## Arts Technology Communication and Media

**ATCM 6000** ATEC Dean's Colloquium (0 semester credit hours) Introduction to research directions and creative practice at the intersection of arts, technology, and emerging communication. Pass/Fail only. Corequisite: **ATCM 6300**, (2-0) Y

**ATCM 6300** Approaches to Arts, Technology, and Emerging Communication (3 semester credit hours) Introduction to the interdisciplinary study of mutual interactions between technology, emerging communication, and the creative arts. Establishes basic theoretical concepts and principles underlying the graduate program in Arts, Technology, and Emerging Communication. Corequisite: **ATCM 6000**, (3-0) Y

**ATCM 6301** Aesthetics of Interactive Arts (3 semester credit hours) Exploration of aesthetic principles underlying the interactive electronic arts, as well as their relation to and divergence from aesthetic principles underlying traditional forms of artistic expression. (3-0) Y

**ATCM 6304** Computer Processing for Arts, Technology, and Emerging Communication (3 semester credit hours) Advanced study of technology and programming methods appropriate for research design and creative practice in arts, technology, and emerging communication. (0-3) R

**ATCM 6305** Animation Creative Practices (3 semester credit hours) An examination of storytelling methodologies and practices used to develop animated content. Topics include ideation, story simplification, evaluation techniques, storyboarding, story reel creation, and communication skills. (0-3) Y

**ATCM 6310** Animation Studio I (3 semester credit hours) Studio-based course where students work individually and in teams to develop creative and varied animated solutions to assigned topics. A variety of animation methods will be explored. Prerequisite: **ATCM 6313** or instructor consent required. (0-3) R

**ATCM 6311** Animation Studio II (3 semester credit hours) This course is a continuation of Animation Studio I. Studio-based course where students work individually and in teams to develop creative and varied animated solutions to complex assignments. A variety of animation methods will be explored. Prerequisite: **ATCM 6310** or instructor consent required. (0-3) R

**ATCM 6312** 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. (0-3) Y

**ATCM 6313** Animation Project Development (3 semester credit hours) An investigation into various methods and practices necessary for developing and producing successful animation related projects. Topics include team dynamics, time management, budgeting, scheduling, and presentation skills. (3-0) Y

**ATCM 6314** Technical Direction (3 semester credit hours) This course examines the application of scripting languages and various technical approaches to animation related problems. Topics include tool development, pipeline usability, and procedurally driven solutions for routine tasks. Prerequisite: **ATCM 6305** or instructor consent required. (0-3) R
ATCM 6315 History of Animation (3 semester credit hours) An in depth examination of the growth and evolution of animation styles and techniques from the early 1900s to today. Topics will include animation technologies, cultural influences, and future animation implications. Critical analysis of a variety of pioneering commercial and experimental animation artists will be included. (3-0) Y

ATCM 6316 Motion Capture (3 semester credit hours) Exploration of advanced methods and techniques in motion capture animation. Students will explore traditional production methods as well as experimental technologies and new research in the field. (0-3) R

ATCM 6317 Procedural Animation (3 semester credit hours) Exploration of advanced methods and techniques for procedurally generated graphics, animation, and other visual imagery through digital media. A variety of animation methods will be explored. (0-3) R

ATCM 6318 Special Topics in Animation (3 semester credit hours) Advanced research in animation procedures and practices. May be repeated for credit as topics vary (6 semester credit hours maximum). (0-3) R

ATCM 6320 Creative Automata (3 semester credit hours) Exploration of media design principles and methods for the creation of automata, including mathematical structures, models, and data. This course focuses on the history and culture of classical automata and mathematical automata, along with their interconnections. (0-3) T

ATCM 6321 Digital Fabrication (3 semester credit hours) Exploration of digital fabrication techniques and their relationship to traditional sculptural processes. Students in the course will employ digital fabrication as an intermediate tool in the process of sculpture, while examining the role that materiality plays in imbuing objects with meaning through thematic development. (0-3) T

ATCM 6322 Experimental Interactive Media (3 semester credit hours) Exploration of the theory, principles, and practice of media objects created for an experimental interactive environment, as they relate to multiple aspects of arts, technology, and emerging communication. (0-3) T

ATCM 6323 Modeling and Simulation (3 semester credit hours) Exploration of the theory, principles, and practice of modeling, including models for concepts, knowledge, geometry, and dynamics. Students will explore a variety of model types as well as their algebraic and diagrammatic representations, with a special focus on creative media design and representation of models. (0-3) T

ATCM 6325 Arts, Science, and Humanities (3 semester credit hours) Examination of current and emerging topics, approaches, and practices at the intersection of the arts, sciences, and humanities. Students in the course will advance new research questions and inquiries at multiple areas of convergence. May be repeated for credit as topics vary (9 semester credit hours maximum). (3-0) Y

ATCM 6326 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 arts, technology, and emerging communication as applied to the domain of sound, with a special focus on interactive applications. (0-3) T

ATCM 6327 Experimental Publishing (3 semester credit hours) Students in this course will examine the broad range of creative and professional activity in the arts, sciences, humanities, and engineering. The course focuses on the development of innovative methodologies for documentation, presentation, and
professionalism through emerging technologies and new publishing formats. (3-0) T

ATCM 6330 Special Topics in Interactive Media (3 semester credit hours) Advanced research in interactive media, focused on how interactivity defines the degree to which digital artifacts are generated and transformed by their users. May be repeated for credit as topics vary (6 semester credit hours maximum). (0-3) R

ATCM 6331 Special Topics in Sound Design (3 semester credit hours) Advanced research in digital music, sonification, visualization of sonic data, and sound design. May be repeated for credit as topics vary (6 semester credit hours maximum). (0-3) R

ATCM 6335 Game Design and Development (3 semester credit hours) Advanced study of the structure, content, and design of games, with a particular focus on prototype creation and development. A variety of design practices will be explored for digital, analog, and experimental games. (3-0) Y

ATCM 6336 Critical Game Studies (3 semester credit hours) Advanced study of the computer game as cultural artifact, procedural system, social space, and artistic medium. (3-0) Y

ATCM 6340 Game Production Methods (3 semester credit hours) Exploration of best practices and production techniques for game design and development, with a focus on the intersections between industry, independent, academic, and experimental practices. Course covers methodologies from multiple perspectives and field areas. (3-0) R

ATCM 6341 Game Production Studio (3 semester credit hours) This studio-based course functions as a simulation of the game development industry. Students work individually and in teams to design, develop, and produce large-scale game projects that emphasize innovation, aesthetics, mechanics, and technological achievement. May be repeated for credit as topics vary (6 semester credit hours maximum). Instructor consent required. (0-3) Y

ATCM 6342 Experimental Games Studio (3 semester credit hours) This studio-based course focuses on the development of experimental interactive experiences in the medium of digital games. Students will utilize multiple aspects of traditional digital game development and production as well as experimental modes of production from other media and fields. Projects developed in this course emphasize innovation and creativity, and are intended to push the boundaries of the field. May be repeated for credit as topics vary (6 semester credit hours maximum). Instructor consent required. (0-3) T

ATCM 6343 Educational Games Studio (3 semester credit hours) This studio-based course focuses on the design, development, implementation, and maintenance of educational games and game based simulations. Games developed in this course are expected to contribute toward new research in pedagogy, simulation, training, and formal and informal education. May be repeated for credit as topics vary (6 semester credit hours maximum). Instructor consent required. (0-3) T

ATCM 6344 Building Virtual Worlds (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. Prerequisite: ATCM 6335. (0-3) R

ATCM 6345 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. (0-3) R

**ATCM 6349** Special Topics in Game Development (3 semester credit hours) Advanced research in aspects of game development, design, production, and implementation. May be repeated for credit as topics vary (6 semester credit hours maximum). (0-3) R

**ATCM 6350** Games Research Methods (3 semester credit hours) Exploration of research methods for critical game studies. Students will examine methodologies from multiple areas, including the humanities, the social sciences, computer science and engineering, new media studies, creative practice, and the game development industry. Instructor consent required. (3-0) R

**ATCM 6351** History and Culture of Games (3 semester credit hours) Interdisciplinary research in the historical, cultural, sociological, and technological impact of games on human society. Prerequisite: ATCM 6336. (3-0) T

**ATCM 6352** Socially Conscious Games (3 semester credit hours) Exploration of the technologies, rules, and processes that shape social relations in contemporary digital culture. Students will examine digital games both as objects of study and as a lens for studying social relationships. Course includes perspectives from multiple related fields, including play and game studies, sociology, history, science and technology studies, and media studies. Prerequisite: ATCM 6336. (3-0) T

**ATCM 6353** Games, Education, and Simulation (3 semester credit hours) Advanced research in the application of gaming technologies, systems, and design principles toward games with applied purposes, including health and medical, social and civil, business, and academic applications. Course includes perspectives from multiple educational structures and theories. Prerequisite: ATCM 6335 or ATCM 6336. (0-3) T

**ATCM 6354** Meaningful Play (3 semester credit hours) Exploration of play as a fundamental aspect of culture, as it relates to aspects of art, technology, and emerging communication. Prerequisite: ATCM 6335 or ATCM 6336. (0-3) R

**ATCM 6355** Narrative System Research (3 semester credit hours) Advanced research in the structures, models, and procedures of narrative in interactive systems. Students in the course will forge connections between narrative, interactive media, and multiple related fields, with a focus on creating innovative experiences for audiences and users. Instructor consent required. (3-0) T

**ATCM 6356** Anatomy of a Game (3 semester credit hours) Introduction to core mechanical structures for the understanding of digital and analog games. Students in the course will play, analyze, and critique multiple games that are considered seminal in the field. Instructor consent required. (0-3) R

**ATCM 6357** Virtual Worlds and Communities (3 semester credit hours) Exploration of the history, culture, and structure of virtual communities as they relate to interactive virtual worlds. Prerequisite: ATCM 6336. (3-0) R

**ATCM 6359** Special Topics in Game Studies (3 semester credit hours) Advanced research in critical game studies as it relates to the intersection of technology, play, and culture. May be repeated for credit as topics vary (6 semester credit hours maximum). (0-3) R

**ATCM 6360** History of Interactive Media (3 semester credit hours) Survey of the history of interactive media
as it relates to arts, technology, and emerging communication, including analysis of potential future directions. (3-0) Y

**ATCM 6361** Design Research Methods (3 semester credit hours) Exploration and application of advanced digital design methods, covering multiple divergent topics in design research. (3-0) Y

**ATCM 6365** Design Principles (3 semester credit hours) Exploration of advanced principles and practices common to most design professions. Topics include the language of design, core design concepts, analysis of design, and specialized design practices. (3-0) T

**ATCM 6366** Information Architecture and Design (3 semester credit hours) Exploration of research principles and practices for information architecture and design. Students will examine structures and strategies for content and information organization, usability and user perception, data evaluation, and the technological potential of shared information environments. (0-3) T

**ATCM 6367** Human Computer Interaction (3 semester credit hours) Advanced exploration of human computer interaction as it relates to arts, technology, and emerging communication. Students in the course will examine HCI from multiple academic fields and perspectives. (0-3) R

**ATCM 6368** Usability Testing (3 semester credit hours) Exploration and application of advanced testing methodologies, principles, and practices for user-based interaction design. (0-3) R

**ATCM 6369** Media Analytics (3 semester credit hours) Advanced research in gathering, analyzing, and understanding data to gain new insights into actionable designs, as applied to arts, technology, and emerging communication. (3-0) R

**ATCM 6370** 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) T

**ATCM 6371** Visualization Research (3 semester credit hours) Exploration and application of advanced techniques in animation, visualization, simulation, and interactivity. (3-0) T

**ATCM 6372** Pervasive Computing and Interaction Design (3 semester credit hours) Advanced research in pervasive computing and ambient intelligence as applied to the field of interaction design. Students in the course will examine a wide range of research topics in ubiquitous systems and applications. (0-3) R

**ATCM 6373** Interactive Environments (3 semester credit hours) Exploration of design principles and practices for the creation of interactive experiential spaces, with an emphasis on techno-cultural impact. (0-3) T

**ATCM 6374** Special Topics in Interaction Design (3 semester credit hours) Advanced research in interactive media and digital design. May be repeated for credit as topics vary (6 semester credit hours maximum). (0-3) R

**ATCM 6375** Critical Approaches to Networked Cultures (3 semester credit hours) This course is an introduction to the interdisciplinary study of media and networked technologies. It examines the history of media studies and key theoretical works in the field, with an emphasis on how institutions and ideology shape cultural representation and technological production. (3-0) Y
ATCM 6376 Media and Cultural Studies Methods (3 semester credit hours) This course provides basic knowledge of hermeneutic traditions in critical media studies as well as its research methods, including archival, participatory, and ethnographic methods. (3-0) Y

ATCM 6377 Creativity as Social Practice (3 semester credit hours) This course explores creative production as a form of social practice. Students develop multimodal projects that use a range of rhetorical and visual tactics to engage audiences in social and collaborative exchanges. (0-3) Y

ATCM 6378 Media, Culture, and Economy (3 semester credit hours) This course examines the history of and interplay among media technologies and industries, cultural representation, and economic logics. Prerequisite: ATCM 6375. (3-0) R

ATCM 6379 Digital Culture (3 semester credit hours) This course examines how networked media and digital technologies shape culture and society. Topics may include but are not limited to the history of intellectual property and intellectual property law; Internet governance and regulation; transnational media flows; media as spectacle; and media activism. Prerequisite: ATCM 6300. (3-0) R

ATCM 6380 Digital Publics and Counterpublics (3 semester credit hours) This course explores key theories of publics and counterpublics and considers their constitution within networked media. Prerequisite: ATCM 6300. (3-0) R

ATCM 6381 Emerging Media and Identity (3 semester credit hours) This course examines emerging media and identities, with a focus on gender, sexuality, race, ethnicity, disability, class, age, and/or nation. Topics will include how such identities are represented in media and how people use media to reshape such representations. Prerequisite: ATCM 6375. (3-0) R

ATCM 6382 Digital Textuality (3 semester credit hours) This course acquaints students with the influence of the digital on textuality. Students learn how to put theory into practice by re-creating a cultural object across multiple media forms. Prerequisite: ATCM 6375. (3-0) R

ATCM 6383 Emerging Media Studio (3 semester credit hours) Advanced workshop. Students work collaboratively to produce creative works across multiple media platforms. May be repeated for credit as topics vary (6 semester credit hours maximum). Prerequisite: ATCM 6377. (0-3) R

ATCM 6384 Critical Making (3 semester credit hours) This course examines theories and practices of critical making. Topics may include the history of DIY practices and communal creativity; identity in relation to communities of practice; critical, speculative, and adversarial design; and so forth. (0-3) R

ATCM 6385 Special Topics in Networked Cultures (3 semester credit hours) Advanced research in networked cultures. May be repeated for credit as topics vary (6 semester credit hours maximum). (0-3) R

ATCM 6386 Social Science Methods in Mediated Communication (3 semester credit hours) This course introduces the basic set of knowledge and skills required for conducting rigorous research in mediated communication. 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. (3-0) R

**ATCM 6391** Approaches to Mediated Communication (3 semester credit hours) This course will synthesize the research on the psychological aspects of production and consumption of media across different media and of content genres. Viewing media consumption through a psychological lens, this class may cover topics such as media and social influence, motivation and emotion, unconscious processing, stereotyping and prejudice, social cognition, and group dynamics. Prerequisite: **ATCM 6390** or instructor consent required. (3-0) R

**ATCM 6392** 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) R

**ATCM 6395** Special Topics in Arts, Technology, and Emerging Communication (3 semester credit hours) Advanced research in issues, methods, or practices relevant to arts, technology, and emerging communication. May be repeated for credit (6 semester credit hours maximum). (3-0) R

**ATCM 6396** Independent Readings in Arts, Technology, and Emerging Communication (3 semester credit hours) Pass/Fail only. May be repeated for credit (6 semester credit hours maximum). Department consent required. (3-0) R

**ATCM 6397** Independent Research in Arts, Technology, and Emerging Communication (3 semester credit hours) Pass/Fail only. May be repeated for credit (6 semester credit hours maximum). Department consent required. (3-0) R

**ATCM 6398** Thesis Proposal (3 semester credit hours) Preparatory work for the creation and development of a Masters thesis or Masters project in arts, technology, and emerging communication. This course is an independent investigation which may be team based. Instructor consent required. (3-0) R

**ATCM 6399** Master’s Thesis (3 semester credit hours) Students engage in the creation of a Masters thesis focused on one or more aspects of arts, technology, and emerging communication. This course is an independent investigation which may be team based, and may correspond to the development and execution of a Masters Project. Instructor Consent Required. (3-0) R

**ATCM 6698** Master’s Project I (6 semester credit hours) Students engage in the creation of an advanced creative and/or research project focused on one or more aspects of arts, technology, and emerging communication. This course is an independent investigation which may be team based. Instructor consent required. (6-0) R

**ATCM 6699** Master’s Project II (6 semester credit hours) This course is a continuation of **ATCM 6698** Masters Project I. Students engage in the creation of an advanced creative and/or research project focused on one or more aspects of arts, technology, and emerging communication. This course is an independent investigation which may be team based. Instructor consent required. (6-0) R

**ATCM 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
ATCM 7331 Research Methodology in Arts, Technology, and Emerging Communication (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

ATCM 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

ATCM 7340 Advanced Studies in Arts, Technology, and Emerging Communication (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

ATCM 7390 Advanced Special Topics in Arts, Technology, and Emerging Communication (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). (3-0) R

ATCM 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. (0-6) R

ATCM 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

ATCM 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

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

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

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