Arts and Technology

**ATEC 2320** Introductory Topics in Arts and Technology (3 semester hours) Introduces students to the field of arts and technology. Sections may be devoted exclusively to a single aspect of the field or to a combination of related aspects. May be repeated for credit as topics vary (6 hours maximum). (3-0) S

**ATEC 2321** Writing and Research for Emerging Media (3 semester hours) This writing-intensive course focuses on writing for new and emergent media environments. While a number of technologies will be introduced and discussed in the course, the focus of the course will not be on the particular details of any one technology but rather on developing technological literacy; that is, the ability to understand and master new and emerging technologies as they appear. (3-0) Y

**ATEC 2322** Theories of Emerging Media and Communication (3 semester hours) The course will examine the history and theory of digital communications with a critical view of their effects on society. The focus will be on the role of the Internet in contemporary life. Prerequisite or corequisite: ATEC 2321. (3-0) Y

**ATEC 2326** Computer Animation Processes (3 semester hours) From pre-production to production and post-production, there are a number of stages in creating 3D computer animation. This course introduces students to the field of 3D computer animation by providing an overview of a production pipeline and its inter-connected steps, such as storyboarding, character design, modeling, texturing, lighting, rigging, animating, rendering, sound recording, and editing. The major goal of this course is to assist students with finding an area of concentration within the field of 3D computer animation. (3-0) Y

**ATEC 2331** Storyboard and Pre-production (3 semester hours) Students learn pre-visualization techniques for planning out time-based media projects (film, video, animation, interactive, etc.). Students are given a survey of visual storytelling techniques, such as framing, composition, camera movements, and editing techniques. Students gain an understanding of narrative story structure and plot construction, as well as learn how to communicate their ideas clearly through the use of storyboards and concept arts. (3-0) Y

**ATEC 2382** Computer Imaging (3 semester hours) Introduction to digital image-making and manipulation using contemporary software applications. Graphic and photographic methods are presented and applied to art and design problems. Computer images are prepared for multiple delivery environments, including the Internet, games, animation, and print. (0-3) S

**ATEC 2384** Basic Design Principles and Practices (3 semester hours) Foundational overview of design principles and practices common to all design professions, including general rules, laws, and guidelines of commercial design. Students will be introduced to the language of design, sources and resources of design practice, and design specializations and their integration with various relevant technical disciplines. (0-3) S

**ATEC 2385** Sound Design (3 semester hours) Introduction to sound design where the main goal is to show and explain the role of sound in single or multiple aspects of the field, including multimedia productions, animation, video games, movies, and live performances. (0-3) S

**ATEC 3310** Audio Technologies (3 semester hours) This class presents and explains the principles of audio and digital audio technologies. The course lays out the fundamentals of audio and computer equipment
and technologies: microphones, loudspeakers, mixing boards, digital converters, digital audio formats, digital processors, audio compression, amplification, stereophonic, surround and multi-phonic diffusion. Prerequisite: ATEC 2385. (0-3) R

**ATEC 3315** Motion Graphics (3 semester hours) This course is an introduction to the concepts, tools and techniques used in graphic design to enhance a communicated message through animation. Students will work with image, text, audio, and movement to create dynamic visual communication pieces. Prerequisite: ATEC 2382. (0-3) Y

**ATEC 3317** Modeling and Texturing I (3 semester hours) An introduction to 3D computer modeling and texturing. Students will learn how to model hard surface objects with emphasis on creating clean geometric meshes. Basic texturing fundamentals and techniques will be covered, including UV editing, texture map creations, and application and shader types. Prerequisite: ATEC 2326 or ATEC 2382. (0-3) S

**ATEC 3318** Concept Development (3 semester hours) The creation and development of game and animation concepts through various writing and creation techniques. This class is writing intensive and includes basic design drawing skills lessons. (0-3) S

**ATEC 3319** Voice Over (3 semester hours) This course explores the psychological implications as well as the artistic, cultural and social dimensions of the use of voice in films, games, and for various other applications. Students will record, edit, process and diffuse recorded voices as well as learn how to select a voice, write for auditory presentations and direct recording sessions. May be repeated for credit as topics vary (6 hours maximum) Prerequisite: ATEC 2385. (0-3) S

**ATEC 3320** Information Usability and Design (3 semester hours) This writing-intensive course blends theory and practice to increase the effectiveness of text prepared for digital media. Students will design, compose, and evaluate information to improve audiences' utility and satisfaction. Topics include the organization, logical development, structuring, and ethical presentation of information. Prerequisite: RHET 1302. (3-0) S

**ATEC 3325** Introduction to Computer Mediated Communication (3 semester hours) This writing-intensive course will explore how we use technology to communicate, share knowledge, and develop social structures. This course will also introduce students to new media theoretical perspectives and scholarship as they critically analyze new media and cyberculture. Prerequisite: RHET 1302. (3-0) S

**ATEC 3326** Emerging Media Production (3 semester hours) The course will introduce emerging practices in new media. It will blend theoretical studies and project-intensive practice in leading-edge applications of digital media, interactive media, and Internet communications. Prerequisite: ATEC 2321 and ATEC 2322. (3-0) Y

**ATEC 3327** Lighting and Composition I (3 semester hours) An introduction to the process of lighting, rendering and compositing computer generated images. Students will learn to create custom lighting setups and how lighting affects mood, time, and viewer perception. Additional topics include global illumination, final gather, and render layers. Prerequisite: ATEC 2326 or ATEC 2382. (0-3) Y

**ATEC 3328** Rigging I (3 semester hours) This course is an introduction to the concepts, tools and techniques used in 3D animation for setting up clean and efficient 3D rigs that are easily able to be animated. Topics will include hierarchical structures, joints and bones, constraints, creating useful and predictable deformations and setting up simple and intuitive control structures for use in animation.
Prerequisite: ATEC 2326 or ATEC 2382. (0-3) Y

ATEC 3330 Digital Video Production I (3 semester hours) Introduction to digital video production examining shooting, editing, and nonlinear post-production techniques. Students will work individually and in teams to produce short video projects. A variety of delivery environments may be explored, including web, mobile, and DVD. (0-3) Y

ATEC 3331 Sound Design for Film (3 semester hours) This class uses: soundtrack analyses and listening exercises, lectures and short projects addressing the various components of a sound track: voices, sound effects, ambient sound, and music and the various techniques implied in production and post-production (field recording, post-synchronization of dialogues, editing, foley, mastering...). Prerequisite: ATEC 2385. (0-3) R

ATEC 3351 Game Development (3 semester hours) Introduction to methods and techniques used in the creation of interactive games. Coursework will focus on the basic principles of game-play mechanics, player dynamics, and project management. Prerequisite: ATEC 2382. (0-3) Y

ATEC 3352 Game Design (3 semester hours) Introduction to critical analysis and creative design of interactive games. Topics include player motivation, game dynamics, gamer culture, and the formation of compelling experiences within increasingly complex, open-ended technology. Prerequisite: RHET 1302. (0-3) Y

ATEC 3353 Game Studies (3 semester hours) Introduction to critical game studies, including analysis of digital and analog games as cultural artifacts, logical systems, technological objects, social media, and narrative experiences. Coursework will focus on basic principles of analysis, criticism, rhetoric, and ludology. Prerequisite: RHET 1302. (0-3) Y

ATEC 3354 Sound Design for Games (3 semester hours) This class uses: soundtrack analyses and listening exercises, lectures and short projects, and presents the key concepts of sound design for games and the constraints of interactivity. Introduction to non-linear sound design tools and presentation of game development environments. Prerequisite: ATEC 2385. (0-3) R

ATEC 3361 Internet Studio I (3 semester hours) Introduction to researching, designing, producing, and distributing Internet content. Through readings, class discussions, and class projects, this class focuses on the various means and techniques for publishing networked digital material. Prerequisite: ATEC 2382. (0-3) Y

ATEC 3363 Basic Interaction Design (3 semester hours) Study of human-machine interaction for a variety of applications. Students explore rapid prototyping, user interface (UI) and user experience (UX) design skills that can be applied to web-based publishing, mobile app development, game development, and entertainment and artistic performances. New devices and interactions are explored. Prerequisite: ATEC 2382. (0-3) Y

ATEC 3365 Virtual Environments (3 semester hours) Explores advanced methods and techniques used in the design and creation of virtual environments. Topics will include aesthetics, architecture, scripting, and deployment. Prerequisite: ATEC 3317. (0-3) Y

ATEC 4310 Digital Audio Processing (3 semester hours) This course presents and develops the theoretical
and technical principles of digital audio processing and sound synthesis as well as hands-on applications and experiments. The course will present and use: spectral processors such as single and multi-band filters, dynamic processors (expanders, compressors, noise gate), complex dynamic spectral processors (noise reduction, cross synthesis). Prerequisite: ATEC 3310. (0-3) R

ATEC 4326 Advanced Emerging Media Production (3 semester hours) The course explores production studio and field practices in the development of emerging forms of digital media and communications. Students will work individually and in teams to produce new media projects using a variety of different methods and technologies. Areas of investigation may include social media, mobile media, and transmedia projects. Prerequisite: ATEC 3326. (0-3) Y

ATEC 4328 Rigging II (3 semester hours) This course is a continuation of the Rigging I course and will continue with concepts, tools and techniques used in 3D animation for setting up clean and efficient 3D rigs that are easily and intuitively animated. Topics will include squash and stretch capabilities in rigs, basic scripting, simple dynamics, facial rigs, as well as rigging techniques for quadruped and winged creatures. Prerequisite: ATEC 3328 and instructor consent required. (0-3) Y

ATEC 4330 Digital Video Production II (3 semester hours) Students will explore cinematography, editing, and storytelling in video intended for networked distribution. Prerequisite: ATEC 3330. (0-3) Y

ATEC 4337 Computer Animation (3 semester hours) This course focuses on applications of the principles of animation. Students learn to create expressive motions through the production of 3D key-frame animations. Prerequisite: ATEC 2326 or ATEC 2382. (0-3) Y

ATEC 4339 Special Effects (3 semester hours) This course introduces students to procedural methods, such as particle systems and dynamics, for the creation of visual effects used in films and animation. Students learn a variety of procedural methods and problem-solving skills needed to effectively produce and direct visual effects sequences. Prerequisite: ATEC 2326. (0-3) R

ATEC 4340 Project Management for Arts & Technology (3 semester hours) This course provides an overview of managing Arts and Technology related projects. Topics covered include project definition, timelines, financial, staffing and marketing plans, as well as presentation strategies. Teamwork and communications strategies are also major topics in the course. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Upper-division standing. (0-3) Y

ATEC 4341 Digital Marketing Design (3 semester hours) This course provides an overview of ways web, social media, mobile technologies, games and other media formats may be used to create and design communications programs. The course provides an overview of these media and how they may be used to create a marketing-based communications plan. May be repeated (6 hours maximum). Prerequisite: Upper-division standing. (3-0) R

ATEC 4345 Motion Capture Animation (3 semester hours) Group projects in which students learn the motion capture pipeline from setting up cameras and capturing data, to editing data and applying data to animated characters. Students will follow the 3D computer animation production process to complete short animations. End products are expected to be high quality animations appropriate for professional demo reels. May be repeated for credit (9 hours maximum). Prerequisite: Instructor consent required. (0-3) S
**ATEC 4346** Story-Telling for New Media (3 semester hours) Theory, principles and practice of narratives created for distribution via digital media. Includes study of the creation of both linear and nonlinear digital content for Internet distribution. Prerequisite: **ATEC 3361** or instructor consent required. (0-3) Y

**ATEC 4347** Advanced Design (3 semester hours) Explores advanced concepts and techniques in design including the use of computer-assisted creation of images. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: **ATEC 3361** or **ATEC 3363**. (0-3) Y

**ATEC 4348** Modeling and Texturing II (3 semester hours) A continuation of **ATEC 3317** Modeling and Texturing I. Students will learn how to model organic surfaces with emphasis on creating both film and game resolution meshes. Advanced topics include 3D paint and sculpturing, subdivision surfaces and normal and displacement map creation and application. Students must be able to work in ATEC labs due to software access. Prerequisite: Instructor consent required. (0-3) Y

**ATEC 4349** Lighting and Composition II (3 semester hours) A continuation of **ATEC 3327** Lighting and Composition I. Focus on the creation of advanced lighting setups and advanced render types. Topics include subsurface scattering, HDRI lighting, channel and matte creation and complex render fx. All students must be able to work in ATEC labs. Prerequisites: **ATEC 3317**, **ATEC 3327**, and instructor consent required. (0-3) Y

**ATEC 4350** Game Production Lab (3 semester hours) Study of advanced methods and techniques (literary, artistic, conceptual, technical) used in original game development. Students will be required to design, develop, and deploy computer games independently and as members of a team. May be repeated for credit as topics vary (6 hours maximum). Prerequisite: Instructor consent required. (0-3) Y

**ATEC 4351** Animation Studio I (3 semester hours) Animation Studio is a two-semester course sequence in which students will create a finished 3D animated short. All areas of production will be involved, including preproduction, layout, modeling, rigging, animation, texturing, lighting, compositing, VFX, and rendering. The story for the project(s) will be selected through a process where a faculty jury selects the winning idea from student story submissions. Students will need to apply for specific positions to gain entrance into the course. A faculty jury will select students to fill the open positions. The number and types of positions may vary based on the selected story's needs. May be repeated for credit (6 hours maximum). Prerequisites: **ATEC 3317** or **ATEC 3327** or **ATEC 4337** or **ATEC 3328** and instructor consent required. (0-3) Y

**ATEC 4352** Animation Studio II (3 semester hours) This course is a continuation of Animation Studio I. This course is only open to those students selected for the Animation Studio I course. This second course will focus on seeing the animated short(s) through to completion. May be repeated for credit (6 hours maximum). Prerequisite: **ATEC 4351** and instructor consent required. (0-3) Y

**ATEC 4357** Advanced Digital Arts (3 semester hours) Explores application of advanced computer imaging techniques to the creation of visual art. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: **ATEC 3361** or **ATEC 2382**. (0-3) Y

**ATEC 4361** Internet Studio II (3 semester hours) Explores advanced methods and techniques related to web design and production. Topics may include but are not limited to, HTML5, CSS3, JavaScript, APIs, microformats, web analytics, usability testing, web typography and other current and relevant web technologies. Prerequisite: **ATEC 3361**. (0-3) Y
ATEC 4365 Level Design and Scripting (3 semester hours) Continuing exploration of topics in virtual environment creation, including advanced techniques in level design, scripting, game design implementation, player engagement, and player experience management. May be repeated (6 hours maximum). Prerequisite: ATEC 3365. (0-3) Y

ATEC 4367 Advanced Game Development (3 semester hours) Continuing study in methods and techniques used in the design and creation of interactive games. Topics may include translating analog mechanics and strategies into digital media; innovations in casual, serious, and art game development; social and interpersonal dynamics game structures; and advanced techniques in iteration, prototyping, and game balancing. May be repeated for credit (6 hours maximum). Prerequisite: ATEC 3351 or ATEC 3352 or instructor consent required. (0-3) Y

ATEC 4368 Advanced Game Design (3 semester hours) Continuing study in critical analysis and creative design of interactive games. Topics may include designing for serious, persuasive, or educational games; integrating art and entertainment; innovations in game mechanics, interactive sound, interactive narrative, and haptic or peripheral devices; and advanced pre-production strategies. Prerequisite: ATEC 3351 or ATEC 3352 or instructor consent required. (0-3) S

ATEC 4370 Topics in Arts and Technology (3 semester hours) Study of fundamental principles and basic techniques of arts and technology. Sections may be devoted exclusively to a single aspect of the arts and technology or to a multiplicity of subjects related to the field. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Upper-division standing or department consent required. (0-3) R

ATEC 4371 Topics in Animation (3 semester hours) Course offers a further exploration of ideas and principles utilized in the animation process. Sections may be devoted to a single aspect of animation or to a variety of subjections in the field. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Department consent required. (0-3) Y

ATEC 4373 Topics in Game Development (3 semester hours) Course offers a further exploration of principles and techniques of computer game design, development, and theory. Sections may be devoted to a single aspect of game development or to a variety of subjects in the field. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Department consent required. (0-3) Y

ATEC 4374 Topics in Digital Design (3 semester hours) Fundamental digital design methods that lay a foundation for more specific design-oriented areas of interest. Topics may include research and planning, drawing and composition, color/graphics and presentation, prototyping and testing. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Department consent required. (0-3) Y

ATEC 4375 Topics in Sound Design (3 semester hours) This class will focus on the role of sound in one or several of the various domains of multimedia production, including, but not limited to animation, video games, movies, live performance, and interactive environments. May be repeated for credit as topics vary (9 hours maximum). Prerequisite: Department consent required. (0-3) Y

ATEC 4v71 Independent Study in Arts and Technology (1-3 semester hours) Independent study under a faculty member's direction. Signature of instructor on proposed project outline required. May be repeated for credit (9 hours maximum). Prerequisites: Upper-division standing and completion of all lower-division requirements in ATEC and instructor consent required. (1-3-0) R
ATEC 4v80 Capstone Project (1-3 semester hours) Culminating independent study under a faculty member's direction in Arts and Technology. Students will engage in the creation of an advanced creative and/or research project exploring the interaction of the arts with digital technology. Restricted to students majoring in Arts and Technology who are within one semester of graduation. Signature of instructor on proposed project outline required. Prerequisite: Instructor consent required. ([1-3]-0) Y

ATEC 4v99 Senior Honors in Arts and Technology (1-3 semester hours) Intended for students conducting independent research for honors theses or projects. Topics may vary. Signature of instructor on proposed project outline required. ([1-3]-0) R