ART233 : 3-D Digital Character Set-Up/Kinematics

General Information

Author:	• Roger Dickes
Course Code (CB01) :	ART233
Course Title (CB02) :	3-D Digital Character Set-Up/Kinematics
Department:	ART
Proposal Start:	Spring 2025
TOP Code (CB03) :	(0614.40) Animation
CIP Code:	(10.0304) Animation, Interactive Technology, Video Graphics, and Special Effects.
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000043400
Curriculum Committee Approval Date:	02/28/2024
Board of Trustees Approval Date:	04/16/2024
Last Cyclical Review Date:	02/28/2024
Course Description and Course Note:	ART 233 provides students with training in 3-D character set-up technique. Students will learn to create a digital puppet that animators can animate. Students will acquire skills including installation of a skeleton within a wireframe mesh, creation of animation controls such as inverse kinematic (IK) handles and set-driven-key relationships, and binding of the wireframe mesh to skeleton using current industry standard digital animation software (Maya).
Justification:	Mandatory Revision
Academic Career:	• Credit

Academic Senate Discipline

Primary Discipline:	• Art
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

☐ Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

• Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

Transferability & Gen. Ed. Options

General Education Status (CB25)

Not Applicable

Transferability

Transferable to CSU only

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	72
Total Course Out-of-Class Hours	90
Total Student Learning Hours	162

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

☐ Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	2	4
Laboratory Hours	0	0
Studio Hours	2	1

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	36
Laboratory	0
Studio	36
Total	72
Course Out-of-Class Hours	
Lecture	72
Laboratory	0
Studio	18
Total	90

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Advisory

ART150 - Fundamentals of Drawing

Objectives

- Apply the fundamental principles of drawing-from-observation.
- Utilize a variety of lines and mark making in drawing.
- Apply the basic principles of design and composition.
- Effectively create a sense of spatial illusion.
- Make individual aesthetic decisions related to their own artwork, and give constructive feedback to peers via group critique.
- Write a critical evaluation of two-dimensional art using the basic vocabulary of two-dimensional design.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Laboratory

Methods of Instruction	Demonstrations

Methods of Instruction	Discussion

Methods of Instruction	Multimedia

Methods of Instruction	Collaborative Learning

Out of Class Assignments

- Projects (making a sculpture)
- Field activity (gathering source images)

Methods of Evaluation	Rationale
Project/Portfolio	Animation projects and assignments
Exam/Quiz/Test	Midterm Exam
Project/Portfolio	Evaluation of final project
Exam/Quiz/Test	Final Exam

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
No Value	No Value	No Value	No Value	No Value

Other Instructional Materials (i.e. OER, handouts)

Description	Maya Learning Channel
Author	No value
Citation	No value
Online Resource(s)	No value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Install, label, orient, and use joints inside a character skin.

Bind the skin of a character to the joint hierarchy and edit skin weighting.

Install, label, and use IK handles and pole vector constraints.

Set up the reverse foot control system.

Establish set driven key relationships.

SLOs

Set up a basic 3-D character for animation.   Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

Use basic 3-D character set-up software tools.   Expected Outcome Performance: 70.0

ILOs Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

Course Content

Lecture Content

Working With Joints (6.5 hours)
- The draw joints tool
- Native hierarchy
- Local axial orientation
- Modify prefix hierarchy names
- Rotation as a numerical function
- Integrated hierarchy

Working with IK Handles (8 hours)
- Anatomy of IK system
- Function of IK handle
- Mammalian joint rotation
- Animation of friction
- The IK handle Rotate plane vs. Single Chain IK
- Pole vector constraints

Creating the Reverse Foot (6.5 hours)
- Control joints setup
- Control joints orientation
- IK handles and control joints
- Functionality

Set Driven Key (7 hours)
- Limits on attributes
- The set driven key concept
- The set driven key window
- The importance of local axial orientation • Functionality

Binding Skin (8 hours)
- Smooth bind vs. rigid bind
- Theory of binding
- The paint skin weights tool
- The component editor
- Influence objects
- The bound character

Total hours: 36

Laboratory/Studio Content

Working With Joints (6.5 hours)
- The draw joints tool
- Native hierarchy
- Local axial orientation
- Modify prefix hierarchy names
- Rotation as a numerical function
- Integrated hierarchy

Working with IK Handles (8 hours)
- Anatomy of IK system
- Function of IK handle
- Mammalian joint rotation
- Animation of friction
- The IK handle Rotate plane vs. Single Chain IK
- Pole vector constraints

Creating the Reverse Foot (6.5 hours)
- Control joints setup
- Control joints orientation
- IK handles and control joints
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Set Driven Key (7 hours)
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Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

No Value

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liason?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No Value

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value