Arts and Technology

**ATEC 6300** Interdisciplinary Approaches to Arts and Technology (3 semester credit hours) Introduction to the interdisciplinary study of mutual interactions between technology and the creative arts. Establishes basic theoretical concepts and principles underlying the graduate program in Arts and Technology. Required of all degree candidates in Arts and Technology. (3-0) Y

**ATEC 6331** Aesthetics of Interactive Arts (3 semester credit hours) Exploration of aesthetic principles underlying the interactive electronic arts, their relation to and divergence from aesthetic principles underlying traditional forms of artistic expression. Topics will include interactive games, animation, and new modes of narrative. Required of all degree candidates in Arts and Technology. (0-3) Y

**ATEC 6332** Design Principles (3 semester credit hours) Exploration of advanced design principles and practices common to most design professions. Topics include the language of design, core design concepts, analysis of design, and specialized design practices. (0-3) Y

**ATEC 6333** Computational Design (3 semester credit hours) Exploration of the computational theory of design and the design of products and processes through digital means, such as computer graphics, animation, visualization, simulation, computer-aided design, and image processing. (0-3) Y

**ATEC 6334** Information Design for New Media (3 semester credit hours) This course explores holistic discovery research and practice in the field of new media studies. Students will learn to uncover insights about user desirability, technological potential and possibility, data evaluation, value measures, and how to select ideas that have the greatest potential to ultimately invest, develop, and build new products and services. (0-3) T

**ATEC 6335** Research in Sound Design (3 semester credit hours) Exploration of the relationship between sound, music, and the visual arts. This course covers the history of art and technology as applied to the domain of sound, with a special focus on interactive applications. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

**ATEC 6341** Game Design (3 semester credit hours) Advanced study of the structure and design of digital, analog, narrative, and social game systems. Course focuses on theory, critical analysis, innovation, and prototype creation. May be repeated for credit (9 semester credit hours maximum). (0-3) Y

**ATEC 6342** Game Studies (3 semester credit hours) Advanced study of the computer game as cultural artifact, procedural system, social space, and artistic medium. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

**ATEC 6343** Interactive Environments (3 semester credit hours) Exploration of design principles and practices for the creation of interactive experiential spaces. Course focuses on atmosphere, flow, interactivity, spatial narrative, and user experience. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

**ATEC 6344** History and Culture of Interactive Media (3 semester credit hours) Interdisciplinary research in the historical, cultural, sociological, and technological impact of interactive media on human society. May
be repeated for credit as topics vary (9 semester credit hours maximum). (3-0) T

**ATEC 6345** Game Production Lab (3 semester credit hours) This course functions as a simulation of the game development industry. This course utilizes various aspects of all areas of game development including programming, art, animation, sound design, game design, level design, project management, and project direction. Games developed in this course emphasize innovation, aesthetics, unique or experimental mechanics and technological achievement. May be repeated for credit as topics vary (9 semester credit hours maximum). Instructor consent required. (0-3) T

**ATEC 6346** Game Pipeline Methodologies (3 semester credit hours) This course functions as a simulation of the game development industry. This course utilizes various aspects of all areas of game development including programming, art, animation, sound design, game design, level design, project management, and project direction. Games developed in this course emphasize innovation, aesthetics, unique or experimental mechanics, and technological achievement. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

**ATEC 6347** Serious Games (3 semester credit hours) Advanced research in the application of gaming technologies, systems, and principles toward games outside the entertainment sector, including health and medical, social and civil, business, and academic applications. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

**ATEC 6348** Educational Games (3 semester credit hours) Advanced research in the design, creation, and implementation of game-like systems towards new research in pedagogy, simulation, training, and formal and informal education. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

**ATEC 6351** Digital Arts (3 semester credit hours) Exploration and application of advanced methods and techniques for the creation of visual images through the use of digital media. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) Y

**ATEC 6352** Motion Capture (3 semester credit hours) Exploration of advanced methods and techniques in motion capture animation. Course culminates in a professional-quality animation project. May be repeated for credit (9 semester credit hours maximum). (0-3) T

**ATEC 6353** Visualization Research (3 semester credit hours) Exploration and application of advanced techniques in animation, visualization, simulation, and interactivity. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

**ATEC 6354** Virtual Environments (3 semester credit hours) Advanced research in the conceptualization, creation, and application of interactive immersive environments, including research in synthetic spaces, interactive game engines, and hybrid physical/virtual worlds. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

**ATEC 6355** Animation Production Lab (3 semester credit hours) Exploration and application of advanced concepts and techniques involved in the development of animated shorts and features. Includes participation in development team for creation of an animated short or feature-length animated film. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T
ATEC 6356 Interactive Narrative (3 semester credit hours) Advanced research in the analysis and creation of interactive narrative systems, designs, and models through various philosophical and mechanical approaches. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

ATEC 6357 Animation Studio (3 semester credit hours) This course replicates an actual animation studio environment. It utilizes various aspects of all areas of computer animation including story development, layout, modeling, texturing, rigging, animation and lighting, rendering/compositing, sound design as well as project planning and management. Registration for this course is determined by a portfolio review by the instructor. May be repeated for credit as topics vary (9 semester credit hours maximum). Instructor consent required. (0-3) Y

ATEC 6358 Concept Development (3 semester credit hours) This course is an in-depth examination of the creation and development of game and animation concepts through various writing and creation techniques. Topics include, advanced modeling and texturing principles and techniques, creating hard surface/organic models, and utilization of polygonal geometry. (0-3) R

ATEC 6359 Digital Cinematography (3 semester credit hours) This course will utilize computer generated pre-visualization techniques and cinematic principles to build a strong foundation in visual storytelling. Topics will include proper camera setup, character staging, moving cameras, line-action management, shot design utilizing color and light, and computer generated storyboard interpretation. Students must have prior experience in modeling and texturing. Department consent required. (0-3) R

ATEC 6361 Creating Interactive Media (3 semester credit hours) This course covers theory, principles, and practice of media objects created for an interactive environment. Sections may be devoted exclusively to a single aspect of emerging media and communications or to a multiplicity of subjects related to the field. May be repeated for credit (9 semester credit hours maximum). (0-3) T

ATEC 6362 Modeling and Simulation (3 semester credit hours) Theory and practice of modeling, including models for concepts, knowledge, geometry, and dynamics. A variety of model types are covered along with their algebraic and diagrammatic representations. Creative media design and representation of models are stressed. Instructor consent required. (0-3) Y

ATEC 6363 Creative Automata (3 semester credit hours) Media design principles and methods for the creation of automata, including mathematical structures, models, and data. History and culture of classical automata and mathematical automata, along with their interconnections. (0-3) T

ATEC 6365 Interaction, Communication, and Exchanges in Virtual Societies (3 semester credit hours) This course will address emerging issues related to the ever increasing use of virtual representations of the self and the other in the fields of human interaction, communication, and exchanges. Topics may include education and training, cultural exchanges, and e-government, with the underlying human computer interaction and project management implications. The course will address the design, technical, psychological, ethical, and sociological dimensions in these fields. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T

ATEC 6375 Topics in Emerging and Cognitive Design (3 semester credit hours) Exploration of the underlying psychological issues of users that can be taken into account in the design and assessment of interactive technologies, such as online personas, virtual humans and cultures, brain-computer or human-robotic interfaces, and e-behavior. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) T
ATEC 6376 E-Business Environment Design (3 semester credit hours) Students in this course will analyze underlying changes in societal structures fueled by a web-based economic environment, apply the effect of these societal paradigms to marketing, examine the effect of technology-driven societal structures on the workplace, and explore how the optimization of e-marketing and e-business environment designs can be used to create sustainability strategies. May be repeated for credit as topics vary (9 semester credit hours maximum). (3-0) T

ATEC 6380 Studies in Art, Science, and Humanities (3 semester credit hours) This course will study current and emerging topics, approaches, and practices, where the arts, sciences, and humanities interact or converge, with the goal to advance new research questions and areas of inquiry. May be repeated for credit as topics vary (9 semester credit hours maximum). (0-3) Y

ATEC 6382 Special Topics in Interactive Media (3 semester credit hours) Students in this course will explore how interactivity defines the degree to which digital artifacts (such as games, multimedia applications, and interactive applications) are generated and transformed by their users. Topics may include interaction design, interface design, and research in anticipatory systems. May be repeated for credit (9 semester credit hours maximum). (0-3) R

ATEC 6383 Special Topics in Sound Design (3 semester credit hours) Advanced research in digital music and sound design. Topics may include advanced visualization of music and sound, sonification of images and data, and advanced research in interactive sound applications. May be repeated for credit (9 semester credit hours maximum). (0-3) R

ATEC 6384 Special Topics in Game Studies (3 semester credit hours) An examination of the links between technology, play, and culture. Topics may include the ethics of game development, serious and persuasive games, simulation and training, interactive education, identity and culture in virtual worlds, multilinear narrative, and philosophical origins of games as a medium. May be repeated for credit (9 semester credit hours maximum). (0-3) R

ATEC 6385 Special Topics in Animation (3 semester credit hours) Advanced research in animation, including concept development, character development, advanced techniques and methods in 3D animation, and animation production techniques. May be repeated for credit (9 semester credit hours maximum). (0-3) R

ATEC 6389 Topics in Arts and Technology (3 semester credit hours) The study of specific issues, problems, methods, or practices relevant to arts and technology. May be repeated for credit (9 semester credit hours maximum). (3-0) R

ATEC 6390 Special Topics in Arts and Technology (3 semester credit hours) Independent study course that may count toward minimum course requirements for the MA or MFA degree. May be repeated for credit (9 semester credit hours maximum). Instructor consent required. (3-0) R

ATEC 6391 Computer Processing for Arts and Technology (3 semester credit hours) Advanced study of technology and programming methods appropriate for research design in Arts and Technology. Department consent required. (3-0) R
ATEC 6397 Independent Readings in Arts and Technology (3 semester credit hours) Pass/Fail only. May be repeated for credit. Department consent required. (3-0) R

ATEC 6398 Independent Research in Arts and Technology (3 semester credit hours) Pass/Fail only. May be repeated for credit. Department consent required. (3-0) R

ATEC 6V90 Internship in Arts and Technology (1-3 semester credit hours) Students undertake a learning experience at a supervised work situation related to their graduate area of study. An internship provides exposure experience to a professional working environment, application of theory to working realities, and an opportunity to test skills and clarify goals. Course requirements include formal and reflective writing. May be repeated for credit (6 semester credit hours maximum). ([1-3]-0) R

ATEC 6V95 Advanced Project Workshop (3-6 semester credit hours) Students will engage in the creation of an advanced creative and/or research project exploring the interaction of the arts with digital technology. Required of all MA and MFA degree candidates in Arts and Technology. May be repeated for credit (6 semester credit hours maximum). Instructor consent required. ([3-6]-0) Y

ATEC 7330 Advanced Topics in Complex Digital Interactive Systems (3 semester credit hours) This course focuses on the analysis, design and production of complex digital interactive systems applied to domains such as learning and training, entertainment, and scientific experiment. May be repeated for credit as topics vary (9 semester credit hours maximum). (3-0) T

ATEC 7331 Research Methodology in Arts and Technology (3 semester credit hours) This course presents students with a variety of research methods that are appropriate for advanced research in Arts and Technology. Methods will include ethnographic, experimental, descriptive, historical, and philosophical. (3-0) R

ATEC 7335 Advanced Topics in Digital Multisensory Representations and Simulations (3 semester credit hours) This course explores the technical, conceptual, sociological, and artistic dimensions of digital multisensory representations in various contexts, domains and applications: entertainment, communication, education and training. Focus of the course may vary to deeper address specific questions in visual, auditory, kinetic, and olfactive representations and simulations. May be repeated for credit as topics vary (9 semester credit hours maximum). (3-0) T

ATEC 7340 Advanced Studies in Arts and Technology (3 semester credit hours) Advanced studies in the theoretical and/or practical interactions of arts and technology. May be repeated for credit (9 semester credit hours maximum). (3-0) R

ATEC 7390 Advanced Special Topics in Arts and Technology (3 semester credit hours) Independent study course that may count toward minimum course requirements for the PhD degree. May be repeated for credit (9 semester credit hours maximum). Instructor consent required. (3-0) R

ATEC 7620 Advanced Projects in Simulation and Game Design (6 semester credit hours) Students will engage in the creation of advanced creative and/or research projects exploring simulation and game design. Instructor consent required. (0-6) R

ATEC 7V81 Advanced Doctoral Project Workshop (3-6 semester credit hours) Students will engage in the creation of an advanced creative and/or research project exploring the interaction of the arts with digital
technology. May be repeated for credit (6 semester credit hours maximum). Instructor consent required. ([3-6]-0) R

**ATEC 7V82** Advanced Projects in Interactive Media (1-9 semester credit hours) Students will complete an advanced creative and/or research project exploring the interaction of communication and digital technology. May be repeated for credit as topics vary (9 semester credit hours maximum). Instructor consent required. ([1-9]-0) R

**ATEC 8303** Independent Readings in Arts and Technology (3 semester credit hours) Pass/Fail only. May be repeated for credit. Instructor consent required. (3-0) R

**ATEC 8305** Independent Research in Arts and Technology (3 semester credit hours) Pass/Fail only. May be repeated for credit. Instructor consent required. (3-0) R

**ATEC 8V99** PhD Dissertation (1-9 semester credit hours) Pass/Fail only. May be repeated for credit. Instructor consent required. ([1-9]-0) R

### Emerging Media and Communication

**EMAC 6300** Interdisciplinary Studies in Emerging Media and Communication (3 semester credit hours) This course is an interdisciplinary study of the implications of interactive technology for the creation, dissemination, and impact of communication. Establishes basic theoretical concepts and principles underlying the graduate program in Emerging Media and Communication. (3-0) Y

**EMAC 6342** Digital Culture (3 semester credit hours) This course will examine the way that the digital network alters various cultural practices. Students will examine a range of institutions, practices, and values that are affected by the digital shift. Topics may include, privacy, legal practices, journalism, politics, and intellectual property. (3-0) T

**EMAC 6365** Journalism and the Digital Network (3 semester credit hours) This course will examine the ways in which the digital network has (and by extension has not) transformed the work of reporting, filtering, and creating the news. (3-0) T

**EMAC 6372** Approaches to Emerging Media and Communication (3 semester credit hours) This course focuses on the conceptual study of emerging media. Course may explore the theoretical, political, technological, cultural, cognitive, and historical forces which inform the way media and communication develop. (3-0) T

**EMAC 6373** Emerging Media Studio I (3 semester credit hours) This course explores media production across multiple media. Students work in teams to develop meta-media projects in a variety of content delivery environments. Class will require students to develop a range of rhetorical (text, audio) and visual (image, video) strategies appropriate for emerging media. May be repeated for credit (9 semester credit hours maximum). (3-0) T

**EMAC 6374** Digital Textuality (3 semester credit hours) This course will combine theory and practice to focus on shifts in text, image, and sound. Students will become acquainted with the influence of the digital on forms of textuality and put theory into practice by communicating ideas through multiple media forms.
EMAC 6375 Research Methodologies in Emerging Media and Communication (3 semester credit hours)
This course introduces the basic set of knowledge and skills required for conducting rigorous research in emerging media and communication from various approaches. The concepts, strategies, methods, and skills that students will acquire in this course should help in understanding the implications and limitations of research reported by others, and to conduct and publish research in students' chosen area of inquiry. Methods covered might include qualitative, quantitative, and/or ethnographic approaches. May be repeated for credit as topics vary (9 semester credit hours maximum). (3-0) T

EMAC 6381 Special Topics in Emergent Communication (3 semester credit hours) A course dedicated to current issues, research problems, and special projects in emerging media and communication. Topics will vary and may include distributed, mobile, time-shifted, interactive, and personal media. May be repeated for credit as topics vary (9 semester credit hours maximum). (3-0) T

EMAC 6383 Emerging Media Studio II (3 semester credit hours) Advanced collaborative workshop devoted to the creation of sophisticated communications employing multiple media platforms. May be repeated for credit (9 semester credit hours maximum). (0-3) T

EMAC 6V91 Advanced Project Workshop (3-6 semester credit hours) Students propose, develop, and execute an advanced creative and/or research project exploring the Emerging Media and Communication. This course is required of all degree candidates in Emerging Media and Communication. May be repeated for credit (12 semester credit hours maximum). Instructor consent required. ([3-6]-0) Y