

(XR) EXTENDED REALITY

Courses

XR 100. XR Practicum I. 1 Hour.

This level one practicum is designed for XR majors to introduce students to the workings of the extended reality facility, projects, and related operations. Students perform hands-on extended reality (XR) support under the mentorship of faculty and upper level XR students. Tasks may include assisting active XR projects, organizing, repairing, and researching XR equipment, and studying principles and support functions for projects and labs.

XR 101. XR Practicum II. 1 Hour.

This level two practicum is designed for XR majors to continue to introduce students to the workings of the extended reality facility, projects, and related operations. Students perform hands-on extended reality (XR) support under the mentorship of faculty and upper level XR students. Tasks may include assisting active XR projects, organizing, repairing, and researching XR equipment, and studying principles and support functions for projects and labs.

XR 108. 2D-3D Drafting Design. 3 Hours.

This course is an introduction to 2D and 3D computer aided drafting (CAD) techniques. Scale drafting is fundamental and powerful to the design-build workflow. This course explores scale drafting to create real-world objects by the development of drawings and models. It introduces the creation of 2D and 3D drawings, which have the potential to be applied to diverse areas including 2D printed plans, 3D printing and extended reality applications.

XR 150. Intro to Game Design and Development. 3 Hours.

This course introduces students to the global game industry and the core principles behind designing and developing interactive experiences. Students learn how games are conceived, structured, and delivered across platforms and devices, and how creative and technical roles work together to bring them to life. Topics include industry growth, game genres, player psychology, mechanics and aesthetics, XR's impact on gaming, AI in modern workflows, game ethics, and the evolving job market. This course serves as a foundation for advanced study in both Game Design and Game Development.

XR 177. Intro to Extended Reality. 3 Hours.

Students are introduced to the foundational principles of extended reality (XR), including the key technological and physiological elements of XR. Focus is given to consumer XR and the key concepts that differentiate XR from other media technologies. Students will explore XR through hands-on experimentation with important virtual and augmented reality technology. A portion of the class is dedicated to applying XR technology to a real-world project and presenting the results.

XR 190. XR Technical Infrastructure. 3 Hours.

This course introduces the practical technical foundations of wearable and non-wearable immersive computing systems. Students learn how to launch and shut down XR equipment, prepare systems for continuous use by many users, and deploy applications to multiple headsets using MDM. The course also covers networking fundamentals as they relate to XR, along with core hardware fundamentals, emphasizing step-by-step approaches to troubleshooting common network, casting, and equipment issues.

XR 200. XR Practicum III. 1 Hour.

This level three practicum is designed for XR majors to assist in leadership responsibilities in XR projects, while continuing to develop the student's knowledge of the workings of the extended reality facility, projects, and related operations. Students perform hands-on extended reality (XR) support under the mentorship of faculty and upper level XR students. Tasks may include assisting active XR projects, organizing, repairing, and researching XR equipment, and studying principles and support functions for projects and labs. Prerequisite(s): XR 100.

XR 201. XR Practicum IV. 1 Hour.

This level four practicum is designed for XR majors to assist in leadership responsibilities in XR projects, while continuing to develop the student's knowledge of the workings of the extended reality facility, projects, and related operations. Students perform hands-on extended reality (XR) support under the mentorship of faculty and upper level XR students. Tasks may include assisting active XR projects, organizing, repairing, and researching XR equipment, and studying principles and support functions for projects and labs. Prerequisite(s): XR 200.

XR 240. Intro to XR Programming. 3 Hours.

This course introduces fundamental programming concepts through the lens of immersive computing in extended reality (XR). Students learn to write and read basic code that drives behavior in XR experiences, progressing from simple instructions and logic to more organized, structured code. Short, applied programming tasks are connected to interactive XR scenes so students can see how their code controls objects and responses in immersive environments.

XR 277. Wearable XR Devices. 3 Hours.

Building on foundational XR concepts, this course focuses on wearable extended reality (XR) devices and their multisensory capabilities. Students operate and evaluate multisensory devices, such as VR headsets, AR glasses, wearable input devices, and force-feedback systems, with attention to their technological, ergonomic, and physiological aspects. A portion of the class is dedicated to designing, developing, and presenting a wearable XR project. Prerequisite(s): XR 177 and GV 292.

XR 292. Game Engines I. 3 Hours.

Current game engines such as Unreal Engine and Unity provide a powerful platform for rapid development of interactive experiences including video games, real-time graphics and special effects for entertainment and augmented and virtual reality environments. This course introduces fundamental game engine topics including level creation, material construction, visual scripting, lighting, collision detection, particle systems and landscape development.

XR 299. Topic/. 3 Hours.

This course is of variable content with selected topics presented to provide prerequisites for specifically identified additional coursework in Extended Reality. The course emphasizes independent investigation and the fundamental principles of immersive technologies and extended reality use cases.

XR 300. XR Practicum V. 1 Hour.

This level five practicum is designed for XR majors to assist in leadership responsibilities in XR projects, while continuing to develop the student's knowledge of the workings of the extended reality facility, projects, and related operations. Students perform hands-on extended reality (XR) support under the mentorship of faculty and upper level XR students. Tasks may include assisting active XR projects, organizing, repairing, and researching XR equipment, and studying principles and support functions for projects and labs.

XR 301. XR Practicum VI. 1 Hour.

This level six practicum is designed for XR majors to assist in leadership responsibilities in XR projects, while continuing to develop the student's knowledge of the workings of the extended reality facility, projects, and related operations. Students perform hands-on extended reality (XR) support under the mentorship of faculty and upper level XR students. Tasks may include assisting active XR projects, organizing, repairing, and researching XR equipment, and studying principles and support functions for projects and labs. Prerequisite(s): XR 300.

XR 310. Immersive Computing Optimization. 3 Hours.

This course focuses on refining immersive computing experiences for stable, real-time deployment across diverse platforms and form factors. Students use performance analysis and iterative testing to improve responsiveness, reduce latency, and increase robustness, with an emphasis on building scalable, energy-efficient, and portable immersive experiences that deliver consistent performance under real-world constraints. Prerequisite(s): GV 208 and XR 292.

XR 351. XR Internship. 3 Hours.

This internship experience allows students to practically apply classroom theory at for-profit or non-profit organizations in a supervised, workplace environment. One hundred twenty hours of active participation in actual projects for the internship site is required. Community service activities are welcome. Working in conjunction with the internship coordinator, each student is able to select an internship site based on their preference and interests after an interview with management and final approval by the coordinator. Prerequisite(s): College Level=Junior or College Level=Senior.

XR 366. Advanced XR Programming. 3 Hours.

This course provides an in-depth, hands-on exploration of advanced augmented reality (AR) development for iOS and Android. Using modern development tools, students learn to design, build, and deploy interactive AR applications. The course covers tracking technologies, 3D model integration, gesture-based interaction, audio layering, face and body tracking, object scanning, and machine learning techniques. Students develop functional AR prototypes and full applications that respond to environmental data, real-world sensor input, and dynamic user interactions on mobile devices. The course emphasizes problem solving, efficient coding practices, user experience considerations, and professional documentation throughout the development process. Prerequisite(s): IT 265.

XR 377. Non-Wearable XR Spaces. 3 Hours.

This intermediate XR course focuses on non-wearable immersive spaces that users can enter without wearing headsets or devices. These interactive environments include LED and projection spaces, spatial audio, and other immersive computing configurations designed for higher throughput and shared use. The course examines core design and interaction considerations for non-wearable installations and compares them with those of wearable XR systems. A portion of the class is dedicated to designing, implementing, and presenting a non-wearable XR experience. Prerequisite(s): XR 100 and XR 277.

XR 392. Game Engines II. 3 Hours.

Game engines provide a powerful platform for rapid development of interactive experiences including video games, real-time graphics, special effects, and extended reality environments. This intermediate course further develops game engine topics such as working with digital assets, materials, particles, lighting and visual programming. Prerequisite(s): XR 292.

XR 477. XR Project Workflow. 3 Hours.

This course centers on completing an immersive computing project from a defined set of requirements. Students build, adapt, and integrate digital assets into a cohesive system, with select assets provided. Course project requirements include immersion, multisensory interaction, hybrid integration of digital and physical elements, and often span wearable and non-wearable systems. Students deliver a comprehensive project with structured guidance that consolidates and showcases their immersive computing skills. Prerequisite(s): IT 366 and XR 310 and XR 377 and XR 392.

XR 499. Topic/. 3 Hours.

This is a course of variable content. Faculty and students prepare a special topic of timely interest in the area of Extended Reality. The course may consist of seminars, individualized instruction and/or research related to a specific area of specialization.