**CSE490 Tech Art for Game Development**

**Prerequisites:** NONE

**General Information:**

Class Schedule: Wednesday 6:00pm – 9:00pm

Class room: 332 Sieg Hall

Lab: 329 Sieg Hall

Professor: Natalie Burke

Contact: natburke@cs.washington.edu

Class web page: <https://courses.cs.washington.edu/courses/cse490j/17su/>

Computer support: [support@cs.washington.edu](mailto:support@cs.washington.edu)

Access to labs: [cardkey@cs.washington.edu](mailto:cardkey@cs.washington.edu)

Staff alias: [cse490a-staff@cs.washington.edu](mailto:cse490a-staff@cs.washington.edu)

CSE account request: [https://www.cs.washington.edu/lab/support/accountapp30.pdf](about:blank)

Lab hours: 24hrs

Support maintenance: Saturday 2 am – 4 am

Staff office hours: **Amanda**: Mon-Thurs 1pm - 3pm

**Blake**: Wed 10am - 12pm, 1pm - 3pm  
 Thurs 11am - 12pm, 1pm - 6pm

**Jeannette**: Tues 2pm - 5pm  
 Friday 12pm - 4pm  
 Saturday 12pm - 3pm

**Description:**

Over the past decade the field of technical art has risen from a tiny niche to an integral and essential part of AAA game development. This course is designed as an introduction to this field. The main objective is to cover the techniques and strategies used for creating art for video games. Students will be introduced to Unreal Engine 4 and Unity 5 as well as various game development pipelines used to increase art quality and production efficiency. Specific topics include physically based shading, art performance and optimization, and strategies for creating runtime compatible simulations.

**Textbooks:** None

**Outline and Projects/assignments:**

**Week 1 – 7/26**

* Understanding the role of technical artists in game development
* Game engine basics
* Introduction to Unreal Engine 4 and Unity

Assignment (due 8/1): Create a basic dining room scene using provided assets.

**Week 2 – 8/2**

* Pipeline theory
* Animation retargeting in Unity and Unreal

Assignment (due 8/8): Follow the tutorial to add automated secondary animation attachments on a character. Write your thoughts about the pipeline. Design any needed improvements.

**Week 3 – 8/9**

* Understanding game budgets
* Understanding rendering

Assignment (due 8/15): From a provided list of problematic game assets, choose one and research two possible solutions for creating that game asset. Explain which is the more expensive of the two and why.

**Week 4 – 8/16**

* PBR shading in Unreal Engine

Assignment (due 8/23): Create two or three master materials and use them to build a library of ten common surface types. Textures will be provided, but you may use your own.

**Week 5 (optional) – 8/18**

* Runtime simulation
* Baked simulation

Assignment (extra credit) (due 8/23): Explore three different techniques to get a “dynamic” cloth asset into a game engine of your choice.

**Grading Policy:**

* 100% from assignments
* First four assignments are worth 25% each
* Final assignment is extra credit
* Assignment grades will be based on how they each met their individual grading rubrics. Rubrics will be posted before each assignment.

**Late Policy:**

It is important to turn assignments in on time in order to keep up in the class. Late assignments will be accepted but 1 point will be docked from the final grade (out of 100) for each **hour** an assignment is late.

**Absence:**

If you are more than 15 minutes late for a class (or leave early) it is marked as an unexcused absence.

* 1 unexcused absence: reduction of final grade by one full grade letter.
* 2 unexcused absences: class failure

If you cannot attend a class due to a verifiable emergency:

* Contact your instructor in advance if possible, or as soon as possible.
* Request for an assignment delivery extension before its due date.

**Lab Rules:**

1. Only students of the Animation Capstone are allowed in the labs. Anyone else must obtain specific permission from Barbara Mones before entering. This means no girlfriends/boyfriends/family members, etc. This is for the safety of the students as well as the security of our equipment.
2. Our labs (Sieg 329 and 332) must be kept clean. They are community spaces, and it is important that they stay as clean as possible for everyone who uses them. This means keeping your own workstation clean, as well as doing your part to keep the floor and refrigerator clean. The kitchen in Sieg 319 is also used by other programs, so it is essential that you clean up your own messes, as well as return any dishes you may use as soon as possible after you're finished using them.
3. Always follow the golden rules within our lab spaces.

<http://courses.cs.washington.edu/courses/cse458/16au/administrative/the_golden_rules.html>

**Instructor’s Biography:**

Natalie Burke is a technical artist, a role that aims to bridge the gap between computer science and art in order to increase the visual potential in real time computer graphics. She has worked for years on improving artist pipelines with focuses on creating content inside of virtual reality, runtime and baked simulation, and character hair creation for runtime environments. She has worked in tandem with both artists and engineers to produce content for games such as Bungie’s *Destiny, The Taken King*, and Limitless Ltd’s *Gary the Gull,* and *The Limitless Creative Environment.* This background provides an understanding of the needs and roles of both departments in the games industry. She has presented at respected conferences such as SIGGRAPH, GDC, and CEDEC about techniques for improving visual potential and the process of creating art for video games. She has a BS in Digital Arts and Sciences from the University of Florida and an MS in Interactive Entertainment from the University of Central Florida.