

# DIGITAL ARTS (DDA)

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## DDA-230 Drawing for Animation I - (3 Credits)

This course is the first in a series of courses in which students develop and understanding of drawing for movement, acting, character development, drapery, (clothing and costume) and drawing from the imagination.

## DDA-231 2D Animation Studio I - (3 Credits)

This course is an introduction to 2-D animation techniques that combines theoretical elements of animation aesthetics with practical experience in animation movie making. Students are exposed to a variety of types of animated film productions through lectures, film presentations, classroom work and outside assignments. Class projects include frame-by-frame animation prepared for video.

## DDA-232 Drawing for Animation II - (3 Credits)

This is the second animation drawing course that focuses on enhancing character in a story through animation. Students will explore the ins and outs of creating a distinct believable character, how it fits into and contributes to story, and what it takes to bring an animated character to life.

## DDA-233 2D Animation Studio II - (3 Credits)

In this course, students with a experience in 2D animation practices will learn how to animate on a digital timeline exploring both vector and bit mapped based digital animation. Students will translate their 2-D drawing and animation skills to digital approaches practiced in contemporary animation studios.

## DDA-234 2D Character Animation I - (3 Credits)

This course focuses on character motion as expressive storytelling. Students will explore the creation of distinct and believable character motion, how this fits into and contributes to story, and what it takes to bring an animated character to life.

## DDA-240 3D Modeling I - (3 Credits)

An intensive introductory course in Digital 3D design, modeling, texturing, lighting, and rendering. Students will build on Foundations 3D Concepts while learning how to design and execute complex, photorealistic and stylized 3D worlds.

## DDA-241 3D Animation I - (3 Credits)

This course covers the concepts, tools, and techniques of organic and inorganic 3D animation. Motion, weight, and emotion are central to the course, as well as broad range of technical issues that make them possible.

## DDA-242 3D Animation Studio I - (3 Credits)

This course is designed to teach theory and conceptual thinking in the context of a complete pipeline process for the creation of an animated short. Students will, under the guidance of the instructor, integrate the skills they have already acquired in previous DDA classes to develop a story, script character(s) and produce a completed animation based upon the script with the characters. Students will storyboard the script, create an animatic based upon the storyboards, do rough through final animations, render composite, edit, and screen their animations.

## DDA-243 3D Modeling II - (3 Credits)

An intensive course in 2D character design and 3D character modeling aimed at the production of stylistically purified 3D characters, which can be easily animated. Students will learn to design and model complex characters, based on story, for easy animation.

## DDA-244 3D Lighting and Rendering - (3 Credits)

This rigorous course builds upon the basic lighting and rendering concepts conveyed in Modeling I and II and explores the technical and psychological aspects of digital cinematography, lighting and rendering.

## DDA-245 3D Animation Studio II - (3 Credits)

This course is designed to teach intermediate level production pipeline techniques and tactics employed in the creation of an animated short. Students will, under the guidance of the instructor, integrate the skills they have already acquired in previous 3D Animation classes to develop a story, script, cartoon character(s), and produce a completed animation based upon the script with the character(s). Students will storyboard the script, create an animatic based upon the storyboards, do rough through final animations, render composite, edit and screen their animations.

## DDA-250 Coding for Artists - (3 Credits)

Coding for Artists is required for undergraduate Digital Arts students beginning the Interactive Arts concentration. It covers the basics of writing computer instructions from the artist's perspective, assuming no prior experience with programming.

## DDA-251 Interactive Media Interactive Media - (3 Credits)

This course introduces the principles of screen-based interaction. Students learn to combine 2-dimensional images, text, audio, and video for media-rich, participant-friendly experiences.

## DDA-252 Interactive Studio I - (3 Credits)

This course introduces the fundamental principles and best practices of computer programming for the visual arts. Visual art practice is considered in a historic context extending to contemporary developments in the field. Students learn how to use code as a creative means of expression in producing screen-based works of art.

## DDA-253 Coding for Interactive Sculpture - (3 Credits)

In this course, students learn to control free-standing sculptural objects by using a microprocessor, programming it to read and respond to its environment, thus creating aesthetically interesting behaviors.

## DDA-254 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 physical computing applications.

## DDA-255 Interactive Studio II - (3 Credits)

This course focuses on the theory and practice of creating discrete interactive sculptures. Students learn to integrate microprocessors into free-standing sculptural objects to convey meaning by responding to any combination of environment, data sets or viewer interaction.

## DDA-256 Creative Coding I: Sketches - (3 Credits)

Creative Coding I is required for undergraduate Digital Arts students beginning the Art + Technology concentration. It covers the fundamentals of computer programming and the creative application of written code. This course assumes no prior experience with programming.

## DDA-257 Art + Tech. Studio I - (3 Credits)

Art + Technology Studio I is split into two modes: Seminar and Studio. In the first half of the semester students develop conceptual and rhetorical abilities by conducting research, participating in group discussions, and reading texts relating to art and technology. In the second half, the focus shifts to creative production, as students work toward a self-directed project utilizing the creative coding and physical computing skills learned in concurrent classes.

**DDA-258 Creative Coding II:A/V - (3 Credits)**

Creative Coding II: A/V focuses on digital tools that create interactive, real-time, audiovisual outputs, which can be applied toward works of live performance, single-channel video, music composition, and more. Contrasting with the text-based coding conducted in Creative Coding I, this course focuses on visual programming tools to control the flow of video, sound and data.

**DDA-259 Art and Technology Studio II - (3 Credits)**

Art + Technology II focuses on art as research with the first half of the semester structured as seminar and the second half as studio. Through the investigation of how research plays a role within contemporary and historical contexts in art, technology, and society, students investigate, develop, and deepen their own research methodologies. In the second half of the semester, students bring their research and techniques learned in concurrent Art + Technology courses to create a self-directed project.

**DDA-270 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-271 Game Coding I - (3 Credits)**

This class introduces students to object-oriented programming logic as it is used in professional game development. Using game engine technologies, students walk through basic programming lessons on loops, conditionals, functions, classes, and objects using simple game exercises. Students also learn the fundamentals of programming games with assets, including the essential visual asset pipelines and instantiation tools.

**DDA-273 Game Studio I: Game Theory - (3 Credits)**

This first class in the game studio sequence introduces the core ideas of game design. Students learn basic game design terminology and philosophy, and put this into practice by participating in non-digital game projects. Students are also introduced to the preferred methodology of design of games and use this process to create their work.

**DDA-274 Game Coding 2 - (3 Credits)**

This class builds on the foundations of the introduction to game programming class and looks at game specific systems and coding practices. By working on several specific genre focused game projects, students learn core code patterns.

**DDA-275 Character Design for Games - (3 Credits)**

This course guides students through the process of designing and creating original character assets for use in games. Students will explore a variety of approaches to stylization and costuming in order to bring their ideas from concept to finished product.

**DDA-276 Game Studio 2: Mechanics, Dynamics, Aesthetics - (3 Credits)**

Game Studio 2 explores the part of game design that comes after prototyping -- balancing. Students engage in a series of non-digital and digital level design assignments, learning how tweaking components and variables of a pre-existing system leads to different aesthetic, narrative, and educational effects. Game research looks at genre definition, styles of level design, dynamics and mechanics to facilitate level creation.

**DDA-280 Audio for Digital Media - (3 Credits)**

This course covers the aesthetic, conceptual, and technical aspects of using audio and music for use with various electronic media, such as 2D/3D animation, video, and the World Wide Web. The course includes lectures on the physical properties of sound, musical instruments, music notation, and musical styles.

**DDA-339 Compositing and Special Effects - (3 Credits)**

In this course, students will learn the visual effects techniques for combining several image sources—such as live action and animation—to create a new time-based image that exists purely in the imagination of the creator.

**DDA-340 2D Animation Studio III - (3 Credits)**

In this course, students with a strong background in 2D animation practices will explore variations to the traditional animated narrative in concept, design, and execution of their media. Integration of other disciplines and approaching the media in an experimental fashion is highly encouraged.

**DDA-341 2D Character Animation II - (3 Credits)**

This course is designed to develop the student's ability to animate a character on an advanced level and apply the proper skills and procedures needed to achieve optimum quality animation. A focus on straight ahead technique as opposed to key frame animation is practice is emphasized.

**DDA-342 2D Post Production - (3 Credits)**

Designed for students with prior basic editing experience, this course will prepare students for the production of the senior project. This class delves into advanced options of digital editing systems and applies them to the creative, technical, and theoretical concerns of editing animation.

**DDA-350 3D Animation II - (3 Credits)**

This course builds on the foundation established in 3D Modeling I and II, and Animation I, with a focus on intermediate to advanced character rigging and animation techniques. Students will continue to apply the classic principles of animation, this time using more robust characters of their own design- facial animation and rigging for lip sync will allow them to convey a full range of expression, gesture and convincing motion. In addition to two assignments, students will complete several in-class exercises, each demonstrating their mastery of a core principle, followed by critique and discussion.

**DDA-351 3D Animation Studio III - (3 Credits)**

This course is designed to teach advanced level production pipeline techniques and tactics employed in the creation of an animated short. Students will create a complete animation from story to post-production.

**DDA-352 3D Post-Production - (3 Credits)**

This studio course covers the concepts, tools, and techniques associated with completing and outputting a high quality time-based project. Students mix animation, video, audio, rendering and compositing tools to finished projects properly.

**DDA-359 Interactive Stagecraft - (3 Credits)**

This intermediate-level course engages students in the conceptualization, planning, construction, and staging of an interactive audio-visual installation, stressing the creative use of lighting, projections, textural materials, and ambient sound to enhance a visitor's experience. Installations that may be currently active in the New York City area also will be visited and critiqued during the semester.

**DDA-360 Coding for Interactive Installation - (3 Credits)**

This course introduces the fundamental principles of visual programming in the context of designing and creating immersive, responsive environments and installations. It offers a high-level approach to signal processing frameworks. It covers techniques for sensing and data acquisition, algorithms for analysis and flow control, and modes for visual and physical output.

**DDA-362 Coding for Interactive Performance - (3 Credits)**

This course focuses on the software and hardware tools utilized in the creation of interactive electronic performance. It is designed to be taken concurrently with DDA 388 Performance and Electronic Media studio which provides the requisite theoretical framework and practicum.

**DDA-363 Performance and Electronic Media - (3 Credits)**

This course addresses the theory and practice of integrating electronic and interactive media in live performance. The electronic medium is treated as a performance medium in its own right, rather than as support or decor for the traditional performing arts. Over the course of the semester, students will conceptualize, develop and ultimately perform live an interactive electronic piece.

**DDA-364 Creative Coding Iii: World Engines - (3 Credits)**

Creative Coding III: World Engines introduces the use of real time engines to create immersive virtual environments. Through spatial design, modeling, non-linear storytelling, and coding, students develop interactive projects that can be experienced in formats such as Augmented Reality, Mixed Reality, and Virtual Reality.

**DDA-365 Art and Technology Studio III - (3 Credits)****DDA-366 Emerging Practices in Art, Technology And Culture - (3 Credits)**

This course is structured in modules and practical workshops led by a leading expert at the intersection of art, technology and digital culture. Each semester, practical workshops and/or seminars are offered to students who will engage in specific topics that are not yet offered in other courses. Students create work during the hands-on workshops and develop critical skills in response to emerging technologies and ideas.

**DDA-367 Embodied Technology - (3 Credits)**

In Embodied Tech students create digital artworks exploring how the human body relates to the world, and how technology mediates that relationship. Students consider different conceptual topics each week through the lens of the body and its mediation by technology. Building on the toolsets from previous semesters in the Art + Technology curriculum, the conceptually-focused projects allow students to refine their skills while learning new advanced techniques.

**DDA-371 Game Coding 3 - (3 Credits)**

Game Coding 3 is an advanced course in visual programming and game development. Building on the core programming concepts established in the first year of programming education, this course turns to the complexities of programming to look at how code can render graphics and mechanics in compelling ways to execute specific aesthetic goals. Students are tasked with creating their own assignments under instructor constraints to work with particular systems that are critical to making polished and visually compelling products.

**DDA-372 Lighting and Texturing for Games - (3 Credits)**

In this intermediate-level course, students will learn the principles and techniques of virtual 3D lighting and texturing for real-time gaming and the creation of dynamic environments. Students learn to utilize different lighting types and styles, material attributes, texture types, cameras, shadows, and effects in the articulation of spaces, narratives and game play. Students will develop a vocabulary of emotional, psychological, and stylized lighting strategies and emerge capable of integrating lighting and texturing into their iterative game design process.

**DDA-373 Game Studio 3 - (3 Credits)**

Game Studio 3 expands on the core interactive aesthetic theories introduced in Game Studio 2 through the concept of procedural rhetoric. The course looks at how game systems can be instrumentalized to tell stories, teach, persuade, and motivate, all with an eye on social justice and positive representations of diversity. Lessons here deal with different methods of instrumentalization, key performance indicators for game products, and dealing with external clients. Students also work on team-based products in this class with a client topic as a model for serious game design practice.

**DDA-374 Game Coding 4 - (3 Credits)**

This programming class supports the Senior Project Development course by teaching students how to manage a large-scale programming project and code a more significant project. Students are taught core production practices for professional programming settings as well as documentation techniques for planning and commenting code. Students work on projects of their own design, and must demonstrate self-driven development of that project under the expert guidance of the instructor.

**DDA-375 Animation for Games - (3 Credits)**

This course explores the technical and creative skills necessary to produce animation for games. Through the course, students will build a foundation of practical animation principles, and learn how to apply those principles in the making of both 2D and 3D game animation.

**DDA-380 Stop-Motion Animation - (3 Credits)**

This is an in-depth, yet introductory level, elective class in the art of stop motion animation. Students will explore a variety of hands-on techniques for creating motion picture art using the stop action photographic process: including animating clay, objects, and puppets. Some basic fabrication, lighting, and photographic skills will also be covered, as well as the fundamentals of using stop motion software. In-class exercises and production assignments are designed to build toward the creation of a short, stop motion animated, team project final film.

**DDA-390 Pre-Production for Senior Project - (3 Credits)**

Students develop a major project that reflects their creative and technical abilities to act as the centerpiece of their professional portfolio. The planning phase of Senior Project is a hands-on experience: while creating a comprehensive plan and timeline for completing a Senior Project, components of a Senior Project are visualized and executed on a weekly basis.

**DDA-391 2D Animation Senior Projects Development - (3 Credits)**

Students will undergo the research and development for their upcoming Senior Project over the course of the semester. This project, in the form of a short animated film up to four minutes long, will serve as the centerpiece for their portfolio upon graduation. Students will conceive, complete, and document the pre-production phases of this project. A production notebook, as well as a verbal presentation with digital visual aid will serve as record of the semesters development.

**DDA-392 3D Animation Senior Projects Development - (3 Credits)**

Students will undergo research and development for their upcoming Senior Project over the course of the semester. This project, in the form of a short animated film up to four minutes long, will serve as the centerpiece for their portfolio upon graduation. Students will conceive, complete, and document the pre-production phases of this project. The semester's final presentation includes an advanced 2D/#D animatic as well as a 20-30 second sequence that is fully rendered and has been treated in post.

**DDA-393 Senior Project Development: Art and Technology - (3 Credits)**

This course focuses on the pre-production aspects of the ambitious year-long Senior Capstone Project, including but not limited to ideation, theoretical and art historical research, production timeline and budget planning, prototype building, materials experimentation, and presentation/critique. Upon conclusion of this course, the student will have a thoroughly conceived and reviewed project on which to start production.

**DDA-394 Senior Project Development: Game Arts - (3 Credits)**

This is a pre-production course for Game Arts majors used to develop the students' Senior Project game. The class focuses on research, ideation, and prototyping, culminating in the submission of a game prototype and a polished segment of gameplay. Senior Project Development (DDA 394) works directly with Game Coding 4 (DDA 374) to code the evolving Senior Project game prototypes. Senior Project Development also includes two public reviews designed to help students develop presentation skills and obtain additional faculty feedback.

**DDA-401 2D Animation Senior Project I - (3 Credits)**

This is the first in a required two course series in which students produce an Animated Senior Capstone Project that was developed in DDA-391 Senior Project Development. By semester's end, 50% of a student's project is fully realized and ready for post-production according to the student's individual technique and production schedule. All guiding audio, such as dialogue for lip sync, must be established by the end of the semester as well. This course is open to senior students only.

**DDA-402 3D Animation. Senior Projects I - (3 Credits)**

This is the first in a required two course series in which students produce an Animated Senior Capstone Project that was developed in DDA-392 Senior Project Development. By semester's end, 50% of a student's project is fully realized and ready for post-production according to the student's individual technique and production schedule. All guiding audio, such as dialogue for lip sync, must be established by the end of the semester as well. This course is open to senior students only.

**DDA-403 Interactive Arts Senior Projects I - (3 Credits)**

This is the first in a required two course series in which students develop a high quality interactive/digital art project following tight deadlines and agreed upon requirements. All requirements and deadlines have been put in place to ensure that students can complete a polished in the following semester that will function as key part of their portfolio.

**DDA-404 Senior Projects I: Game Arts - (3 Credits)**

This is the first in a required two course series in which students produce a Senior Capstone game based on the game concept and prototype that was developed in DDA 394 Senior Project Development. By the semester's end, students will complete a fully playable and functionally complete Alpha version of their game with 30% of the total production assets completed. Open to senior Game Arts students only.

**DDA-411 2D Animation Senior Projects II - (3 Credits)**

This is the second in a required two course series in which students produce a Senior Capstone Project that was developed in DDA-390, Senior Project Development. A finished project of portfolio quality is required for the completion of this course. Open to senior students only.

**DDA-412 3D Animation Senior Projects II - (3 Credits)**

This is the second in a required two course series in which students produce a 3D-animated senior capstone project that was developed in DDA-390 Senior Project Development. A highly polished animation of portfolio quality is required for the completion of this two course series. The quality of motion is expressive, depicts strong poses, timing and sense of weight; surface treatment, lighting and rendering convey a distinct, original aesthetic and strengthen the message of the film. Open to senior students only.

**DDA-413 Interactive Arts Senior Projects II - (3 Credits)**

This is the second in a required two course series in which students complete a high quality interactive/digital art project following tight deadlines and agreed upon requirements. A finished, exhibited and documented project is required to complete the course, concluding the BFA education.

**DDA-414 Senior Projects II: Game Arts - (3 Credits)**

This is the second course in a required two-course series in which students produce a Senior Capstone game project that was developed and partially produced in DDA-394 Senior Project Development and DDA-404 Senior Projects I. In order to complete the course and graduate, students must submit a finished digital game that is of portfolio quality and ready to be released. Open to senior Game Arts students only.

**DDA-415 Professional Practices - (3 Credits)**

This course helps students develop the concepts, strategies, resources and skills to manage their creative lives professionally. Focus will be placed both on industry and studio art practices. Through field trips, readings, and class presentations, students will acquire a greater awareness of artists working in their fields and of the resources New York City offers digital arts practitioners.

**DDA-418 Professional Practices: Game Arts - (3 Credits)**

This course helps students navigate the professional landscape outside of school and prepares them for successful careers in the gaming industry. At the conclusion of the course students will have a comprehensive packet of materials, including portfolio website, with which to market themselves to the world.

**DDA-425 Coding for the Network - (3 Credits)**

This intermediate-level course covers the principles of programming necessary for the creation of interactive artworks that depend on networked communication, both wired and wireless, local and public, as well as the related issues which arise in a 24-7 connected society.

**DDA-430 Subverting Digital Media - (3 Credits)**

Students will learn to explore their creative and potentially non-conformist ideas within the context of digital media practices. They will engage in a self-directed practical as well Course Description: as theoretical inquiry into digital media

**DDA-455 Coding for the Life - (3 Credits)**

In this advanced course, students work with professional programming tools to create media-rich, responsive experiences using contemporary libraries and frameworks, acquiring code design skills likely to last throughout their creative careers.

**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-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-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-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-9400 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-9401 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-9402 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-9403 Digital Arts Internship3 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.