CREATIVE TECHNOLOGY AND DESIGN

The ATLAS Institute's Creative Technology and Design (CTD) graduate programs prepare students to be multidisciplinary leaders versed in real-world design challenges and technical know-how. Degrees are granted by the College of Engineering and Applied Science.

The program is built for versatility: students pursue their passion in UX/UI, product development, interactive media, game design, sustainability, performing arts technology, social impact—or anywhere engineering and creativity converge.

ATLAS is home to students who transcend traditional disciplinary structures of engineering, design, science and art to inspire new realms of invention. They collaborate on complex design problems. They lead teams. They conceive, prototype, refine and deploy useful solutions to thorny problems. They do work that matters.

Each ATLAS lab serves as a hub for leading research in textiles, human-computer interaction, biomaterials, nanotech, data, fabrication, music, language, art, performance and more. Together they comprise a larger force for unconventional lines of inquiry, radical creative expression and spontaneous collaboration toward achieving meaningful impact.

Graduates of the professional MS program go on to fulfilling work in design shops, NGOs, Fortune 500 companies, and arts organizations—or start their own businesses. PhD alumni continue to pursue academic careers or seek research roles in industry or government.

Interested in joining our vibrant community? Visit the ATLAS Institute's Graduate Programs webpages (https://www.colorado.edu/atlas/academics/) to learn more.

Course code for this program is ATLS.

Master's Degree

- Creative Technology and Design - Professional Master of Science (MS) (https://catalog.colorado.edu/graduate/colleges-schools/engineering-applied-science/programs-study/creative-technology-design/creative-technology-design-master-science-ms/)

Doctoral Degree

- Creative Technology and Design - Doctor of Philosophy (PhD) (https://catalog.colorado.edu/graduate/colleges-schools/engineering-applied-science/programs-study/creative-technology-design/creative-technology-design-doctor-philosophy-phd/)

Faculty

While many faculty teach both undergraduate and graduate students, some instruct students at the undergraduate level only. For more information, contact the faculty member's home department.

Alistar, Mirela (https://experts.colorado.edu/display/fisid_164177/)
Assistant Professor; PhD, Technical University of Denmark

Bruns, Carson J. (https://experts.colorado.edu/display/fisid_159851/)
Assistant Professor; PhD, Northwestern University

Chopra, Aidan
Lecturer; MArch, Rice University

Cohen, Ruscha (https://experts.colorado.edu/display/fisid_149781/)
Scholar in Residence, Director; MS, University of Colorado Denver

Devendorf, Laura (https://experts.colorado.edu/display/fisid_158564/)
Assistant Professor; PhD, University of California, Berkeley

Do, Ellen Yi-Luen (https://experts.colorado.edu/display/fisid_159925/)
Professor; PhD, Georgia Institute of Technology

Gross, Mark D. (https://experts.colorado.edu/display/fisid_100095/)
Professor, Institute Director; PhD, Massachusetts Institute of Technology

Johnson, Gabriel
Lecturer; PhD, Carnegie Mellon University

Leslie, Grace (https://experts.colorado.edu/display/fisid_172297/)
Assistant Professor; PhD, University of California San Diego

Margaret, Annie (https://experts.colorado.edu/display/fisid_159961/)
Associate Teaching Professor; PhD, Northwestern University

Pinter, Anthony (https://experts.colorado.edu/display/fisid_171867/)
Assistant Teaching Professor; Ph.D., University of Colorado Boulder

Rankin, Daniel (https://experts.colorado.edu/display/fisid_156453/)
Associate Teaching Professor, Associate Director; MS, University of Colorado Boulder

Rezvani, Sheiva
Associate Teaching Professor, Faculty Director; MA, New York University

Rivera, Michael (https://experts.colorado.edu/display/fisid_169859/)
Assistant Professor; PhD, Carnegie Mellon University

Schaal, David A. (https://experts.colorado.edu/display/fisid_114824/)
Associate Teaching Professor; MFA, University of Colorado Boulder

Suzuki, Ryo (https://experts.colorado.edu/display/fisid_167629/)
Assistant Professor; PhD, University of Colorado Boulder

Swanson, Joel E. (https://experts.colorado.edu/display/fisid_134311/)
Assistant Professor; MFA, University of California, San Diego

Weaver, Zachary (https://experts.colorado.edu/display/fisid_166757/)
Assistant Teaching Professor; MArch, Carnegie Mellon University

Zamore, Shaz (https://experts.colorado.edu/display/fisid_166083/)
Assistant Teaching Professor; PhD, University of Washington

Courses

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: Restricted to students in the Atlas student group (PATL) only.

ATLS 5050 (3) Alt Arcade Interfaces
In this project-based studio course, students will move beyond conventional button and joystick interfaces into the design of bespoke interfaces for game control, with an emphasis on games designed for public exhibition. Students will, both individually and in groups, design and develop multiple games, and build custom control interfaces for them.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4050
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5060 (3) Tiny Games
Guides students into fluency across a suite of technical tools (Bitsy, PuzzleScript, Pico-8, and others) to construct tiny games: short games with tight technical constraints, created in relatively brief amounts of time, and built around singular ideas.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4060
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5112 (3) Neurohacking
Explores psychotechnologies for developing high level metacognition and individual sovereignty. We investigate the optimization of conscious human experience, mindfulness, and creativity through the lenses of neuroscience, cognitive science, evolutionary psychology, and philosophy. Students will learn to critique primary literature, experimental design, and be guided in developing a set of practices to enhance cognition and achieve various desired mental states.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4112
Requisites: Restricted to Atlas (ATLS) graduate students 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) Experimental 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 5131 (3) Computational Typography
Introduces students to the technical and creative techniques of computational typography. Students will learn to create and manipulate typographic forms using code and other digital applications. Explores the history of typography and its relationship to parametric and systems-based design. The course is oriented towards producing creative works that explore computational typography.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4131
Requisites: Restricted to graduate students only.
Recommended: Prerequisite Prior experience with programming.

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; students create visuals individually and with mixed teams of graduates, undergraduates, engineering majors and photography/video majors.
Equivalent - Duplicate Degree Credit Not Granted: MCEN 4151, ATLS 4151, MCEN 5151, CVEN 4153, and CVEN 5153

ATLS 5201 (3) Biodesign
This class covers basic design techniques, together with essential wetlab skills. Students will learn how to culture and work with various types of organisms, such as bacteria, algae (dynoflagellates, cyanobacteria) and fungus. These organisms will become the living media or processed biomaterials that the students will design with. This is a lab-based class.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4201
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5202 (3) Computational Fabrication
This course will explore techniques, representations, and workflows for computational fabrication. Digital fabrication machines like 3D printers and laser-cutters bring complicated designs into physical form, and computer programming helps overcome design challenges that are difficult or nearly impossible. Blending these two tools, students will use computational fabrication techniques to design and build functional, creative objects leveraging existing computer-aided design (CAD) tools, programming languages and digital fabrication machinery.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4202 and CSCI 4012
Requisites: Restricted to graduate students only.

ATLS 5203 (3) Light and Perception
Traces human and camera vision in close detail. Students explore visual perception between two and three dimensions by exploring advanced experiments in designing light. Starting with different analog illustration exercises, students explore how light informs the perception of three dimensional space and objects. Students then explore techniques to play with visual perception, using advanced technologies like Augmented and Virtual Reality, Interactive Sculpture, Digital Games, and Immersive Media.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4203
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5204 (3) Product Development Studio
Develops practical skills for navigating the complexities of preparing a software product for launch and bringing it into the world. Students will explore the role and function of product management and development with a practical, studio-oriented method. Operating from the perspective of a Product Manager, students will engage with and answer questions such as: what is the product, who is it for, how should it work, and how can we get it to market.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4204
Requisites: Restricted to graduate students only.

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 Atlas (ATLS) 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, CSCI 5214, and CSCI 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 5221 (3) Interactive Sound
Interactive Sound explores generative coding to produce unique audio design systems that can be employed in a wide array of interactive projects. Students will learn to use Max (a visual programing tool) to combine and control sound, video, OpenGL 3D objects, and microcontrollers. Example inputs: real time video, data scraping for the sonification of natural phenomena, or environmental sensor data collected via Arduino. Example outputs: reactive audio-visual installations, immersive projection, or multichannel spatial sound systems.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4221
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5230 (3) Case Studies in Social Impact
Serves as foundation course for MS-Social Impact 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 Social Impact as an emerging area of academic focus.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4230
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5240 (3) Technology for Social Impact Laboratory
Prepares students for the semester-long practicum. Students work in teams to design interventions that address unique socio-economic and environmental development issues. Teams will design a variety of interventions, including telehealth and distance education programs, communication networks, and pro-development 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 5244 (3) Empathy and Technology
Explores how the creative integration of empathy and compassion with design and technology can benefit society. Reviews foundational neuroscience and evolution of empathy. Through readings, discussion, and reflection students will develop personal practices for fostering empathy and critically investigate: empathy as a finite resource, tribalism/polarization, the weaponization of empathy, and principles for designing social systems that promote well-being. Previously offered as a special topics course.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4244
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

ATLS 5250 (3) Fieldwork Methods
Introduces methods and models that can be employed in 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 initiatives.
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5279 (3) Aesthetics in Design
Focuses on aesthetic aspects of design via hands-on design-build experiences. Students individually create dynamic artifacts of their own choice with the assistance of teammates. Content includes major design movements since 1900, constructive critique practice, hand sketching techniques and other selected industrial design topics. Students publish their design work on an archival public blog which provides a professional portfolio element.
Equivalent - Duplicate Degree Credit Not Granted: MCEN 5279 and MCEN 4279 and ATLS 4279

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 5330 (3) Wearable Technologies
Introduces elements of embedding electronic and computational behaviors into clothing and accoutrements such as watches, handbags, and other wearable accessories. In weekly exercises students build, test, and demonstrate canonical wearable projects. Readings and video viewings survey past and current trends in wearable technologies, including materials, components, fashion and social acceptability. Participants design, develop, debug and document a wearable technology term project.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4330
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5340 (3) Experimental Textiles
Introduces students to the design and creation of soft interactive objects using textile techniques with a focus on weaving. Specifically, students are guided through exercises intended to cultivate and embodied a sense of textile structures and the mechanical and aesthetic effects they afford. Then, students learn the state of the art of integrating electronics into these soft/deformable textiles structures. With applications from sports, medicine, fashion, architecture, and soft robotics, smart/interactive textiles require a unique set of understandings and design considerations. Students learn about textile structure development, surface design, material sourcing, and electronics integration through project-based assignments.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4340
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5400 (3) Applied AI Ethics
Explores the ethical dimensions of Artificial Intelligence (AI) and its profound impact on individuals and society. Through case studies, hands-on design sprints, engaging discussions, and independent research, students will examine the complex relationship between rapid AI advancements and human values. Through leveraging frameworks from philosophy, behavioral science, computer science, and art, students will critically analyze emerging AI technologies and develop a nuanced understanding of issues like data bias, AI alignment, and the politics of technological systems.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4400
Requisites: Restricted to graduate students only.

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 5410 (3) Creative Technologies
This course gives students hands-on exposure to a wide range of technologies, including 3D printing, laser cutting, microcontrollers, sensors and programming. Through rapid prototyping and problem solving, students gain technical fluency and competence while identifying technology skills they wish to develop further.
Requisites: Restricted to Atlas (ATLS) 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.
Requisites: Restricted to Atlas (ATLS) graduate students only.
Grading Basis: Letter Grade

ATLS 5430 (3) Design Methods
In this course, students will learn to develop sense-making techniques as designers. This includes framing and structuring design research, making representations to generate insights, as well as documenting and communicating processes and outcomes. The class is structured around weekly discussions and activities anchored in real-world design challenges; and it will also offer tutorials on key design skills such as rapid prototyping and visual communication.
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5440 (3) Design Studio
In this course students work with both faculty and industry expert mentors on developing a semester-long group project. In small teams, students learn to develop an interactive experience that combines project design and technical execution. The class is designed to reflect a "real world" interactive design project experience, in which students must present and deliver a large scale completed project for demonstration/exhibition at the end of the semester.
Requisites: Restricted to Atlas (ATLS) graduate students only.

ATLS 5519 (1-3) Adv Topics
Analyzes special interest areas of multidisciplinary creative technologies and design research and practice.
Repeatable: Repeatable for up to 9.0 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to graduate students only.

ATLS 5529 (1-3) Adv Critical Topics
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 9.0 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

ATLS 5606 (3) 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, ATLS 4606 and INFO 4606
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

ATLS 5610 (6) Startup Practicum
Presumes that entrepreneurism 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 5616 (3) Introduction to Mixed Reality
This course introduces the rapidly evolving field of mixed reality (MR), including augmented (AR) and virtual reality (VR). Students gain foundational knowledge and hands-on experience through readings, discussions, and MR application development. Topics include MR frameworks, tangible interaction, sensing, gestural input, spatial collaboration, and AI for MR, with applications in education, healthcare, robotics, and more.
Equivalent - Duplicate Degree Credit Not Granted: CSCI 4616 and ATLS 4616 and CSCI 5616

ATLS 5620 (3) User-Experience Design 1
Through lecture, industry illustrations, and hands-on projects students will learn the end-to-end UX Design process. Through this course students will learn how to craft a professional design portfolio piece, understand contemporary UX design methodologies, and be shown how to innovate when designing at scale.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4620
Requisites: Restricted to Atlas (ATLS) 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
Explores computation as a powerful tool for creative design and expression in a project-based studio environment. Students learn the fundamentals of creative coding, computational thinking, and object-oriented programming. Hands-on topics include generative art and design, interactivity, animation, and visualization. This class is a mix of technical instruction (both inside and outside the classroom), readings, viewings, lectures, workdays, and critiques. This is a projects-based class, but projects will vary.
Requisites: Restricted to Atlas (ATLS) 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 Atlas (ATLS) graduate students only.
Recommended: Prerequsites: exposure to HTML, CSS, JavaScript, PHP and MySQL and previous experience with WordPress for blogging and/or content publication.

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 12.0 total credit hours.
Grading Basis: Letter Grade

ATLS 5720 (3) User-Experience Design 2
Expands on techniques and opportunities presented in User-Experience 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.
Equivalent - Duplicate Degree Credit Not Granted: ATLS 4720
Requisites: Requires prerequisite course of ATLS 5620 (minimum grade C).

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 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 5820 (3) User-Experience Research
User experience research (UX Research) aims to improve the efficiency, effectiveness, and satisfaction of products and services by using qualitative and quantitative research methods to guide the design, development, and refinement of a product. Through lecture, industry examples, readings, and hands-on practice, students learn the foundational UX research skills (observation, interviewing, and survey design) and how to apply these skills to the concepts and methods of UX research, including identifying and understanding user needs, evaluating concepts and designs, and assessing the usability of products and solutions.

ATLS 5840 (3) Advanced User-Experience
This course builds upon prior user-experience curriculum, helping students to develop their advanced user experience design skills and professional development skills through project-based work. The course ends with student producing high-quality in portfolio-level projects(s).
Requisites: Requires prerequisite course of ATLS 5720.

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 6.0 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to graduate students only.

ATLS 6519 (1-3) Advanced Special Topics in Creative Technology and Design
Analyzes special interest areas of multidisciplinary in creative technology and design research and practice.
Repeatable: Repeatable for up to 9.0 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to graduate students only.

ATLS 6900 (1-3) Professional Internship
The objective of this course is for students to receive academic credit for internships with industry partners that have an academic component to them suitable for graduate-level work. Participation in the program will consist of an internship agreement between a student and an industry partner who will employ the student in a role that supports the academic goals of the internship. Instructor participation will include facilitation of mid-term and final assessments of student performance as well as support for any academic-related issues that may arise during the internship period.
Repeatable: Repeatable for up to 3.0 total credit hours.

ATLS 6910 (3-6) Social Impact Practicum
This practicum allows Social Impact MS students to synthesize what they have learned and test their readiness for a career in Social Impact. Practicum assignments are arranged under the supervision of the MS Program Director and involve work with a non-governmental organization, development agency or technology/policy entity. Successful completion is required for graduation from the Social Impact MS 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 6920 (3) Creative Industries Final Project
This course allows MS-CTD students to synthesize what they have learned and test their readiness for a career in the creative technologies and design field. Through this class students work with an academic and/or industry mentor to create a capstone final project emblematic of their focus during their master degree studies. Students learn to propose and scope work, adhere to budget constraints and time schedules, communicate their work, and create a final end deliverable that is presented to the larger ATLAS community. This final project is meant to serve as a culminating portfolio project that helps position students for industry after graduation. Successful completion is required for graduation from the MS-CTD Program.
Requisites: Restricted to Creative Technology Design (ATLS) master's degree students only.

ATLS 7000 (1) ATLAS Colloquium
Each week during the fall and spring semesters, the ATLAS Colloquium features dynamic speakers from academia and industry who work in fields of interest to the creative technology and design community. Whether artists, creatives, scientists, researchers, entrepreneurs or free spirits, these speakers share their interdisciplinary experience and knowledge in an intimate, small-group setting. Topics may include programmable matters, do-it-yourself technologies, new design medium, robotic teleoperations, virtual/augmented/mixed reality, information visualization, games, design computation, creativity and cognition, personal health informatics, addictive fabrication, cyber security, ethics, education, human computer interaction and others. The ATLAS Colloquium promotes rigorous, curiosity-driven investigation in a thriving academic community that is supportive, energetic and playful.
Repeatable: Repeatable for up to 8.0 total credit hours.
Requisites: Restricted to graduate students only.

ATLS 7500 (3) ATLAS Graduate Research Methods
The objective of this course is to provide a primer for key methodological approaches used in the field. Students will investigate a broad set of techniques for conducting theoretical, design, and experimental research. They will explore how to formulate and investigate research questions using these methods. Topics covered will include basic research ethics, research project design, approaches to constructing theory, research through design techniques, and methods for experimental study.
Repeatable: Repeatable for up to 6.0 total credit hours.

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 6.0 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 30.0 total credit hours.
Requisites: Restricted to Atlas (ATLS) graduate students only.