



Modern Human Anatomy Program

UNIVERSITY OF COLORADO **ANSCHUTZ MEDICAL CAMPUS**

Anatomical Imaging and Modeling Track Electives

ANAT 6840, Independent Study (1-4 credits)

ANAT 6910, Teaching Practicum (1-2 credits)

BIOE 5057, Rehabilitation and Assistive Technology (3 credits)

This course provides students with an overview of technologies and their use by and for persons with disabilities. Cross-listed with BIOE 4057. Restriction: Restricted to students with BIOE designation, or with instructor permission.

BIOE 5058, Intro to Design, Disability, and Aging (3 credits)

This course provides an introduction to the topic of disability and aging and the application of bioengineering principles for persons living with functional impairment(s) across the lifespan. Cross-listed with BIOE 4058. Restriction: Restricted to BIOE majors or with instructor permission.

BIOE 5064, Advanced MatLab For Bioengineers And Life Scientists (3 credits)

MatLab programming for graduate bioengineers and life scientists. Topics include MatLab syntax and optimization as well as techniques for working with scalars, time-series, images and multi-dimension datasets. Surface/Curve fitting, modeling, automation and classification will be covered. Cross-listed with BIOE 4064.

BIOE 5065, Introduction to iOS Apps (3 credits)

This course will introduce graduate students to best practices in developing Health centered iOS Apps. Topics will focus on Xcode, Object Oriented Design, Objective-C, Cocoa, Core Data and the iOS emulator. Cross-listed with BIOE 4065.

BSBT 6801, Biomedical Entrepreneurship (3 credits)

This course addresses the essential elements of bioscience and health innovation and entrepreneurship. Prerequisites: An undergraduate degree in science, technology, business, engineering or math.

BSBT 6802, The Regulatory Environment of Life Science Innovation (3 credits)

This course is designed to familiarize graduate-level engineering, business, law and life science students with the fundamentals of the life science technology commercialization, including drugs, devices, diagnostics, healthcare IT and platform applications.

CBHS 6615, Health Literacy & Public Health (2 credits)

Restriction: Offered in even years. This course provides an in-depth examination of health literacy...what it is, what implications it has for health, and how healthcare and public health professionals can ensure that treatment and intervention approaches are appropriate for people across health literacy levels.

CBHS 6628, Tech-Based Health Promotion (3 credits)

This course will introduce students to health promotion programs delivered using computers, the internet and mobile phones. Students will learn strategies for designing, implementing and evaluating technology-based programs and will develop a technology-based health promotion program as a class project.

FINE 5340, Topics in Studio Art: immersive Media Arts (2 credits)

Immersive media is growing exponentially in the world of business, science, technology, entertainment, and art. This course is an introduction to concepts, tools, techniques, and workflows that are used by people and teams creating immersive media projects. This course will focus specifically on learning to work with the Unity game development platform. Students are not required to have prior knowledge in coding, animation, 3D modeling or interactive design, but the course will touch on all of those areas in order to bring a full understanding of how immersive media projects are developed.

IDPT 7301, Introduction to Life Science Technology Commercialization (1-3 credits)

Course designed to familiarize graduate level engineering, business, law, science students with fundamentals of life science technology commercialization including drugs, devices, diagnostics, healthcare IT and platform applications. Three consecutive 5-week classes, each 1 credit. Open to all graduate level students

INTE 5000, Design Thinking and Educational Innovation (3 credits)

Design thinking is a creative, human-centered approach to exploring and solving professional and community-based problems of practice. In this studio-based course students will cultivate academic and community partnerships, design innovative media and experiences, and support diverse learning opportunities across settings. Cross-listed with INTE 4000. Restriction: Restricted to graduate level students.

INTE 5100, Planning and Designing for Instruction (3 credits)

Instructional design is the process used to analyze, design, develop, and evaluate learning solutions. You will identify a gap in learning or performance and design a learning solution in the form of courses units, modules, and other instructional resources.

INTE 5200, Crafting eLearning Experience (3 credits)

This course helps educators transition to teaching online. Create online learning activities, assessments, and resources. Learn how to establish a strong online teaching presence. Explore blended learning environments, use of set curriculum, open educational resources (OER), family support, communication strategies, digital citizenship, and accessibility concerns. Restriction: Restricted to graduate level students.

INTE 5250, Teaching Strategies for Online and Blended Learning (3 credits)

This course provides a foundation for effective online teaching strategies. Learning essentials include: affording more reflective, engaging, inventive, and successful online learning experiences; fostering improved presence; employing skilled management techniques; and unpacking tools, habits, and processes for effective learning.

INTE 5320, Games and Learning (3 credits)

This course examines the use of games for learning and education across formal and informal environments. Students will survey contemporary learning theory, media, trends, and challenges related to designing and playing games in informal, community-based, online, and school settings. Cross listed with INTE 4320. Restriction: Restricted to graduate level students.

INTE 5660, Developing Self-Paced Online Modules (3 credits)

Students use a variety of tools and strategies to develop self-paced eLearning courseware, such as tutorials. The course covers critical aspects of the instructional development process that support the creation of effective self-paced online learning experiences, materials, and resources.

INTE 5680, Producing Media for Learning (3 credits)

Students develop and integrate media resources into eLearning environments, applying principles of media selection and multimedia learning. Students explore a variety of tools for producing audio, video, and multimedia content and examine ways to enhance eLearning courses through multimedia presentation and engagement resources. Cross-listed with INTE 4680.

INTE 5711, Creative Designs for Instructional Materials (3 credits)

This course is a project-based exploration of design theories, principles, and best practices for communicating information to diverse learning audiences. Students apply unique design approaches and formats to the creation of materials for teaching, learning, and being of service to underrepresented communities. Cross-listed with INTE 4711. Restriction: Graduate level students.

IWKS 5100, Human-Centered Design, Innovation and Prototyping (3 credits)

Introduces students to a design methodology known as human-centered design, which can be harnessed to stimulate innovation in various career fields and industries. Through in-class activities and learning an array of prototyping tools in the Inworks lab, students will build up the skills necessary to develop their own projects in the second half of the course. Team projects apply the design process and culminate in a product, service, or system that is designed from scratch. All students from any major are welcome to take this course.

IWKS 5350, Computational Foundations of Innovation (3 credits)

Provides a broad introduction to the technological underpinnings of modern society, introducing the fundamental principles and algorithms underlying computer programming. Students will create generative visualizations, work with data, and create realistic artifacts with interesting behavior using Processing and Arduino, with optional opportunities to script chatbots and work with lab equipment to create hybrid digital/physical objects. In-class and in-world discussions and readings introduce important computer science ideas and concepts. Emergent topics in computer science will also be introduced. Completion of this course will prepare students for more advanced IWKS courses that require knowledge of computing principles and programming.

IWKS 5170, 3D Design and Prototyping (3 credits)

Introduces the design and computer-controlled fabrication of three dimensional objects using both additive (3D printing) and subtractive (laser cutter, CNC router / milling machine) processes. Various commercial and open-source software tools for 3D design (CAD), manufacturing (CAM) and visualization will be explored. Increasingly complex projects throughout the semester will be used to illustrate fabrication techniques. The course will culminate in a final project.

IWKS 5180, Choose Your Own Adventure: Experiences in Design, Innovation and Prototyping (1-3 credits)

Provides weekly speakers, workshops and other experiences that educate and enrich across the design, innovation and prototyping landscape. Students may choose to participate in any five (for one credit), ten (for two credits) or fifteen (for three credits) activities. Each week, participating students will attend the scheduled activity, and then create a meaningful response that reflects the impact of that activity on their thinking or practice.

IWKS 5200, Data Science for Innovators (3 credits)

Introduces techniques for capturing, processing, visualizing, and making meaning out of large health-focused datasets. With the exponential growth and decreasing cost of data collection tools such as genome sequencing, mobile phone health trackers, remote sensors, and electronic and personal medical records to name a few, the demand for data scientists to help find meaning in a sea of data has never been greater. This course will introduce the fundamentals of working with health data and large data sets, introduce widely-used data analysis and visualization tools, and culminate in a cumulative health data project.

IWKS 5400, Game Design and Development I Principles of Computer Game Development (3 credits)

Introduces the fundamental principles of computer game development, including the rich interplay of computer science, graphics design, physics, music, and narrative that comprise modern computer games. Students develop interactive 2D and simple 3D games in laboratory assignments of increasing complexity. The course involves considerable software development, but requires only introductory programming experience (e.g., IWKS 2300). Culminates with a final project consisting of a team-developed complete game.

Suggested Background: IWKS 2300 or similar computing experience

IWKS 5620, Mobile App Development (3 credits)

Introduces mobile application development, including front-end mobile application clients, data handling, connectivity to back-end services and cloud hosting. The course provides an overview and comparison of technical approaches employed by Apple iOS, Google Android and Microsoft Windows. Students will install, develop, test, and distribute mobile applications while addressing challenges associated with development for any mobile platform: limited screen size and memory, gesture based GUI, varying connectivity, and the wide variety of target mobile devices.

Suggested Background: IWKS 5300 or similar computing experience

IWKS 5700, Innovation in Society (3 credits)

Analyzes impact of innovative design on work, sense of self and social systems, in education, healthcare, finance, and other sectors. Investigates how people customize / “hack” technologies they use, and the moral / ethical implications of being designers. Students will research the impact of an innovation of their choice and share via essays, models, videos, or another medium of their choice.

IWKS 5120, Game Design and Development II (3 credits)

Continuation of IWKS 3400, with increased emphasis on more advanced techniques including 3D rendering; multimodal music, complex narrative, animation, non-player AI, and advanced 3D techniques including diffuse, ambient, specular, and emissive lighting; vertex, pixel and geometry shaders; shadows; terrain building; reflective and refractive lighting; bump, parallax, and parallax occlusion mapping; Phong and Gouraud shading; “cel” shading; ray tracing; bloom; and high dynamic range lighting.
Suggested Background: IWKS 5400 suggested

IWKS 5750, Innovating on Education (3 credits)

Explores how design-thinking and user-centered design can be used to develop and improve technology mediated learning. Using a team-based project-oriented approach, students design, develop, and evaluate new modalities for digital education. Projects will include ways to educate general audiences as well as targeted ones, such as employees, customers, or medical patients.
Suggested Background: IWKS 5700

PMHW 6627, Mental Health and Technology (1 credit)

This course will examine the use of technology and methods to evaluate applications of technology to mental health and substance use treatment and prevention, ethical issues associated with technological applications in mental health, methods for enhancing user engagement, and technology options for application in this area of public health.