Fall 2025 ITLS-6210-IO1 XL Syllabus

Virtual Environment Development

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Course Description

This studio course introduces the design and production of immersive virtual environments using **two engines**:
- **Roblox Studio** (primary for the semester-long team capstone: *USU Virtual Campus*).
- **Unity** (industry-standard engine for transferable workflows and portfolio depth).

The course is **code-minimal and designer-first**, emphasizing visual tools, prefabs/modules, lighting, UI, and interaction patterns. Students will **read** and **lightly modify** small scripts (C# in Unity, Lua in Roblox) and learn to work **with Generative/Agentic AI** (e.g., ChatGPT) to understand, debug, and adapt code safely and ethically.

By the end, each student will deliver a **functional section of a USU building in Roblox** (assigned from a provided list) and may optionally mirror a small slice in Unity for their portfolio.

Course Objectives

Remember/Understand
1. Identify the roles and affordances of Unity and Roblox for environment design and interaction.
2. Recall setup steps, project structure, editor navigation, and essential tools in both engines.

Apply
3. Construct 3D environments using grayboxing, modular kits, materials, lighting, cameras, and basic physics.
4. Implement low-code interactions (triggers, proximity prompts, UI buttons) using prefabs/components and short script snippets.

Analyze/Evaluate
5. Read, explain, and critique small C# and Lua scripts; use AI to propose and vet improvements; validate behavior through testing.
6. Profile scenes to identify performance bottlenecks; apply optimization tactics (budgets, streaming, occlusion/light baking, LODs).

Create
7. Design accessible UI (HUD/menus) integrated with environment goals.
8. Deliver a polished Roblox scene for the **USU Virtual Campus** with documentation, trailer, and an **AI usage log** reflecting responsible AI collaboration.

Alignment with IDEA Course Evaluation Objectives

We focus the IDEA objectives on the handful that are **essential** to this course's learning goals and assessments. The table below shows how they align with our Course Objectives (CO#) and where students will demonstrate evidence.

IDEA Objective (Essential)	Why it matters in this course	Aligned Course Objectives	Primary Evidence/Assessments
Gaining a basic understanding of the subject (factual knowledge, methods, principles)	Students must be fluent with core tools and workflows in Unity & Roblox to build credible environments.	**CO1, CO2**	Unity Labs **UL1–UL3**, Roblox Sprints **RS1–RS3**, weekly reflections
Learning to apply course material (to improve thinking, problem solving, decisions)	Designers translate goals into scenes, interactions, and UI; they make scoped, testable decisions.	**CO3, CO4, CO7, CO8**	**UL2–UL4**, **RS1–RS4**, Hybrid Bridges **HB1–HB2**, Final Project milestones A–C
Developing specific skills, competencies, and points of view needed by professionals	Industry-standard scene building, optimization, UI/UX, and production habits.	**CO3, CO6, CO7, CO8**	Optimization tasks & perf metrics (**RS5**), UI integration (**HB2**), final readme & trailer
Acquiring skills in working with others as a member of a team	Team Create/versioning, handoffs, and critique are core to production.	*(Supports CO8 in practice)*	Team workflows (Week 13), handoff doc (**RS5**), pitch & showcase participation
Developing creative capacities(inventing/designing)	Aesthetic intent, iteration, and communication through environment art and UI.	**CO3, CO7, CO8**	Mood/lighting (**UL2**), atmosphere (**RS3**), trailer/storytelling (Milestone B/C)
Learning to analyze and critically evaluate ideas, arguments, points of view	Reading/explaining code, evaluating AI suggestions, and comparing engines.	**CO5**	AI usage logs, code comments (**UL3**), compare/contrast write-ups (**HB1/HB2**), midterm critique

> **IDEA Logistics:** Students complete the IDEA survey in **Week 13** (20 pts). Reflections, AI logs, and milestone artifacts provide evidence aligned to the essential objectives above.

Required/Recommended Resources

- **Software (free):** Roblox Studio; Unity (LTS recommended)
- **AI Assistance:** Access to ChatGPT (or equivalent). Free tiers are acceptable; paid tiers optional.
- **Learning Hubs (recommended):** Unity Learn; Roblox Creator Hub.
- **Hardware:** A laptop/desktop capable of running Roblox Studio and Unity; reliable internet.

Course Requirements

Students must:

- Install and keep Roblox Studio and Unity updated.

- Maintain weekly progress in the studio (individual + team).
- Participate in critiques, playtests, and reflections.
- Use AI ethically (see *AI Use & Academic Integrity* below) and keep an **AI usage log** for the final submission.

Evaluation & Grade Breakdown (Total = 1000 points)

- **Unity Skill Labs (4 × 50 pts) = 200**
  Focused, code-minimal build exercises to establish industry-standard workflows.
- **Roblox Build Sprints (5 × 50 pts) = 250**
  Milestones that incrementally realize your assigned USU building section.
- **Hybrid Bridge Assignments (2 × 50 pts) = 100**
  Implement the same micro-experience in both engines; compare/reflect.
- **Design Reflections/Discussions (Any 10 weeks × 15 pts) = 150**
  Short posts capturing intent, decisions, and lessons; top 10 scores counted.
- **Final Project — USU Building in Roblox = 280**
  Three staged milestones: **Pitch (40)** + **Release Candidate & Trailer Draft (60)** + **Final Delivery (180)**.
- **IDEA Course Evaluation (Completion) = 20**
  Submit confirmation of completion by the posted deadline.

Letter Grades: A = 93–100; A- = 90–92.9; B+ = 87–89.9; B = 83–86.9; B- = 80–82.9; C+ = 77–79.9; C = 73–76.9; C- = 70–72.9; D+ = 67–69.9; D = 63–66.9; D- = 60–62.9; F < 60.

> **Deadlines**: Unless noted otherwise, deliverables are due **Sundays 11:59 pm MT**. Final project due **Fri Dec 12, 5:00 pm MT**.

Weekly Schedule (Dates & Deliverables)

Week 1 (Aug 25–31) — Kickoff: Engines, Projects, & AI for Designers

- Setup Roblox Studio + Unity; project hygiene; scope of *USU Virtual Campus*; AI prompting basics (explain-this-code, pseudocode → code, debugging).
- **Deliverables:** None graded (onboarding + micro-practice in class).

Week 2 (Sep 1–7) — Unity Core I: Editor, GameObjects, Prefabs

- Hierarchy, components, transforms; prefab variants/nesting.
- **UL1 (40):** Graybox a small indoor space with prefab variants.
- **Reflection**

Week 3 (Sep 8–14) — Unity Core II: Materials, Lighting, Cameras, Phys Basics

- Lighting types/shadows; camera paths (Cinemachine welcome); gentle physics.
- **UL2 (40):** Mood-lit scene + guided camera path.
- **Reflection**

Week 4 (Sep 15–21) — Unity Core III: Low-Code Interactions

- Triggers; simple door/collectible; reading tiny C# scripts; AI-assisted explain/fix.
- **UL3 (40):** One interaction with commented script (what/why).
- **Reflection**

Week 5 (Sep 22–28) — Roblox Core I: Graybox the Assigned Building

- Explorer/Properties fluency; scale refs; collision pass.
- **RS1 (50):** Building shell graybox (major rooms/volumes).
- **Reflection**

Week 6 (Sep 29–Oct 5) — Roblox Core II: Modular Kits & Materials

- Reusable modules; decals/materials responsibly.
- **RS2 (50):** Modular kit + applied to graybox; naming & reuse demo.
- **Reflection**

Week 7 (Oct 6–12) — Roblox Core III: Lighting, Atmosphere, FX (Perf-aware)

- Time-of-day, indoor/outdoor mixes, highlights; perf budgets.
- **RS3 (50):** Atmosphere pass + day/night variant.
- **Reflection**

Week 8 (Oct 13–19) — Bridge 1: Same Micro-Interaction in Both Engines

- Choose one (e.g., proximity door + sound). Implement in Unity *and* Roblox.
- **HB1 (50):** Side-by-side video + 1-page compare/contrast.
- **Reflection**

Week 9 (Oct 20–26) — Midterm Studio & Final Project Pitch

- Critique UL1–UL3 + RS1–RS3 + HB1; risk register; scope lock for final.
- **Final Project Milestone A — Pitch (40):** Slides + task board + quick test plan.
- **Reflection**

Week 10 (Oct 27–Nov 2) — Unity Interactions Deepening

- Small sequences via Timeline/Animation events; optional NavMesh guided tour.
- **UL4 (40):** Scripted sequence or guided tour.
- **Reflection**

Week 11 (Nov 3–9) — Roblox Gameplay Patterns (Low-Code Lua)

- Proximity prompts; ClickDetectors; simple state handling; AI “rubber-duck” notes.
- **RS4 (50):** Two linked interactions (e.g., switch → door + SFX).
- **Reflection**

Week 12 (Nov 10–16) — UI in Both Engines

- Unity Canvas/UI Toolkit; Roblox ScreenGui; accessibility checks.

- **HB2 (50):** Minimal HUD/menu in current scene in both engines.
- **Reflection**

Week 13 (Nov 17–23) — Performance & Collaboration

- Profilers; occlusion/light baking; streaming/collections; Team Create.
- **RS5 (50):** Perf checklist with before/after metrics + short handoff doc.
- **Reflection**
- **IDEA Evaluation (20):** Complete by end of week.

Week 14 (Nov 24–30) — Thanksgiving Break
No class, no deadlines.

Week 15 (Dec 1–3) — Final Sprint: QA + Trailer

- Playtesting, punch-list burn-down, trailer/storyboard.
- **Final Project Milestone B — RC & Trailer Draft (60)**

Week 16 (Dec 4–5) — Showcase & Submission

- In-class showcase & peer feedback.
- **Final Project Milestone C — Final Delivery (180) due Fri Dec 5, 5:00 pm MT**
  Deliver: Roblox experience link, short trailer (30–60s), readme with map, and **AI usage log**.

Major Assignment Summaries

Unity Skill Labs (UL1–UL4, + one make-up/extension window)
Short, scoped builds emphasizing editor fluency, lighting/cameras, and low-code interactions. Each lab supplies a starter scene and annotated snippets.

Roblox Build Sprints (RS1–RS5)
Five milestones toward your assigned USU building: graybox → modular kit → atmosphere → interactions → performance/collaboration. Consistent naming, reuse, and perf checks are graded.

Hybrid Bridges (HB1–HB2)
Implement the **same** concept in both engines and reflect on workflow differences. These cement transfer of mental models.

Final Project (Milestones A–C)
A scoped, polished Roblox scene representing a portion of an assigned USU building. Includes pitch, RC + trailer draft, final delivery, and an AI usage log.

Policies

Attendance & Participation

Weekly progress, critiques, and reflections are key to studio learning. Up to **two** unexcused absences permitted; further unexcused absences may reduce your final grade by **10 points each**. Communicate early about conflicts; approved excused absences require documentation.

Late Work

On-time submissions are expected. Late work without prior arrangement may receive a **zero**. If you submit on time and revise after feedback within one week, partial credit recovery is possible (up to 50% of lost points), except for the Final Project.

AI Use & Academic Integrity

AI is encouraged for **explanations, scaffolding, and debugging**. You must:

- Keep an **AI usage log** (prompt → response → what you kept/changed → why).
- **Cite AI assistance** in your readme or reflection.
- **Verify** outputs; you remain responsible for correctness and originality.
  Submitting uncredited AI-generated work or code/assets you do not understand violates academic integrity and may trigger sanctions under USU policy.

Behavior & Community Norms

Professional, respectful collaboration is required. Offensive language, harassment, or chronic non-participation may incur penalties (5 points per incident after a documented warning).

Office Hours & Communication

Email/Canvas are the best ways to reach me. I aim to respond within a few hours during weekdays. Drafts are welcome for feedback.

Canvas

Canvas hosts the syllabus, modules, assignments, and grades. Ensure notifications are enabled and deadlines are tracked in your time zone.

Quick Submission & Due-Date Conventions

- **Weekly submissions:** Sundays 11:59 pm MT.
- **Thanksgiving Week:** No deadlines.
- **Final Project:** Fri **Dec 5**, **5:00 pm MT** hard deadline.
- **File naming:** Lastname_Firstname_Assignment (e.g., Doe_Jane_RS3).
- **Readme:** Each submission includes a brief readme with goals, controls, known issues, and (when relevant) *AI usage notes*.

This syllabus may be updated to better support learning goals; any changes will be discussed in class and posted on Canvas.