VIRTUAL TECHNOLOGY/DESIGN (VTD)

VTD 101 Introduction to Virtual Reality
3 credits
This course explores introductory design methods for virtual reality (VR) design and technical application. Designed to allow students the ability to rapidly develop their programming, and technical design skills required to produce VR experiences. Three 1-hour online lecture/lab per week and associated work.

VTD 151 Virtual World Building 1
2 credits
Introduction to the processes and principles of design associated with virtual world building. Two 2-hour lectures per week and assigned work. Recommended Preparation: ART 110 and ART 121

VTD 151L Lab: Virtual World Building 1
1 credit
This course is designed to support and further develop the comprehension of virtual reality design technology within the VTD 151: Virtual World Building 1 course.
Coreq: VTD 151 or Permission

VTD 152 Virtual World Building 2
2 credits
Applied tools and techniques. Exploration of the processes and principles of design associated with virtual building. Two 2-hour lectures per week and assigned work. Recommended Preparation: ART 110 and ART 121. (Spring only)
Prereq: VTD 151

VTD 152L Lab: Virtual World Building 2
1 credit
This course is designed to support and further develop the comprehension of virtual reality design technology within the VTD 152: Virtual World Building 2 course.
Coreq: VTD 152 or Permission

VTD 153 Virtual World Building 3
2 credits
Intermediate level virtual world building with an emphasis on intermediate-level tools and techniques for creating more complex environments, modeling, lighting, materials, characters, interaction, and behaviors. Two 2-hour lectures per week and assigned work. Recommended Preparation: ART 110 and ART 121.
Prereq: VTD 152

VTD 153L Lab: Virtual World Building 3
1 credit
This course is designed to support and further develop the comprehension of virtual reality design technology within the VTD 153: Virtual World Building 3 course.
Coreq: VTD 153 or Permission

VTD 154 Virtual World Building 4
2 credits
Synthesis of processes, principles, tools, and techniques associated with virtual world building. Two 2-hour lectures per week and assigned work. Recommended Preparation: ART 110 and ART 121.
Prereq: VTD 153

VTD 154L Lab: Virtual World Building 4
1 credit
This course is designed to support and further develop the comprehension of virtual reality design technology within the VTD 154: Virtual World Building 4 course.
Coreq: VTD 154 or Permission

VTD 200 (s) Seminar
Credit arranged

VTD 201 History & Theory of VR
3 credits
This seminar course is designed to develop the historical and philosophical understanding of virtual reality (VR) technology and its cultural evolution. The course will explore the formal description of VR technology and interpret recent psychological theories of VR knowledge construction.
Prereq: VTD 154

VTD 204 (s) Special Topics
Credit arranged

VTD 245 Advanced Modeling
3 credits
Exploration of methods used for modeling and sculpting organic surfaces focused on the creation of character and avatar for high and low polygon 3D digital models. Three 1 hour lecture/labs per week and associated work. (Fall only)
Prereq: VTD 154

VTD 246 Advanced Lighting and Materials
3 credits
Exploration of methods for illuminating and texturing virtual objects and environments. Foreground, middleground and background rendering issues are examined through topics that include radiosity, ray-tracing, procedural materials and render engine options. Three 1-hour lecture/labs per week and associated work. (Fall only)
Prereq: VTD 154

VTD 253 Virtual Design I
3 credits
Investigation of the art and science of virtual design, integrating creative problem solving skills with computer technologies. Sequence of exercises explores the problem domains of virtual objects and environments. Two 3-hour studios per week and assigned work. (Fall only)
Prereq: VTD 154

VTD 254 Virtual Design II
3 credits
Continued development of critical thinking and problem solving skills through a sequence of exercises that emphasize design process, concept and context driven solutions to virtual, tangible, and integrated projects. Two 3-hour studios per week and assigned work. (Spring only)
Prereq: VTD 253 or Permission

VTD 271 Cross-Reality Technology 1
3 credits
Introduction to the fundamentals of Cross-Reality (XR) technologies, explore the development and delivery of interactive immersive digital worlds that transform and combine physical reality into virtual experiences. Two 1-1/2-hour lecture/labs per week and associated work. (Fall only)
Prereq: VTD 154

VTD 299 (s) Directed Study
Credit arranged
VTD 301 Theory & Applications of VR  
3 credits  
This seminar course is designed to develop the student's understanding of virtual reality (VR) design theory and application. The course will challenge students to develop new concepts for VR that have the potential to significantly impact society and expand on current concepts of the built environment.  
Prereq: VTD 201 or Permission  

VTD 355 Virtual Design III  
4 credits  
Introduction to virtual design and relationship to human needs; focus on design process and expansion of vocabulary associated with virtual environments; experimentation & creativity encouraged. Three 3-hour studios per week and assigned work. (Fall only)  
Prereq: VTD 254 or Permission  

VTD 356 Virtual Design IV  
4 credits  
Design development of conceptual and technical aspects of virtual environments; exploration of design issues from conception to delivery. Three 3-hour studios per week and assigned work. (Spring only)  
Prereq: VTD 355 or Permission  

VTD 367 Visual Effects  
3 credits  
Exploration of methods used for visual and experiential communication, problem solving, and storytelling through linear and interactive 3D computer generated animation. Three 1-hour lecture/labs per week and associated work. (Spring only)  
Prereq: VTD 266 or Permission  

VTD 372 Cross-Reality Technology 2  
3 credits  
Building upon the foundational knowledge of Cross-Reality (XR) technologies, exploring how current and emerging versions of XR technologies can enhance XR interactions (object-oriented and event-driven) and user experiences (story telling/presence/social/multiuser) in virtual worlds. Two 1-1/2-hour lecture/labs per week and associated work. (Spring only)  
Prereq: VTD 271 or Permission  

VTD 380 Advanced Character Design  
3 credits  
Exploration of advanced workflows and methods for entertainment focused character design. This course will cover advanced digital painting techniques and basic image compositing in Photoshop while also covering digital sculpting and rendering using Zbrush. One 3-hour lecture/lab per week with associated work.  
Prereq: Instructor Permission  

VTD 457 Capstone Design Studio I  
6 credits  
Gen Ed: Senior Experience  
Sequential contract courses built around the collective content of five interdisciplinary clusters; research, design and implementation of comprehensive virtual design project. Three 3-hour studios per week and associated work.  
Prereq: VTD 356  

VTD 458 Capstone Design Studio II  
6 credits  
Sequential contract courses built around the collective content of five interdisciplinary clusters; research, design and implementation of comprehensive virtual design project. Three 3-hour studios per week and associated work.  
Prereq: VTD 457  

VTD 497 Teaching Assistant, Undergraduate  
Credit arranged  
Teaching assistant services performed by advanced undergraduate students with faculty supervision.  

VTD 499 (s) Directed Study  
Credit arranged