APTECH 162 Course Outline as of Fall 2018

CATALOG INFORMATION

Dept and Nbr: APTECH 162 Title: 3D ANIM: VISUAL FX, COMP
Full Title: 3D Animation: Visual Effects and Compositing
Last Reviewed: 8/28/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	1.75	17.5	Lecture Scheduled	30.63
Minimum	2.00	Lab Scheduled	0.75	6	Lab Scheduled	13.13
		Contact DHR	0		Contact DHR	0
		Contact Total	2.50		Contact Total	43.75
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 61.25 Total Student Learning Hours: 105.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
This course covers a range of visual effects (VFX) in Autodesk 3ds Max and Adobe After Effects, including particle systems, dynamic simulations, and the integration of computer-generated (CG) and real-world imagery. Topics include basic motion capture, matchmoving and multipass rendering workflows.

Prerequisites/Corequisites:
Course Completion of APTECH 43

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: This course covers a range of visual effects (VFX) in Autodesk 3ds Max and Adobe After Effects, including particle systems, dynamic simulations, and the integration of computer-generated (CG) and real-world imagery. Topics include basic motion capture, matchmoving and multipass rendering workflows. (Grade Only)
Prerequisites/Corequisites: Course Completion of APTECH 43

Recommended:
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Use 3ds Max software to create dynamic simulations and particle-based visual effects for 3D scenes.
2. Use 3ds Max in conjunction with Adobe After Effects to create additional visual effects, and to combine real-world and computer-generated imagery.

Objectives:
During the course, students will:
1. Create basic, non-event-driven particle effects in 3ds Max.
2. Use the Particle Flow event-driven system of 3ds Max to create and modify complex visual effects.
3. Use the MassFX dynamic simulation tools in 3ds Max to mimic the real-world behavior of matter.
4. Apply motion capture and matchmoving data to animated scenes.
5. Output animations and effects from 3ds Max with multiple render passes.
6. Use After Effects to composite multiple render passes and to create additional visual effects.
7. Use After Effects to composite real-world and computer-generated imagery.

Topics and Scope:

I. Visual Effects (VFX) Overview
   A. Special effects versus visual effects
   B. History of VFX
   C. Computer-generated imagery and compositing
II. Particle Systems
   A. Non-event-driven particle systems
   B. Event-driven systems: particle flow
      1. Particle view interface

2. Operators
3. Tests, forces/space warps, deflectors

C. Advanced particle flow effects
1. Material-driven particle emission
2. Splitting flows

III. Dynamic Simulations - MassFX dynamic simulation solvers
A. Forces, volumes, mass and density
B. Rigid body dynamics
C. Soft body dynamics
D. Constraints
E. mParticles

IV. Motion Capture
A. Overview of motion capture systems
B. Application of motion capture data

V. Compositing in 3ds Max
A. Composite maps
B. Combining live action with CG objects and visual effects
1. Animated environment backgrounds
2. Lighting and environment matching

VI. Compositing in After Effects
A. After Effects overview
1. Standard workspace
2. Project setup
3. Basic tools
4. Compositions and layers
5. Basic effects

B. Compositing multi-pass renders
C. Motion tracking (including demonstration of Autodesk MatchMover workflow)
D. Combining pre-rendered and stock footage with CG animation - Chromakey
1. Using background plates
2. 3D character image sequences
3. Pre-keyed action footage: pyrotechnics

E. Audio mixing and synchronizing
F. Media export formats and procedures

The above topics and scope apply to both lecture and lab in an integrated format.

Assignment:

1. VFX and Compositing Assignments including:
A. Non-event-driven effects (1-2)
B. Basic Particle Flow effects (1-2)
C. Volumetric Effects (1-2)
D. Dispersion Effects (1-2)
E. MassFX Simulations with MaxScript (1-2)
F. Multi-pass compositing exercise (1-2)
G. Motion capture on Max rig in live set (1-2)
H. Live actor in computer-generated set (1-2)
2. Quizzes (2-3)
3. Final Project (1)

Assignments above integrate lab and lecture content.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Class exercises	Problem solving 45 - 60%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Quizzes	Exams 5 - 20%

Other: Includes any assessment tools that do not logically fit into the above categories.

Final project	Other Category 25 - 35%

Representative Textbooks and Materials:
Compositing Visual Effects: Essentials for the Aspiring Artist. 2nd ed. Wright, Steve. Taylor and Francis. 2011 (classic)
Instructor prepared materials