XRTERRA

AR & VR DEVELOPER PROGRAM

PROGRAM SYLLABUS

PROGRAM OVERVIEW

AR & VR Developer Program from XR Terra

According to Statistica, the AR & VR industry is expected to exceed $200 billion in market size by 2023. This growing trend leads to an urgent need for talented XR developers to create applications and experiences in immersive technologies across a variety of industries. The AR & VR Developer Program from XR Terra is a part-time, 12-week program that will equip participants with the knowledge, skills, and experience necessary to develop dynamic virtual reality and augmented reality content and prepare them to be productive members of an XR-focused software development team.
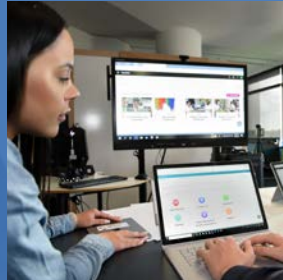
PROGRAM STRUCTURE

The 12-week program requires a weekly time commitment of:
- 7 contact hours of live, online hours
- 10+ hours of self-study and project time
- Weekly 1-on-1 office hours with teaching staff and community hours as needed

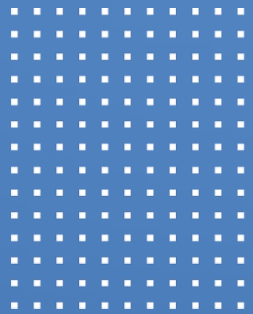For weekly schedule, refer to upcoming cohort schedule on xrterra.com

Office hours with the instructor and optional 30-min 1-on-1 weekly check-in's with a teaching facilitator

Dedicated career advisor that supports your career development journey from day 1

Discussion forums for questions to instructors and student services advisors

GRADING

This is a Pass / Fail program. In order to pass this program you must complete the following before the end of the program:
- Attend all live online sessions; maximum of 2 excused absences from lab sessions allowed during the 12-week program
- Complete all pre-work and post-work assignments
- Complete all projects in a timely manner following presented guidelines

Participants of this program will be able to:

Construct the project development pipeline to produce an XR application

Develop and manage AR and VR experiences using industry-standard development tools

Explain the foundational knowledge of AR and VR and identify its benefits for real-world applications

Understand and analyze industry challenges, and propose an appropriate AR and/or VR solution

Apply project management tools to collaborate effectively with other team members throughout the development phase

Demonstrate technical skills, and apply them to at least 2 industry projects across AR and VR modules

Effectively communicate proposed AR and/or VR solution to industry collaborator

Meet some or all qualifications for XR development related job titles including:

- AR, VR software engineer
- AR, VR software developer
- Unity developer
- AR mobile application developer
- Gameplay programmer
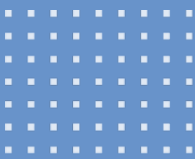
PROGRAM PREREQUISITES

Applicants must meet at least one of the required program prerequisites to qualify for the program. XR Terra is committed to educating candidates from diverse backgrounds.

Required:
• Familiarity with modern programming languages such as Javascript, C#, C++, or Python
• Experience in full software development lifecycle working from concept through completion
• Understanding of professional team software practices including unit testing and version control

Optional / Preferred:
• Experience in game development
• Experience with design and animation / modeling software
• Understanding of 3D mathematics
• Familiarity with one or more of these topics: Computer Vision (OpenCV), Computer Graphics (OpenGL), Artificial Intelligence (AI), Data Structures, Machine Learning, etc.
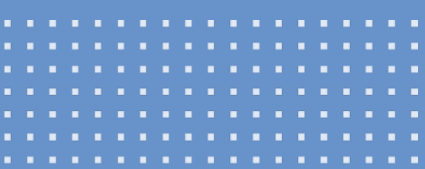
MATERIALS
& SUPPLIES

Students are encouraged to use their own AR and VR hardware
(e.g. AR smartphones, Oculus Quest)

Recommended hardware for the program:

- PC (Windows 7 (SP1+) or Windows 10) or Mac (Sierra 10.12+)
- An Oculus Quest or Quest 2, or any other 6DoF VR headset (may require VR ready computer)
- ARCore compatible Android phone or ARKit iOS device

Please note that iOS development requires a Mac device.

12 WEEK PROGRAM

The 12 week program will include module topics, learning objectives, and key learning activities.

WEEK 1

Module Topics
- XR Foundation, Use Cases, and Emerging Trends
- Introduction: Unity, Unity Services, C#, Version Control, Developer Testing, Programming Core Interactions, Project Management, and the Unity Certified Programmer Exam

Learning Objectives
- Evaluate existing AR and VR projects and applications
- Learn Unity engine basics including asset management, C# programming basics, UI implementation, animations and working with application data

Key Learning Activities
- 2D Mini-Game Project

WEEK 2

Module Topics
- Unity Engine and Services Contd.
- Application Systems Programming

Learning Objectives
- Working with Particle Effects
- Implementing Mobile Controls
- Understanding Remote Settings and Unity Analytics
- Creating Achievements System and Achievements UI
- Creating a Components and Classes Diagram

Key Learning Activities
- 2D Mini-Game Project Contd.

WEEK 3

Module Topics
- 3D Interactions, Cameras, and Navigation
- The Art and Audio Pipeline
- Unity Certified Programmer Exam
- VR and AR Best Practices

Learning Objectives
- Prepare for the Unity Certified Programmer Exam

Key Learning Activities
- 3D Stealth Mini Game Project

WEEK 4

Module Topics

- VR Mini Challenges
- VR Development Tools Introduction
- VR Best Practices

Learning Objectives & Activities

- Understand and implement small projects using a VR development workflow

WEEK 5

Module Topics

- AR Mini Challenges
- AR Development Tools Introduction
- AR Best Practices

Learning Objectives & Activities

- Understand and implement small projects using an AR development workflow

WEEK 6

Module Topics

- VR Mini-Capstone I: Industry Partner Project Brief
- Application of project management concepts

Learning Objectives & Activities

- Analyze the problem / objective based on provided industry partner brief and propose an appropriate VR solution
- Propose development plan and timeline
- Develop an alpha version of VR prototype for the proposed solution

WEEK 7

Module Topics

- VR Mini-Capstone II: Experience Development

Learning Objectives & Activities

- Develop a beta version of VR prototype for the proposed solution
- Prepare a pitch presentation and VR showcase

WEEK 8

Module Topics

- VR Mini-Capstone III: Presentation and Showcase

Learning Objectives & Activities

- Develop a ready-to-publish VR project
- Present VR project to industry partner representative

WEEK 9

Module Topics

- AR Mini-Capstone I: Industry Partner Project Brief
- Application of project management concepts

Learning Objectives & Activities

- Analyze the problem / objective based on provided industry partner brief and propose an appropriate AR solution
- Propose development plan and timeline
- Develop an alpha version of AR prototype for the proposed solution

WEEK 10

Module Topics

- AR Mini-Capstone II: Experience Development

Learning Objectives & Activities

- Develop a beta version of AR prototype for the proposed solution
- Prepare a pitch presentation and AR showcase

WEEK 11

Module Topics

- AR Mini-Capstone III: Presentation and Showcase

Learning Objectives & Activities
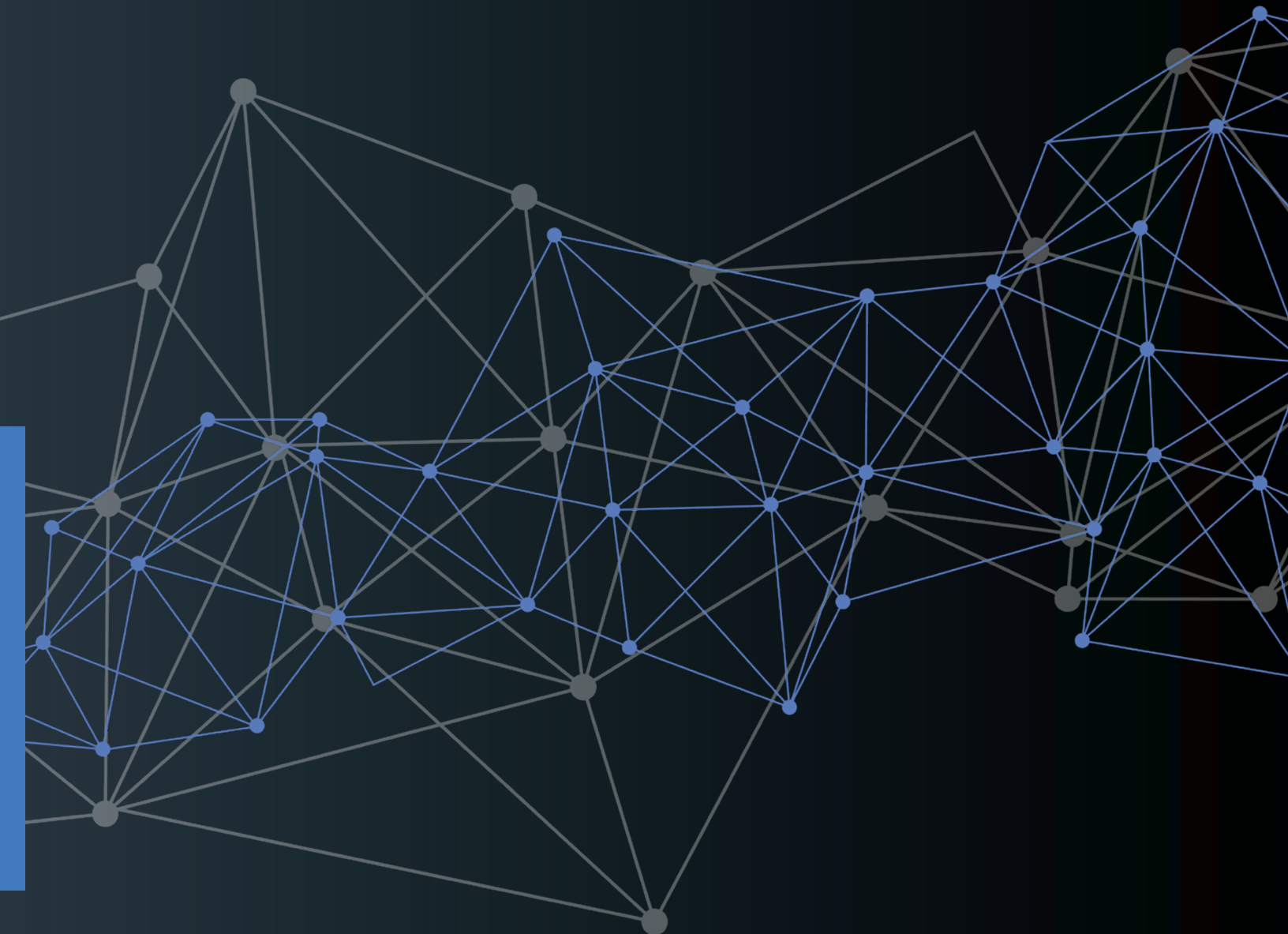
- Develop a ready-to-publish AR project

WEEK 12

Module Topics

- AR Mini-Capstone III: Presentation and Showcase (continued)
- Professional Portfolio Development

Learning Objectives & Activities

- Present AR project to industry partner representative
- Polish and update professional portfolio with projects completed during the program