APTECH 168 Course Outline as of Fall 2018

CATALOG INFORMATION

Dept and Nbr: APTECH 168   Title: 3D ANIM: INTRO TO VR
Full Title: 3D Animation: Introduction to Virtual Reality
Last Reviewed: 5/9/2022

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 introduces the process of creating virtual reality (VR) experiences based on computer-generated environments. Students will develop models and animations in Autodesk 3ds Max, and bring them into Autodesk Stingray to create interactive experiences.

Prerequisites/Corequisites:
Course Completion of APTECH 43

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: This course introduces the process of creating virtual reality (VR) experiences based on computer-generated environments. Students will develop models and animations in Autodesk 3ds Max, and bring them into Autodesk Stingray to create interactive experiences. (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 and export 3D models and animations from 3ds Max for use in virtual reality environments.
2. Create interactive VR projects in Autodesk Stingray using digital assets imported from 3ds Max.

Objectives:
During the course, students will:
1. Create and modify 3D models and animations in 3ds Max.
2. Unwrap models and apply mapping modifiers.
3. Set up Stingray projects.
4. Move geometry and animations from 3ds Max to Stingray.
5. Generate and apply basic materials, lighting and effects in Stingray projects.
6. Create and use custom VR controllers and components.
7. Deploy projects for VR platforms.

Topics and Scope:

I. Virtual Reality Overview
    A. Virtual reality versus traditional media
    B. VR hardware and software
    C. Presence and immersion
    D. Interactivity
II. VR Experience Overview
    A. Interior walkthrough
    B. Interactive gallery
    C. Vehicle experience
    D. Required assets

III. Modeling in 3ds Max for Stingray
    A. Best modeling practices for Stingray export
    B. 3ds Max materials for Stingray
    C. Cameras
IV. Animating in 3ds Max for Stingray
    A. Object animation
    B. Multiple loop timelines
    C. Exporting animation from 3ds Max
V. Stingray Overview
    A. Project set-up
    B. Software interface
    C. Navigation
    D. Project creation
    E. Importing assets
VI. Building Environments (levels)
    A. Creating levels
    B. Placing and transforming objects
    C. Testing levels
VII. Basic Materials
    A. Material masters and instances
    B. Material setup in Stingray
    C. Physically based shader effects
VIII. Lighting
    A. Basic lighting
    B. Shading environment and post effects
    C. Light FX and light baking
IX. Animation
    A. Object setup
    B. Animation Editors
    C. Previewing animation
X. Creating Interactivity
    A. Flow vs Lua scripting
    B. Visual programming with Flow
    C. Flow editors
    D. Physics actors
    E. Proxies
    F. Collision volumes
    G. Inputs and controllers
    H. Cameras
XI. Audio
    A. 3D positional audio
    B. Wwise audio
    C. Player proxy units
    D. Attenuation
XII. Deployment
    A. VR hardware setup
    B. Lua VR scripts

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

Assignment:

1. 3ds Max interior modeling project
2. 3ds Max animations (1-3)
3. Stingray interior walkthrough project
4. Stingray spline-based roller coaster
5. Deployment exercises (1-3)
6. Student-designed final Stingray project
7. Objective quizzes (3-4)

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 and skill demonstrations 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.

3ds Max models and animations, Stingray projects, deployment exercises and student-designed projects

Problem solving
55 - 70%

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

VR headset and controllers use and spatial navigation skills

Skill Demonstrations
5 - 10%

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

Quizzes

Exams
10 - 20%

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

Final Project

Other Category
10 - 15%

Representative Textbooks and Materials:
Learning Virtual Reality. Parisi, Tony. O'Reilly Media. 2015
Instructor prepared materials