

ME.120 (ART AS APPLIED TO MEDICINE)

Courses

ME.120.708. Media Reproduction. 1 Credit.

Introduction to principles of design, cognitive theory and user-centered thinking that will inform the production of clear, functional multimedia.

ME.120.709. Continuous Tone Illustration. 1 Credit.

Continuous tone rendering of medical and biological subjects.

ME.120.712. Visual Concepts. 0 - 5 Credits.

ME.120.714. Editorial and Conceptual Illustration. 8 Credits.

Conceptual approach to illustration utilizing brain-storming and problem solving skills to effectively interpret and illustrate manuscripts and clinical or anatomical concepts.

ME.120.715. Biological Illustration. 2 Credits.

Application of illustration techniques to biological, botanical, and natural science topics.

ME.120.716. Medical Sculpture. 3 Credits.

Materials and techniques used in producing instructive three-dimensional medical sculpture and rehabilitative facial prostheses.

ME.120.717. Communications Media. 1 Credit.

Camera and lighting techniques, reproducing art in color and black and white with both analogue and digital media. Hands-on working in a photo lab environment.

ME.120.719. Anatomical Illustration and Radiological Visualization. 1 Credit.

A comprehensive overview of the technical aspects of digital color anatomical illustration and the fundamentals of incorporating radiological visualizations into medical illustration workflows.

ME.120.720. Vector Illustration. 2 Credits.

An overview of the technical aspects of digital art production using vector-based digital imaging applications

ME.120.721. Raster Tone Illustration. 3 Credits.

An overview of the technical aspects of digital art production using raster-based digital imaging applications for continuous tone. Creating digital still artwork for print and digital media.

ME.120.722. Introduction to 3D Modeling and Animation.

This course will introduce the Cinema 4D software as a way of generating 3D assets for use in 2D illustration and as the basis for 3D animation. The course will cover all aspects of working in C4D including user interface, reference image setup, modeling techniques, and materials and textures. Students will gain an understanding and proficiency in C4D to create 3D digital models of surgical instruments, medical devices and basic organic structures. Students will be able to effectively model a variety of objects to begin building a digital 3D asset library for future use and to explore the basics of 3D animation.

ME.120.723. Digital Imaging IV (Animation).

Principles of 2D animation for video production. Fundamentals of script-writing, storyboard creation, asset and scene production, motion, 2D animated rendering techniques, special effects and post-production processing.

ME.120.724. Web Animation, Interactivity and Design. 3 Credits.

Theory and techniques for the creation of a dynamic animation with interactivity, optimized for the web; and the development of a web-based portfolio

ME.120.725. Clinical Anaplastology. 7.5 Credits.

ME.120.726. Molecular and Cellular Visualization. 3 Credits.

In-depth review of structural biology for the medical illustrator, including methods for visual background research and strategies for visually depicting molecular and cellular data. Culminates with creation of a molecular illustration.

ME.120.727. Neuroanatomy for the Medical Illustrator. 2 Credits.

Comprehensive overview of human neuroanatomy with a focus on visual communication concepts. Lecture content is supplemented by access to specimens, pathology conferences, and radiological data. Includes creation of a color neuroanatomical illustration.

ME.120.728. 3D Animation. 4 Credits.

This course will introduce the Cinema 4D software as the basis for 3D animation. The course will cover all aspects of working in C4D including lighting, rendering, cameras, as well as basic animation and dynamic simulation setup. Students will gain an understanding and proficiency in C4D to animate in 3D. The goal of this course is to explore the basics of 3D animation.

ME.120.733. 2D Animation. 3 Credits.

Theory and technique for creation of dynamic animation optimized for electronic presentation media.

ME.120.750. Surgical Illustration. 7 Credits.

Illustration of surgical procedures from operating room sketches for medical education.

ME.120.751. Ophthalmological Illustration. 3 Credits.

Intensive review of gross and microscopic anatomy of the orbit. Survey of ophthalmological surgical procedures. Special illustration techniques presented. Introduction to the use of patient examining instruments.

ME.120.754. Research and Thesis.

Original investigation under preceptor and department advisor

ME.120.755. Business Practices for the Medical Illustrator. 1 Credit.

Experience in analyzing problems of the visual artist and formulating practical solutions. Includes operations, finance, production and business management, business entities, taxes and accounting, human resources, marketing and communications, social media, business ethics, contracts and negotiations, and intellectual property.

ME.120.756. Operating Room Sketching. 4 Credits.

Introduction to operating room protocol, observation and recording of surgical procedures.

ME.120.757. Scientific Communication. 1 Credit.

Principles of effective oral and written presentation.

ME.120.758. The Portfolio. 4 Credits.

Professional portfolio and exhibition preparation and presentation, includes effective negotiation in a professional environment.

ME.120.759. Interactive Media and Game Development. 3 Credits.

Students will use a game engine to build an interactive teaching module for a scientific, medical or healthcare topic in 2D or 3D. Objectives include gaining familiarity with game engines and coding, creating interactable game objects and sprites, optimization of 3D assets for game engine rendering, and incorporating instructional and UI/UX design to help users with learning.

ME.120.801. Advanced Projects in Illustration.

Special topics in editorial, conceptual, biological or surgical illustration

ME.120.807. Design of Interactive Learning Experiences. 2 Credits.

Design of instructional, interactive media for medicine, public health and science

ME.120.813. Independent Study. 1 Credit.

Conceptualization of scientific information and application to problem solving assignments. Students may arrange independent study with a faculty member with the approval of the Department or Graduate Program Director and scheduled during any quarter of the second year as an overload.

ME.120.901. The Clinical Anaplastologist. 1 Credit.

Introduction to professional standards in the field of clinical anaplastology including: an overview of professional societies addressing continuing education; the defined scope of practice of clinical anaplastologists: facial, ocular, and non-weight bearing somatic prosthetics; practice guidelines addressing assessment and treatment, quality assurance, and professional performance standards; and requirements for certification. Invited speakers participate in providing students with an understanding of current professional activities.

ME.120.902. Clinical Anaplastology Exposure. 1 Credit.

Observe Certified Clinical Anaplastologists providing care to patients and experience firsthand professional, behavioral, and organizational practices impacting anaplastology patient care. The exposure period provides students with a case-based context for topics covered in concurrent coursework and provides practical experience in advance of Supervised Clinical Rotations.

ME.120.903. Anatomical Sculpting. 5 Credits.

Hands-on course with sculpting assignments of the facial form using oil and water-based clay. This course develops skills of observation and accurate sculptural replication of nasal and auricular anatomy based on surface anatomy relationships, proportions, surface texture, functional considerations, and underlying remnant anatomy. Comparisons to digitally produced anatomical models as well as prosected cadaveric specimens provide greater understanding of form based on anatomical relationships.

ME.120.904. Survey of Materials and Methods. 1 Credit.

Provides exposure to the various conventional materials and workflows used in creating custom medical devices for the face, eye, and body. Includes a discussion on material properties and various products used for impression taking, sculpting, moldmaking, color matching, casting and finishing phases of work. Also presents materials and processes associated with digital 3D workflows used in producing flexible and rigid medical devices.

ME.120.905. Interdisciplinary Considerations of Rehabilitation. 1 Credit.

Exploration of various dimensions involved in anaplastology care: clinical etiology, surgical, aesthetic, functional and psychosocial considerations involved in prosthetic rehabilitation. Discuss types of cancer, congenital diseases, and traumas leading to referral for care. Discuss surgical and reconstructive procedures on a regional anatomical basis. Review aesthetic and functional considerations for each region of anatomy. Review issues dealing with both clinician and patient psychosocial aspects to care as well as positive impact and limitations of prosthetic rehabilitation.

ME.120.906. 3D Technologies and Clinical Modeling. 1 Credit.

An advanced hands-on exploration of various 3D technology tools for clinical applications, including: 3D segmentation of medical imaging (DICOM) data, 3D surface scanning, digital sculpting, image guidance software, and filament versus resin-based 3D printing. Discuss considerations in the design of clinical models for teaching and diagnostic treatment planning purposes.

ME.120.907. Principles of Clinical Anaplastology Practice. 1 Credit.

Survey elements and activities involved in clinical care, from varying points of view of the clinician, patient, and clinical practice standards. Sample topics include: principles of effective communication, professionalism and ethical care, patient education, medical terminology, patient clinical assessment, treatment planning, documentation using SOAP (Subjective, Objective, Assessment, and Plan) notes, and long-term patient follow-up.

ME.120.908. Adhesive and Anatomically-Retained Facial Prosthetics. 2 - 3 Credits.

Principles, materials and methods, and hands-on practice of tasks involved in treatment of patients using adhesive and anatomically-retained facial prosthetics. The course reviews relevant anatomy, assessment criteria, treatment planning, sculpting, moldmaking, finishing, and aftercare considerations for auricular, nasal, orbital, and midface prosthetic medical devices.

ME.120.909. Osseointegrated Implant-Retained Facial Prosthetics. 4 Credits.

Principles, materials and methods, and hands-on technical skills development in treatment of patients using osseointegrated implant-retained facial prosthetics. Topics discussed include criteria for use, treatment planning considerations, surgical planning, surgical navigation, implant placement protocols, as well as a discussion of diverse types of extraoral implants, abutments, and superstructure components used.

ME.120.910. Ocular and Scleral Shell Prosthetics. 3 Credits.

Principles, materials and methods, and hands-on practice in treating anophthalmic or phthisical eye patients using ocular or scleral shell prostheses. Review relevant eye anatomy, assessment criteria, design, fitting and fabrication, aftercare, surgical revision, as well as special considerations for pediatric and geriatric cases. Develop technical skills in the areas of impression taking, producing and modifying of wax trial patterns, acrylic processing techniques, iris and scleral painting and finishing/polishing techniques.

ME.120.911. Somatic Prosthetics. 3 Credits.

Principles and hands-on technical skills development in treatment of patients using prosthetic devices for hands, fingers, feet, toes, breast and nipple. The course reviews pertinent anatomy and physiology, kinesiology, pathology, etiology and other factors specific to making non-weight bearing prosthetic devices for these regions of anatomy. Differences between somatic and facial prosthetic devices are emphasized in areas such as clinical assessment, materials, methods and aftercare protocols.

ME.120.951. Supervised Clinical Rotations. 8 - 10 Credits.

Participation in clinical anaplastology service, performing assessment, treatment planning and parallel clinical activities under the close supervision of a certified clinical anaplastologist or a member of physician housestaff. Document several cases and prepare for inclusion as part of a post-graduate clinical portfolio submission for certification.

ME.120.952. Business Practices and Ethical Standards. 2 Credits.

Introduction to clinical anaplastology businesses: establishing a private practice, regulatory and ethical considerations. Course includes an overview of medical billing for durable medical equipment, practice management, provider enrollment, site accreditation, quality assurance and FDA regulations governing activities of clinical anaplastology and diagnostic medical models.

ME.120.953. Capstone Research. 2 - 7 Credits.

Original investigation into research topics related to clinical anaplastology. Projects are mentored by an approved physician or faculty preceptor as well as an advisor. Students present results to an interdepartmental audience and are strongly encouraged to submit research findings for publication in a peer-reviewed journal, and/or present results as a podium presentation, or informational poster session at a professional society meeting.

ME.120.954. Professional Development and Portfolio. 2 Credits.

Professional development for Clinical Anaplastology: creating a resume or curriculum vitae, presenting sample case study, effective and ethical self-promotion, and negotiations in a professional environment. This course includes a self-review of requirements for BCCA Certification in Clinical Anaplastology and documenting required elements (Educational Clinical Practice, Art and Science course transcripts; Clinical Case Portfolio and Patient Authorization Forms; Supervised Clinical Experience Verification Forms; Letters of Recommendation, etc.).