

## Animatronics MFA Curriculum – 3 Year

Year 1 Fall	Year 1 Spring	Year 2 Fall	Year 2 Spring	Year 3 Fall	Year 3 Spring
<b>Animatronic Design 1A</b> (DEP 6310) 2 credits	<b>Animatronic Design 1B</b> (DEP 6311) 2 credits	<b>Animatronic Design 2A</b> (DEP 7310) 2 credits	<b>Animatronic Design 2B</b> (DEP 7311) 2 credits	<b>Animatronic Design 3A</b> (DEP 8310) 2 credits	<b>Animatronic Design 3B</b> (DEP 8311) 2 credits
<b>Prototypical Project Management A</b> (DEP 6320) 2 credits	<b>Prototypical Project Management B</b> (DEP 6321) 2 credits	<b>Figure Design and Engineering A</b> (DEP 7320) 2 credits	<b>Figure Design and Engineering B</b> (DEP 7321) 2 credits	<b>Animatronic Programming A</b> (DEP 8320) 2 credits	<b>Animatronic Programming B</b> (DEP 8321) 2 credits
<b>3D Design, Sculpting and Animatics 1A</b> (DEP 6330) 2 credits	<b>3D Design, Sculpting and Animatics 1B</b> (DEP 6331) 2 credits	<b>3D Design, Sculpting and Animatics 2A</b> (DEP 7330) 2 credits	<b>3D Design, Sculpting and Animatics 2B</b> (DEP 7331) 2 credits	<b>Thesis</b> (DEP 8909) 3 credits	<b>Thesis</b> (DEP 8909) 3 credits
<b>Production</b> (DEP 6000) 6 credits	<b>Production</b> (DEP 6000) 5 credits	<b>Production</b> (DEP 7000) 6 credits	<b>Production</b> (DEP 7000) 5 credits	<b>Production</b> (DEP 8000) 4 credits	<b>Production</b> (DEP 8000) 3 credits

## Course Descriptions

### **EXISTING:**

**DEP 6000 Production** (6 Credits Fall Semester, 5 Credits Spring Semester)

**DEP 7000 Production** (6 Credits Fall Semester, 5 Credits Spring Semester)

**DEP 8000 Production** (4 Credits Fall Semester, 3 Credits Spring Semester)

This is a practical laboratory class that is required for all Design and Production graduate students. Specific assignments vary according to each student's abilities and the production to which they are assigned. It is intended to serve as an opportunity to practice skills learned in the studio or laboratory classes. By applying these skills to actual productions that are performed for the public, students will experience a variety of situations that will prepare them for the professional workplace. Advanced students will be assigned to the areas of their concentration.

**DEP 8909 Thesis** (3 credits)

Preparation and submission of a fully documented, rigorous thesis for a student's area of concentration. Depending on area of concentration, one of the following categories will be required: Production Thesis, Research Thesis, Thesis Portfolio Gallery. A Production Thesis will be a fully produced physical production, presented before the public, and documentation will include design or engineering concepts, research material, renderings, fabric/paint samples, elevations, complete construction and mechanical drawings, cost estimates, schedules, and photographs of the completed production as appropriate to the area of concentration. A Research Project will be conducted under the close supervision of the thesis advisor. A Thesis Portfolio Gallery presentation will showcase the entire body of the student's work, which will be fully documented and include a final Thesis Gallery Review. See THESIS REQUIREMENTS FOR MFA CANDIDATES - SCHOOL OF DESIGN AND PRODUCTION for the concentration-specific requirements. Graded Pass/Fail.

### **NEW:**

**DEP 6310 Animatronic Design 1A – Figure Basics** (2 credits)

This course introduces students to the concepts, tools and techniques of designing Animatronic figures and props. Students will learn the fundamental principles of scene timing, figure joints and motion, sculpting, relevant software basics, 3D scanning and file processing, Animation Sheets/documentation, and color/costume fundamentals. Each student will begin their design for a Small Animated Figure and an Animated Prop.

**DEP 6311 Animatronic Design 1B – Figure Basics** (2 credits)

In this course, students will continue to learn the fundamental principles of scene timing, figure joints and motion, sculpting, relevant software basics, 3D scanning and file processing, Animation Sheets/documentation, and color/costume fundamentals. Each student will document their evolving design for a Small Animated Figure and an Animated Prop.

**DEP 6320 Prototypical Project Management A** (2 credits)

This course introduces project management fundamentals including managing Budget, Scope and Schedule for Animatronics. Design and fabrication of Animatronics involves creating a “living” 3D element, and this generally involves creative invention, prototyping and complex manufacturing.

**DEP 6321 Prototypical Project Management B** (2 credits)

This course continues Animatronic project management fundamentals by introducing necessary additional tools and techniques needed to manage prototypical projects. These include Earned Value, Risk Analysis, Hazard Analysis, Quality Planning, Procurement Planning, Communication Planning and other advanced techniques.

**DEP 6330 3D Design, Sculpting and Animatics 1A – Figure Basics (2 credits)**

This software and 3D printing intensive course focuses on the basics of designing, visualizing and growing miniature 3D figures. Students will begin with software tools and techniques for 3D sculpting of a simple Small Animated Figure. Students will design and position figures in a 3D environment and learn how to position a figure in a neutral pose. Students will learn how to prepare files for printing and learn techniques for effectively growing scaled figures. Students will export their digitally sculpted figure into a motion software environment and identify specific joint locations and ranges of motion.

**DEP 6331 3D Design, Sculpting and Animatics 1B – Figure Basics (2 credits)**

This software and 3D printing intensive course focuses on advanced skills for designing, visualizing and growing miniature 3D figures. Sculpted figures previously developed will be modified and adapted for the ranges of motion and updated for clean motion.

**DEP 7310 Animatronic Design 2A – Figures and Scenes (2 credits)**

This course focuses on importing the animatronic into a scene environment to explore guest perspectives and experience. Students will begin with 2D sketching to layout the scene with design sketches to illustrate intent then principles of 3D scene design lighting, sound and color will be incorporated to create a digitally realized multiple figure scene.

**DEP 7311 Animatronic Design 2B – Figures and Scenes (2 credits)**

The course continues exploring guest perspectives and experience for animatronic figures in scenes-by focusing on advanced animated figure design. Students will explore multiple joints, speeds and ranges working together. The final project for the class course will be to design a “lifelike” animated figure, an “imaginary” animated figure, one museum interactive animated prop, and one devised theater animated prop.

**DEP 7320 Figure Design and Engineering A – Actuators, Show Control and Electrical (2 credits)**

This course concentrates on the engineering and infrastructure of Animatronics-by looking at forces – mass and acceleration, component sizing, ranges of motion and speed, safety/hazard analysis and shafting/powertrain design.

**DEP 7321 Figure Design and Engineering B – Actuators, Show Control and Electrical (2 credits)**

This course focuses on machinery control components, sensors, wiring, diagrams, motor power and schematics for Animatronic figures. Students will identify the basics of show control, documentation and practice.

**DEP 7330 3D Design, Sculpting and Animatics 2A – Advanced Tools, Model Growing/Building (2 credits)**

This course is designed to provide students with first-hand working experience creating models using a combination of techniques including traditional model building, 3D printing and 3D cutting technologies. This course focuses on the “Digital Pipeline” for animatronics and software tool selection-by exploring various “best in breed” software titles and advantages between different possible software titles.

**DEP 7331 3D Design, Sculpting and Animatics 2B – Advanced Tools, Model Growing/Building (2 credits)**

This course provides students with a working knowledge of basic 3D scanning, 3D printing and 3D sculpting technology. Students will create interactives with show timing, 3D technical coordination, and 3D animatics of designs.

**DEP 8310 Animatronic Design 3A (2 credits)**

This course focuses on designing the figure finishing aspect of Animatronics. Students will design costumes, wigs and fur for Animatronics with special emphasis on maintenance, boning and costume structure. The final project will include designing a simple figure with all elements of figure finishing and fully documenting the design/sample process.

**DEP 8311 Animatronic Design 3B** (2 credits)

This course synthesizes all previous years of study into a series of design projects that allow the student to express all the combined elements into figures of increasing complexity including flexible skins, hair and/or fur.

**DEP 8320 Animatronic Programming A** (2 credits)

This course focuses on the art and technology behind bringing a figure to “life”. The course is grounded in animation functions, range of motions, speeds and technical design challenges to support the artistic design intent. Students will focus on figure calibration, operation and adjustment.

**DEP 8321 Animatronic Programming B** (2 credits)

This course continues work on the art and technology behind bringing a figure to “life”. Students will focus on set-up and calibration of equipment and interface-by looking at show timing, dialogue and programming life-like movement.-The course will encompass a series of programming challenges for figures of varying complexity, and creating show files with documentation to demonstrate mastery of programming.