Courses

ATLS 1100 (3) Design Foundations
Introduces foundational principles, practices and methods of design. Emphasizes design as an expressive and creative problem solving tool. This course engages with design from a broad perspective including visual, computational, physical and auditory design practices. Through lectures, discussions and creative projects, students will gain a familiarity with the diverse applications of creative technology through design.
Requisites: Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors only.
Grading Basis: Letter Grade

ATLS 1220 (4) Virtual Worlds: An Introduction to Computer Science
Introduces the fundamental principles of computer science using an online virtual world called Second Life as the "Laboratory" for this course. Students will learn how to program by creating objects of interest in Second Life. In-class and in-world discussions and readings will introduce the students to important ideas and concepts that shape the field of computer science. Does not count as Computer Science credit for the Computer Science BA, BS or minor.

ATLS 1240 (3) The Computational World
Introduces and explores the "computational style of thinking" and its influence in science, mathematics, engineering and the arts. Does not focus on the nuts and bolts of any particular programming language, but rather the way in which computing has affected human culture and thought in the past half century. Does not count as Computer Science credit for the Computer Science BA, BS, or minor.

ATLS 1300 (4) Computational Foundations 1
Instructs non-computer science students in analyzing problems and synthesizing programs for the solution, emphasizing good engineering practices for program construction, documentation, testing, and debugging. Uses Java for programming projects. Formerly ATLS 2010.
Requisites: Restricted to TMEN or MTAM students only.

ATLS 1710 (3) Tools and Methods for Engineering Computing
Designed for students with little or no programming background. Students learn procedural and object-oriented programming through development of games, simulations, and animations using Flash/Actionscript, VB/Excel, Java, MATLAB, and real-world applications. Activities are oriented toward smaller projects that address topics in beginning science, engineering, and mathematics courses. Students gain practical, applicable skills.

ATLS 2000 (3) The Meaning of Information Technology
Surveys the history of information technologies and modern techniques of information production, storage, transmission, and retrieval. Emphasizes understanding not only the technological transformations in interpersonal, organizational, and mass communication, but also the technological, social and political changes that underlie the movement toward a digital society.
Equivalent - Duplicate Degree Credit Not Granted: HUEN 2020
Requisites: Restricted to Technology, Arts and Media (TMEN) majors or (MTAM-MIN) minors or ATLAS (PATL) student group.

ATLS 2001 (3) Design Technologies: Toolkit
Introduces students to the fundamentals of creative design through digital media production. Throughout the semester, students explore a number of disciplines related to digital media including imaging, web development, animation, video production, and more. Class sessions are in lecture format and are aimed at helping students attain a strong conceptual and technical understanding of creative design.
Requisites: Requires prerequisite or corequisite course of ATLS 2000 (minimum grade C). Restricted to PATL students.
Grading Basis: Letter Grade

ATLS 2002 (3) Design Technologies: Process
Introduces foundational principles, practices and methods relating to the process of creative design. Emphasis on the pre-production process as a creative problem-solving tool in order to produce innovative and interesting creative work. Through lectures, discussion and creative projects, students will gain a familiarity with diverse applications and practices related to creative technology and design

ATLS 2036 (3) Introduction to Media Studies in the Humanities
Serves as an introduction to media studies specifically from a humanities perspective. Studies both histories and theories of media from the 20th and 21st centuries. Touches on methodologies for undertaking media studies (including distant ready and media archaeology). Objects of study may include such topics as film, radio, social media platforms and games, as well as digital art and literature.
Equivalent - Duplicate Degree Credit Not Granted: ENGL 2036
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors, or the ATLAS (PATL) student group only.
Additional Information: Arts Sci Gen Ed: Distribution-Arts Humanities

ATLS 2100 (3) Image
Introduces techniques, technologies and concepts of digital image making and manipulation through lectures, projects and critiques. Focuses on digital photography, digital animation and digital video as a means to formal and expressive ends. This course also contextualizes practices and methodologies of digital imaging with historical and critical perspectives.
Requisites: Requires prerequisite course of ATLS 2000 or HUEN 2020 (minimum grade C). Restricted to TMEN and MTAM majors/minors only.
Grading Basis: Letter Grade

ATLS 2200 (3) Web
Introduces techniques, technologies and concepts of web design and development through lectures, projects and critiques. Focuses technically on HTML, CSS and JavaScript as the primary web technologies. Contextualizes the technical and societal implications of the Internet through historical and critical perspectives.
Requisites: Requires prerequisite course of ATLS 2000 or HUEN 2020 (minimum grade C). Restricted to TMEN and MTAM majors/minors only.
Grading Basis: Letter Grade

ATLS 2300 (3) Text
Introduces technologies, terminology and histories related to the design of text within digital and analogue media. Students will learn the fundamentals of design, typography and layout through lectures, projects and critiques. The curriculum surveys significant theoretical perspectives, historical periods and significant practitioners that influence the practice of typographic design.
Requisites: Requires prerequisite course of ATLS 2000 or HUEN 2020 (minimum grade C). Restricted to TMEN and MTAM majors/minors only.
Grading Basis: Letter Grade
ATLS 2519 (1-4) Special Topics in Technology, Arts and Media
Recommends special interest areas of multidisciplinary technology, arts and media research and practice.
Repeatable: Repealtable for up to 12.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors, or the ATLAS (PATL) student group only.
Grading Basis: Letter Grade

ATLS 3100 (3) Form
Teaches the fundamentals of 3D modeling, 3D animation and 3D printing / rapid prototyping from a conceptual and sculptural perspective. Through topical lectures, technical demonstrations and creative projects the course will introduce students to the potentials of thinking and working within 3-dimensional spaces.
Requisites: Requires prerequisite course of ATLS 2000 (minimum grade C). Restricted to Technology, Arts and Media (TMEN) majors only.
Grading Basis: Letter Grade

ATLS 3110 (3) Motion
An animation-based projects course that advances student understanding of motion design in today's culture. Through active production and critical analysis, students will create new media projects and critically examine the history, social implications, and impacts of these forms of mass media.
Requisites: Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors, or the ATLAS (PATL) student group only.
Recommended: Prerequisite ATLS 2100.

ATLS 3112 (1-3) Digital and Social Systems Professional Development
Supports students in developing professional skills and practices in human computer interaction, design of interactive systems, computer supported cooperative work, computer supported collaborative learning, educational technology, tools that support creativity, user-developed knowledge collections and gaming.
Equivalent - Duplicate Degree Credit Not Granted: CSCI 3112
Repeatable: Repeatable for up to 10.00 total credit hours.

ATLS 3173 (3) Creative Climate Communication
We generate multimodal compositions on the subject of climate change and engage with various dimensions of issues associated with sustainability. We work to deepen our understanding of how issues associated with climate change are or can be communicated, by analyzing previously created expressions from a variety of media (interactive theatre, film, fine art, television programming, blogs, performance art, for example) and then be creating our own work.
Equivalent - Duplicate Degree Credit Not Granted: ENVS 3173 and THTR 4173
Recommended: Prerequisite ENVS 1000.
Additional Information: Arts Sci Gen Ed: Distribution-Arts Humanities
Arts Sci Gen Ed: Distribution-Social Sciences

ATLS 3200 (3) Sound
Introduces techniques, technologies and concepts of digital sound through lectures, projects and critiques. Focuses technically on digital sound creation, production, synthesis and interactivity. Explores various approaches to digital sound production through historical and conceptual perspectives.
Requisites: Requires prerequisite course of ATLS 2000 (minimum grade C). Restricted to Technology, Arts and Media (TMEN) majors only.
Recommended: Prerequisite CSCI 1300.
Grading Basis: Letter Grade

ATLS 3300 (3) Object: Introduction to Physical Computing
Introduces the fundamentals of physical computing. This class is an exploration of computing that starts from the perspective that humans are fundamentally physical beings. Students will design projects that interact with humans and the physical world and will learn to integrate sensors, motors, and simple electronics into creative projects. Projects will include interactive installations, art projects, games, and audio controllers.
Requisites: Requires prerequisite of ATLS 3000 or CSCI 1300 or CSCI 1320 (all minimum grade C-). Restricted to TMEN students only.
Grading Basis: Letter Grade

ATLS 3500 (1-3) Client Projects in Technology, Arts and Media
Allows undergraduate students to work on collaborative projects with faculty and with external organizations under faculty supervision. Focuses on teamwork, conceptual planning, technical design and development and working within real-world client environments. Critical skills include project research, planning, design, development, trouble-shooting and presentation.
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Requires prerequisite course of ATLS 2000 (minimum grade C).
Recommended: Prerequisite ATLS 3020.

ATLS 3519 (1-3) Special Topics in Technology, Arts, and Media
Analyzes special interest areas of multidisciplinary technology, arts and media research and practice.
Repeatable: Repeatable for up to 21.00 total credit hours. Allows multiple enrollment in term.
Requisites: Requires prerequisite course of ATLS 2000 (minimum grade C). Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors, or the ATLAS (PATL) student group only.

ATLS 3529 (1-3) Special Topics in Critical Perspectives in Technology
Analyzes critical perspectives in technology, art, and media. Within these courses, students will develop vocabularies, theoretical perspectives and critical approaches relevant to technology and its effects on culture and society.
Repeatable: Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
Requisites: Requires prerequisite course of ATLS 2000 (minimum grade C). Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors, or the ATLAS (PATL) student group only.
Grading Basis: Letter Grade

ATLS 4010 (4) Capstone Projects I
The focus of this advanced practicum course is the development of an individual thesis project. Specific class sessions will feature a combination of lectures, demonstrations, guest speakers, lab sessions, and critiques. This course also entails group work, portfolio development, critical theoretical readings, and a significant written component.
Requisites: Requires prerequisite courses of ATLS 3100 and ATLS 3200 (all minimum grade C). Restricted to Technology, Arts and Media (TMEN) majors only.
ATLS 4040 (3) Game Design
Introduces students to game design, development, history, theory and culture through readings, discussion, game analysis and the iterative design process of non-digital games.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5040
Requisites: Requires prerequisite course of ATLS 2000 (minimum grade C). Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors, or the ATLAS (PATL) student group only.
ATLS 4120 (3) Mobile Application Development
Provides a comprehensive overview of developing mobile applications using a range of technologies including software developers’ kits, object-oriented programming and human interface design principles. Students incorporate leading edge technologies with their own academic pursuits and personal interests to develop mobile applications. Explores the social and cultural effects of app and mobile-based computing.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5120
Requisites: Requires prerequisite course of ATLS 3000 or ATLS 1300 or CSCI 1300 or CSCI 1320 (minimum grade C). Restricted to Technology, Arts and Media (TMEN) majors, MTAM minors or the ATLAS (PATL) student group only.
Grading Basis: Letter Grade

ATLS 4130 (3) Typography
This course is an advanced investigation of typography for visual communication and expression. Emphasis is placed on the analysis of meaning as conveyed through materials, technology, and design. Projects are experimental and are designed to challenge you to expand your understanding of the function of typography in communication, design, art, and culture.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5130
Requisites: Requires prerequisites ATLS 2200 and ATLS 2300 (both minimum grade C). Restricted to TMEN and MTAM students.

ATLS 4140 (3) Game Development
Builds on concepts and processes learned in ATLS 4040/5040. Reinforces game design principles through analysis and discussion of digital games, and introduces students to key practices in the development of digital game experiences, including game flow, mechanics, 2D and 3D graphics, and artificial intelligence.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5140
Requisites: Requires prerequisite ATLS 4040 (minimum grade C). Restricted to MTAM or TMEN students.

ATLS 4151 (3) Flow Visualization
Explores techniques for the visualization of the physics of fluid flows including seeding with dyes, particles and bubbles, and lightpath and schlieren. Reviews optics and fluid physics, especially atmospheric optics. Assignments are student-driven, to individuals and mixed teams of graduates, undergraduates, engineering majors and photography/video majors.
Equivalent - Duplicate Degree Credit Not Granted: ARTF 5200, MCEN 4151, MCEN 5151, CINE 4200 and ATLS 5151
Requisites: Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors, or the ATLAS (PATL) student group only.
Additional Information: Arts Sci Gen Ed: Distribution-Arts Humanities

ATLS 4214 (3) Big Data Architecture
Provides students with a comprehensive survey of technologies used today in the collection, storage, processing, analytics and display of big data. Focuses on cultivating real world skills with students working on semester long projects to execute on a group project.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5214
Requisites: Requires prerequisite course of CSCI 2270 (minimum grade D-). Restricted to TMEN, MTAM, CSEN, CSCI, and ATLAS (PATL) student group only.
Grading Basis: Letter Grade

ATLS 4230 (3) Case Studies in Information and Communication Technology for Development
Serves as foundation course for MS-ICTD program. Students will evaluate case studies across a range of technologies and applications. Students will learn how to match available technologies to human and environmental needs and resources, be introduced to the seminal work and leaders in the field, and discuss the future of ICTD as an emerging area of academic focus.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5230

ATLS 4320 (3) Mobile Application Development: Advanced Topics
Explores advanced topics in mobile application design and development, including examining different approaches to information design and the various user interaction models associated with them. Understanding how data is structured, accessed, stored and flows through apps is a core theme of the course. Explores the interaction with external data sources and storage models.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5320
Requisites: Requires a prerequisite course of ATLS 4120 (minimum grade D-). Restricted to College of Engineering (ENGRU) undergraduates only.
Grading Basis: Letter Grade

ATLS 4519 (1-4) Advanced Special Topics in Technology, Arts, and Media
Analyzes special interest areas of multidisciplinary technology, arts and media research and practice.
Repeatable: Repeatable for up to 32.00 total credit hours. Allows multiple enrollment in term.
Requisites: Requires prerequisite course of ATLS 2000 (minimum grade C). Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors, or the ATLAS (PATL) student group only.

ATLS 4529 (1-3) Advanced Special Topics: Critical Perspectives in Technology
Analyzes critical perspectives in technology, art and media. Within these courses, students will develop vocabularies, theoretical perspectives and critical approaches relevant to technology and its effects on culture and society.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5529
Repeatable: Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
Requisites: Requires prerequisite course of ATLS 2000 (minimum grade C). Restricted to Technology, Arts and Media (TMEN) majors and (MTAM) minors, or the ATLAS (PATL) student group only.
Grading Basis: Letter Grade

ATLS 4606 (3) Mastery in Information Science: Critical Technical Practice
Surveys design theory and methods that can be used to question relationships between technology, culture, and the environment. Students will discuss readings and synthesize those readings through design exercises. The course will equip students with resources for thinking more critically and creatively about design and possible future human-technology relationships.
Equivalent - Duplicate Degree Credit Not Granted: INFO 5606, INFO 4606, and ATLS 5606
Grading Basis: Letter Grade
ATLS 4630 (3) Web Front-End Development
Explores interactivity on the web using front-end web development concepts and technologies. Students will work with a range of technologies including JavaScript, jQuery, HTML5, APIs and user interface design methods to create interactive web applications. Individual and group projects will include animations, games, interactive narratives and web applications.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5630
Requisites: Requires prerequisite courses of ATLS 2200 and ATLS 3000 or CSCI 1300 or CSCI 1320 (all minimum grade C).

ATLS 4809 (3) Computer Animation
Develops a firm understanding of the general principles of computer animation. Lectures cover the creation of models, materials, textures, surfaces, and lighting. Path and key frame animation, particle dynamics, and rendering are introduced. Students are assigned a number of animation tutorials to carry out.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 5809 and CSCI 4809 and CSCI 5809
Requisites: Restricted to Technology, Arts and Media (TMEN) majors, MTAM minors, or the ATLAS (PATL) student group only.

ATLS 4889 (3) Interactive Machine Learning for Customizable and Expressive Interfaces
Introduces students to techniques for applying machine learning in the development of customizable human-computer interfaces. Students learn to process a wide variety of input data (e.g. video and accelerometer streams) using different machine learning algorithms to detect semantically meaningful events that can afford the construction of new interactive systems. Students complete substantial projections within the domains of assistive or creative technologies. Does not fulfill Breadth Requirement for CSEN graduate students.
Equivalent - Duplicate Degree Credit Not Granted: CSCI 5880, CSCI 4889 and ATLS 5880
Requisites: Requires prerequisites of (APPM 3570 or APPM 4570 or CHEN 3010 or CSCI 3022 or CVEN 3227 or ECEN 3810 or ECON 3818 or MATH 3510 or MATH 4510 or MCEN 4120 or STAT 4520) and (CSCI 3002 or CSCI 3202 or CSCI 4448) (all minimum grade C).
Grading Basis: Letter Grade

ATLS 4900 (1-3) Undergraduate Independent Study
Provides opportunities for independent study at the upper-division undergraduate level. Students work on research or a creative project guided by faculty. Department consent required.
Repeatable: Repeatable for up to 6.00 total credit hours. Allows multiple enrollment in term.
Requisites: Requires prerequisite courses of ATLS 3010 and 3020 (all minimum grade D-).

ATLS 5040 (3) Game Design
Introduces students to game design, development, history, theory and culture through readings, discussion, game analysis and the iterative design process of non-digital games.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4040
Requisites: Requires prerequisite course of ATLS 2000 (minimum grade C). Restricted to the ATLAS (PATL) student group only.

ATLS 5120 (3) Mobile Application Development
Provides a comprehensive overview of developing mobile applications using a range of technologies including software developers’ kits, object-oriented programming and human interface design principles. Students incorporate leading edge technologies with their own academic pursuits and personal interests to develop mobile applications. Explores the social and cultural effects of app and mobile-based computing.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4120
Grading Basis: Letter Grade

ATLS 5130 (3) Typography
This course is an advanced investigation of typography for visual communication and expression. Emphasis is placed on the analysis of meaning as conveyed through materials, technology, and design. Projects are experimental and are designed to challenge you to expand your understanding of the function of typography in communication, design, art, and culture.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4130
Requisites: Restricted to graduate students only.

ATLS 5140 (3) Game Development
Builds on concepts and processes learned in ATLS 4040/5040. Reinforces game design principles through analysis and discussion of digital games, and introduces students to key practices in the development of digital game experiences, including game flow, mechanics, 2D and 3D graphics, and artificial intelligence.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4140

ATLS 5150 (1) Managing Effectively in a Changing Telecommunications Environment
Provides students with an opportunity to join international managers and policy makers from around the world in an intensive seminar focused on the challenges of managing in a telecommunications environment in an era of technological change. Guest lecturers provide an effective overview of the cutting-edge issues managers face in telecom and technology companies around the world.
Equivalent - Duplicate Degree Credit Not Granted: TLEN 5150
Requisites: Restricted to CYBR/TLEN graduate students.

ATLS 5151 (3) Flow Visualization
Explores techniques for the visualization of the physics of fluid flows including seeding with dyes, particles and bubbles, and shadowgraphy and schlieren. Reviews optics and fluid physics, especially atmospheric clouds. Assignments are student-driven, to individuals and mixed teams of graduates, undergraduates, engineering majors and photography/video majors.
Equivalent - Duplicate Degree Credit Not Granted: CINE 4200, MCEN 4151, MCEN 5151, ATLS 4151 and ARTF 5200

ATLS 5210 (3) Global Development I
Introduces students to the theories and policy of international development. Examines the role of multilateral agencies, foundations, aid organizations, corporate entities and academia in development as both an industry and a research field. Focuses on development movements and their outcomes, the inter-related nature of development and its effect on policies and programs, and critiques.
Requisites: Restricted to graduate students only.
ATLS 5214 (3) Big Data Architecture
Provides students with a comprehensive survey of technologies used today in the collection, storage, processing, analytics and display of big data. Focuses on cultivating real world skills with students working on semester long projects to execute on a group project.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4214
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

ATLS 5220 (3) Global Development II
Explores the impact of economic, geographical and social/cultural conditions on development outcomes through standalone course components taught by subject matter experts in region and in residency at ATLAS. Components may include, but are not limited to, development economics, environmental sustainability, public health, climate change, globalization and migration, religion, and gender as these broad themes relate to development.
Requisites: Requires prerequisite courses of ATLS 5210 (minimum grade D-). Restricted to graduate students only.

ATLS 5230 (3) Case Studies in Information and Communication Technology for Development
Serves as foundation course for MS-ICTD program. Students will evaluate case studies across a range of technologies and applications. Students will learn how to match available technologies to human and environmental needs and resources, be introduced to the seminal work and leaders in the field, and discuss the future of ICTD as an emerging area of academic focus.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4230
Requisites: Restricted to graduate students only.

ATLS 5240 (3) Information and Communication Technology for Development Laboratory
Prepares students for the semester-long practicum. Students will work in teams to design ICTD interventions that address unique socio-economic and environmental development issues. Teams will design a variety of ICTD interventions, including telehealth and distance education programs, communication networks, and pro-development ICTD policies. Topics will be chosen by teams and guided by program faculty and external domain experts.
Requisites: Requires prerequisite courses of ATLS 5230 (minimum grade D-). Restricted to graduate students only.

ATLS 5250 (3) Fieldwork Methods for ICTD Practitioners
Introduces methods and models that can be employed in ICTD program development and deployment. Examines the applications of participatory research, value-centric design, program scale, cross-disciplinary work, and appropriate monitoring and evaluation. The goal is to build student confidence around existing evaluation toolkits and methods, while advancing multi-method approaches to designing and analyzing ICTD initiatives.
Requisites: Restricted to graduate students only.

ATLS 5320 (3) Mobile Application Development: Advanced Topics
Explores advanced topics in mobile application design and development, including examining different approaches to information design and the various user interaction models associated with them. Understanding how data is structured, accessed, stored and flows through apps is a core theme of the course. Explores the interaction with external data sources and storage models.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4320
Requisites: Requires prerequisite course of ATLS 5120 (minimum grade C).
Grading Basis: Letter Grade

ATLS 5380 (3) Future of Video: Technology, Policy, and Economics
Examines the issues that have been created by the shift from analog to digital technologies, the shift from narrowband/wideband systems to broadband systems, and the shift to converged networks (i.e. networks able to convey voice, data, image and video traffic on a common platform) based upon packet switching and Internet Protocol (IP) suite.
Equivalent - Duplicate Degree Credit Not Granted: CYBR 5480
Requisites: Requires prerequisite of CYBR 5001 (minimum grade C). Restricted to CYBR graduate students.

ATLS 5402 (3) Research Methods in Human-Robot Interaction
Introduces students to the field of human-robot interaction (HRI). Covers HRI theory, principles, methodologies, and applications with links to robotics, artificial intelligence, human factors, human-computer interaction, design, cognitive psychology, education and other domains. Coursework includes readings from state-of-the-art in HRI research, team exercises and problem-solving sessions, and implementation and evaluation of a human-robot interaction systems for specific applications.
Equivalent - Duplicate Degree Credit Not Granted: CSCI 5402
Requisites: Restricted to graduate students only.

ATLS 5420 (3) Professional Seminar: Business of Creativity
This course was designed specifically to prepare students to make the most of their time in the CTD Master's Program, and to prepare them for a career within the creative technology and design professional landscape. The course helps students identify career goals and mentors, and helps them position themselves for industry through course-selection, portfolio development, and projects. There is also a survey element to the course which exposes students to creative technology professionals who discuss their career paths, offer advice, and provide insight into their individual design process.
Grading Basis: Letter Grade

ATLS 5519 (1-3) Advanced Special Topics in Technology, Arts, and Media
Analyzes special interest areas of multidisciplinary technology, arts and media research and practice.
Repeatable: Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to graduate students only.

ATLS 5529 (1-3) Advanced Special Topics: Critical Perspectives in Technology
Analyzes critical perspectives in technology, art and media. Within these courses, students will develop vocabularies, theoretical perspectives and critical approaches relevant to technology and its effects on culture and society.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4529
Repeatable: Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

ATLS 5606 (3) Mastery in Information Science: Critical Technical Practice
Surveys design theory and methods that can be used to question relationships between technology, culture, and the environment. Students will discuss readings and synthesize those readings through design exercises. The course will equip students with resources for thinking more critically and creatively about design and possible future human-technology relationships.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4606, INFO 4606 and INFO 5606
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade
ATLS 5610 (6) Startup Practicum
Presumes that entrepreneurship can be learned through the conception, build, and launch of an original product or service by student teams within a single semester. Immerses students in the daily leadership and innovation challenges of the startup environment and serves as a clinic in thinking, decision making and mental agility that will benefit any area of business—not just startups.

Requisites: Restricted to graduate students only.

ATLS 5620 (3) User Centered Design 1
Emphasizes that user-centered design is the first and primary consideration in the design process. UCD teaches how to design successful interactions from research into users’ behaviors, attitudes and expectations via three key elements to designing successful user experiences: 1) Listen, Observe, and Research; 2) Concept and Design for Your Users; 3) Deliver/Launch.

Requisites: Restricted to graduate students only.

ATLS 5630 (3) Web Front-End Development
Explores interactivity on the web using front-end web development concepts and technologies. Students will work with a range of technologies including JavaScript, jQuery, HTML5, APIs and user interface design methods to create interactive web applications. Individual and group projects will include animations, games, interactive narratives and web applications.

Equivalent - Duplicate Degree Credit Not Granted: ATLS 4630
Requisites: Restricted to graduate students only.

ATLS 5640 (4) Design Thinking
Explores design thinking and how it can be applied conceptually and practically to innovation in areas as diverse as business organization and product development to topics and areas including but not limited to, story, design, UX, interaction design, communication strategy and presentation. Fast-paced, project-based, and immersive, students will work in small teams to discover solutions to real-world problems.

Requisites: Restricted to graduate students only.

ATLS 5650 (3) Introduction to Programming
Provides a hands-on introduction to programming logic, environments, and execution using Ruby as the primary programming language. Covers basic programming principle, syntax, design patterns, and best industry practices while focusing on developing elegant, problem-solving skills through code.

Requisites: Restricted to graduate students only.

ATLS 5660 (3) Creative Code
Exposes students to front-end, web-based design and development processes and best practices. WordPress will be used as the back end CMS. Students will learn how to design and develop using WordPress as a framework. At the end of the semester, students will present a final project to illustrate what they have learned and the logic of their build.

Requisites: Restricted to graduate students only.

Recommended: Prerequisites: exposure to HTML, CSS, JavaScript, PHP and MySQL and previous experience with WordPress for blogging and/or content publication.

ATLS 5670 (3) Content Strategies
Experiments with different frameworks on how to combine messaging with creative to communicate complex ideas, brand story, product, and finally measure success. Gain experience and expertise with the various content types and channels, with an understanding of how to apply them and the capabilities to do so in solving creative and business problems.

Requisites: Restricted to graduate students only.

ATLS 5680 (3) Creative Tech Studio
Emphasizes fundamentally, theoretically, and practically that technology and creativity are not opposing disciplines but rather a dynamic and complementary blending of idea and execution that is iterative and evolving through the dynamic exchange and interaction of ideas and tools. Each Studio will offer a different conceptual challenge, such as using technology to bridge physical and digital environments, game design, or storytelling.

Repeatable: Repeatable for up to 12.00 total credit hours.

Grading Basis: Letter Grade

ATLS 5720 (3) User-Centered Design 2
Expands on techniques and opportunities presented in User-Centered Design 1 with a deeper dive into research and prototyping practices as means to insight into user desires and preference, adoption, and execution of product and branded experiences in a variety of contexts and locations within the global experience economy.

ATLS 5730 (3) Front-End Development 2
Requires that students are proficient in front-end environment and ready for advanced front-end development using these tools - HTML 5, CSS3, JS - on weekly projects, a mid-term project, and a final project. This course develops more robust and elegant uses of the semantic use of elements as well as the benefits of using standards-based, valid code, CSS efficiencies, and JS and its libraries.

ATLS 5740 (3) Design Thinking 2
Presents visual thinking as a complex process that can be supported in every stage using specific design techniques. Provides practical, task-oriented information for designers and software developers charged with design responsibilities, including examples of integrated text and full-color data stories, all of which are robust in principles of “active vision,” viewing graphic designs as cognitive tools.

ATLS 5809 (3) Computer Animation
Develops a firm understanding of the general principles of computer animation. Lectures cover the creation of models, materials, textures, surfaces, and lighting. Path and key frame animation, particle dynamics, and rendering are introduced. Students are assigned a number of animation tutorials to carry out.

Equivalent - Duplicate Degree Credit Not Granted: ATLS 4809 and CSCI 4809 and CSCI 5809
Requisites: Restricted to graduate students only.

ATLS 5880 (3) Interactive Machine Learning for Customizable and Expressive Interfaces
Introduces students to techniques for applying machine learning in the development of customizable human-computer interfaces. Students will learn to process a wide variety of input data (e.g. video and accelerometer streams), using different machine learning algorithms to detect semantically meaningful events that can afford the construction of new interactive systems. They will complete substantial projections within the domains of assistive or creative technologies. Does not fulfill Breadth Requirement for CSEN graduate students.

Equivalent - Duplicate Degree Credit Not Granted: ATLS 4889, CSCI 4889 and CSCI 5880
Requisites: Requires prereqs (CSCI 3022 or APPM 4570 or APPM 3570 or APPM 4520 or CVEN 3227 or MATH 3510 or MATH 4510 or ECEN 3810 or ECON 3818 or MCEN 4120) (CSCI 3002 or CSCI 3202 or CSCI 4448) all min grade C-. Restricted to grad students in the ATLAS program.

Grading Basis: Letter Grade
ATLS 5900 (1-6) Masters Level Independent Study
Provides opportunities for independent study and research at the Masters level. Students work on research project guided by faculty.
**Repeatable:** Repeatable for up to 6.00 total credit hours. Allows multiple enrollment in term.
**Requisites:** Restricted to graduate students only.

ATLS 6519 (1-3) Advanced Special Topics in Technology, Arts, and Media
Analyzes special interest areas of multidisciplinary technology, arts and media research and practice.
**Repeatable:** Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
**Requisites:** Restricted to graduate students only.

ATLS 6910 (3-6) Information and Communication Technology for Development Practicum
This practicum allows MS-ICTD students to synthesize what they have learned and test their readiness for a career in ICTD. Practicum assignments are arranged under the supervision of the MS-ICTD Program Director and involve work with a non-governmental organization, development agency or technology/policy entity. Successful completion is required for graduation from the MS-ICTD Program.
**Requisites:** Requires prerequisite courses of ATLS 5210 and ATLS 5220 and ATLS 5230 and ATLS 5240 and ATLS 5250 (all minimum grade D-).

ATLS 7000 (1) ATLAS Seminar
This student/faculty seminar critically examines issues in technology, media and society from the multiple interdisciplinary perspective of the gathered participants. Topics may include: IT and business, security, ethics, globalization, digital divide, IT and education, human computer interaction and others. Department consent required.
**Repeatable:** Repeatable for up to 8.00 total credit hours.
**Requisites:** Restricted to graduate students only.

ATLS 7800 (2) Online Course Design for the Foreign Languages
Learn about the challenges and affordances of designing online foreign languages courses. Read research articles and book chapters pertaining to instructional design issues and online teaching strategies. Experiment with the latest forms of educational technologies. Students enrolled in the course will design and teach a two-week online language course. Department enforced prerequisite: two years of language teaching experience at the college level.
**Grading Basis:** Pass/Fail

ATLS 7900 (1-6) Doctoral Level Independent Study
Provides opportunities for independent study and research at the Doctoral level. Students perform independent research under faculty supervision.
**Repeatable:** Repeatable for up to 6.00 total credit hours. Allows multiple enrollment in term.
**Requisites:** Restricted to Atlas (ATLS) graduate students only.

ATLS 8990 (1-10) Doctoral Dissertation
Approved research conducted under the supervision of members of the graduate faculty. Investigates some specialized topic or field in the area of interdisciplinary information and communication technology. All doctoral students must register for at least 30 hours of dissertation credit as part of the requirement for the ATLAS doctoral degree.
**Repeatable:** Repeatable for up to 30.00 total credit hours.
**Requisites:** Restricted to Atlas (ATLS) graduate students only.