APTE 162 Course Outline as of Summer 2025

CATALOG INFORMATION

Dept and Nbr: APTE 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: APTECH 162

Catalog Description:
In this course, students will explore a range of three-dimensional (3D) digital visual effects (VFX) in applications such as Autodesk 3ds Max and Adobe After Effects. Students will apply particle systems and dynamic simulations and will composite 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: In this course, students will explore a range of three-dimensional (3D) digital visual effects (VFX) in applications such as Autodesk 3ds Max and Adobe After Effects. Students will apply particle systems and dynamic simulations and will composite 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. Create dynamic simulations and particle-based visual effects for 3D scenes.
2. Integrate multiple software applications to create complex visual effects.
3. Composite real-world and computer-generated imagery.

Objectives:
At the conclusion of this course, the student should be able to:
1. Create and modify particle systems.
2. Use physics simulation tools.
3. Generate and apply matchmoving and motion capture data.
4. Integrate visual effects and 3D modeling and animation workflows.
5. Manipulate and combine real-world and computer-generated imagery.

Topics and Scope:

I. 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
      1. Particle system interfaces
      2. Operators
      3. Tests, forces, space warps, and deflectors

    C. Advanced particle flow effects
       1. Material-driven particle emission
       2. Splitting flows
III. Dynamic Simulations
    A. Forces, volumes, mass, and density
    B. Rigid body dynamics
    C. Soft body dynamics
    D. Constraints
    E. Physics-based particles
IV. Motion Capture
    A. Overview of motion capture systems
    B. Application of motion capture data
V. Compositing in 3D Modeling and Animation Application
    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 Visual Effects Application
    A. Application overview
       1. Standard workspace
       2. Project setup
       3. Basic tools
       4. Compositions and layers
       5. Basic effects
    B. Compositing multi-pass renders
    C. Camera and motion tracking workflows
    D. Combining pre-rendered and stock footage with CG animation
       1. Chromakey
       2. Background plates
       3. 3D character image sequences
       4. Pre-keyed action footage such as 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:

Lecture and Lab-Related Assignments:
1. Weekly reading
2. VFX and compositing exercises (8-16)
3. Quizzes (2-3)
4. Final Project

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.

VFX and compositing 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