

AI & Virtual Reality – Course Syllabus (16 Sessions)

Program

Sarjana Terapan Produksi Media (D4) – Universitas Indonesia

Language of Instruction

English

Credits

2

Duration

16 Sessions × 100 minutes

Semester

Recommended for Semester 6

Prerequisite

Introduction to Digital Media / Interactive Technology

Course Description

This course introduces the fundamental concepts, tools, and creative applications of Artificial Intelligence (AI) and Virtual Reality (VR) within the media production ecosystem. Students explore how machine learning, generative AI, and immersive technologies transform visual storytelling, interactive environments, simulations, cultural content, and media innovation. The course emphasizes hands-on experiments, prototype building, ethical considerations, and project-based learning.

Course Learning Outcomes (CLOs)

- Explain core AI concepts (machine learning, neural networks, generative AI) and VR principles (presence, immersion, interaction).
- Analyze the role of AI and VR in contemporary media production, creative industries, and digital culture.
- Develop simple AI-assisted media assets (image generation, audio processing, procedural content).

- Build a basic VR interactive environment using industry-standard engines (Unity/Unreal).
- Integrate AI components into VR content (navigation, NPC behavior, procedural events).
- Evaluate ethical issues related to AI & VR, including privacy, representation, and digital well-being.
- Produce a final prototype project that combines AI and VR for a media application.

Weekly Course Outline (16 Sessions)

Session 1: Introduction to AI & VR in Media Production

Topics: History, evolution, applications in media, overview of tools

Output: Reflection note on AI/VR trends

Session 2: Fundamentals of Artificial Intelligence

Topics: Machine learning basics, supervised & unsupervised learning, datasets

Output: Simple ML model demonstration

Session 3: Neural Networks & Generative AI for Media

Topics: GANs, Diffusion Models, AI Image/Video synthesis

Output: AI-generated concept art

Session 4: Introduction to Virtual Reality Principles

Topics: Immersion, presence, haptics, locomotion

Output: Experience report

Session 5: VR Hardware, Software, and Pipelines

Topics: Headsets, controllers, tracking, Unity XR toolkit

Output: VR scene template prepared

Session 6: 3D Asset Creation for VR Worlds

Topics: Low-poly assets, optimization, PBR workflow

Output: Optimized 3D asset

Session 7: Interaction Design in VR

Topics: UX for immersive systems, spatial UI, gaze-based interaction

Output: VR mini-interaction prototype

Session 8: Midterm Assessment

Topics: VR environment walkthrough & AI asset presentation

Output: Midterm prototype

Session 9: Integrating AI into VR Systems

Topics: NPC behavior, AI navigation, ML-Agents intro

Output: Simple AI-driven agent

Session 10: Procedural Content Generation using AI

Topics: Narrative generation, generative sound, adaptive events

Output: Procedural environment

Session 11: AI for Audio/Voice in VR

Topics: Speech recognition, AI voice generation, ambient audio

Output: AI-generated voice asset

Session 12: Ethics in AI & VR

Topics: Deepfakes, privacy, psychological safety

Output: Ethical analysis paper

Session 13: Cultural & Educational Applications

Topics: Immersive pedagogy, cultural preservation, gamification

Output: Concept proposal

Session 14: Production Sprint

Topics: Prototype building & debugging

Output: Prototype draft

Session 15: User Testing & Final Refinement

Topics: Testing & improvements

Output: Final prototype

Session 16: Final Presentation & Showcase

Topics: Presentation & demo

Output: Final Project

Assessment Breakdown

- Class Participation & Weekly Outputs: 20%
- AI Mini-Project: 10%
- VR Mini-Project: 20%
- Ethics Paper: 10%
- Midterm Prototype: 15%
- Final Project: 25%

References (\leq 2021)

- Russell, S., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach.
- Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep Learning.
- Jerald, J. (2016). The VR Book: Human-Centered Design for Virtual Reality.
- LaValle, S. (2020). Virtual Reality.
- McDowell, B. (2021). Artificial Intelligence for Media.