

# Digitally Augmented Architecture

---

## Into which MS degree will this Graduate Certificate convert?

This certificate can lead into the current MS Arch degree. M Arch students may also take the courses of the certificate as elective courses and apply them for both (the certificate and their M Arch degree). We are also in the process to restructure the MIP degree and rename it Master of Urban Design. Once this degree is available this certificate can also lead towards that degree.

## In what industries might a holder of this Graduate Certificate find employment?

This certificate will provide an inside in how information technology is used to influence and support social structures and an inside in how ICS are used as a catalytic tool for expanding and augmenting public and private space.

## In what job titles might a holder of this Certificate fit?

Architect, Urban Designer, Urban Planner

## Is this certificate fully available online (all courses)?

Yes

## Description of certificate program

The integration of Information Technology in architecture changed the way we experience the build and natural environment. Interactive maps and other smartphone apps are the beginning of new ways to interact with our physical environment through new interfaces. A rapid development of new augmented reality technologies will define new characteristics of work environments, public and private spaces. This certificate will introduce you to the history and politics and economic forces that are starting to define this new space. You will learn tools, methods and strategies in computational processes ranging from areas of embedded systems and human factors. Courses are offered in machine learning, programming, physical computing, simulation and motion capture and digital fabrication. The intersection of these areas will allow you to develop new solutions for the Internet of Things and a digital culture.

The 12 credit Graduate Certificate in Digitally Augmented Architecture is comprised of 4 courses for those who wish to gain the foundational skills and knowledge required to design of a digitally augmented spaces for a wide range of programs.

## What are the Required Courses?

(12 credits) Students have to select 4 courses from the following course offerings:

### **ARCH 689 AI / VR in Architecture;** 3 credits, 3 contact hours

The recent progress in data science allows us to understand the correlations between artistic expressions and their implicit qualities in more quantifiable formats and leads us to explore creativity through a symbiotic relationship between human and machine intelligence. This course will introduce various analytical means to assess the performance and quality of spatial designs. Using various computational design tools, students will use environmental to aesthetic parameters to explore the use of Artificial Intelligence (AI) and Virtual Reality (VR).

### **ARCH 688 The Augmented City;** 3 credits, 3 contact hours

Digital technology disrupted city life. The use of ICTs (Information Communication Technologies) has radically changed the way we inhabit and operate in the urban space. This course provides a history of how information technology is used to influence and support social structures and an inside in how ICTs are used as a catalytic tool for expanding, augmenting and altering social interactions.

### **ARCH 677 Geographic Information Systems;** 3 credits, 3 contact hours

Prerequisite: course or working knowledge of CADD or permission of instructor. Geographical/Land Information System (GIS/LIS) is a computerized system capable of storing, manipulating and using spatial data describing location and significant properties of the earth's surface. GIS is an interdisciplinary technology used for studying and managing land uses, land resource assessment, environmental monitoring and hazard/toxic waste control, etc. Introduces this emerging technology and its applications.

### **DD 634 Physical Computing for Designers;** – Interaction Design; 3 credits, 3 contact hours

Design course focusing on two-and three-dimensional visual communication of data, including interactive and scripted/animated communication as well as still-image utilization. Applications may include website creation, information kiosks, exhibit design, educational videos, scientific visualization, and other graphics-intensive projects.

### **DD 640 User Interface/User Experience in Digital Design;** 3 credits, 3 contact hours

Students will research, develop, and test basic UI/UX designs. Design strategies will be discussed as they apply to physical, virtual, and hybrid prototype solutions.

**IS 661 User Experience Design;** 3 credits, 3 contact hours

This is a foundation course on the design of digital products. User Experience Design (UXD) isn't just about making interfaces usable. It is about designing and building relevant and successful products. Effective UXD requires a mix of Interaction Design (ID) methods and processes. This course takes you through the process of creating compelling interaction designs for digital products from the idea stage into creating a simple and intuitive user experience blueprint. You will 'learn by doing' in a team environment, enabling you to practice the techniques with coaching from instructors. The course will demystify Lean UX; Agile UX; Human Computer Interaction (HCI); Design Audits and Claims analysis; Persona construction; Storyboarding; ID scenarios; ID Frameworks; Role of user-research in UXD; and Design Patterns.