thesis in Progress - (0 Credits)
If the Thesis course is not completed in the initial semesters, students can continue working in DDA-700 for no more than five semesters.

DDA-9600 Digital Arts Internship 0 Credits - (0 Credits)
The internship is a learning experience 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.

DDA-9601 Digital Arts Internship 1 Credit - (1 Credit)
The internship is a learning experience 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.

DDA-9602 Digital Arts Internship 2 Credits - (2 Credits)
The internship is a learning experience 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.

DDA-9603 Digital Arts Internship 3 Credits - (3 Credits)
The internship is a learning experience 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.