DIGITAL DESIGN AT UO

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University of Oregon Architecture Department has developed a spectrum of digital design from introductory methods courses to advanced design studios. With a computing curriculum that stresses a variety of tools, architectural issues such as form-making, communication, collaboration, theory-driven design, and presentation are explored.

During the first year, all entering students are required to learn 3D modeling, rendering, image-processing and web-authoring in our Introduction to Architectural Computer Graphics course. Through the use of cross-platform software, the two hundred beginning students are able to choose to work in either MacOS or Windows. Students begin learning the software by 'playing' with geometric elements and further develop their control by describing assigned architectural monuments. In describing the monuments, they begin with 2D diagrams and work up to complete 3D compositions, refining their models with symbol libraries. By visualizing back and forth between the drafting and modeling modes, the students quickly connect orthogonal plans and sections with their spatial counterparts. Such connections are an essential foundation for further learning.

Throughout this introductory course, the Internet is used to share student work and provide academic resources. For example, in order to assist undergraduates in improving their modeling abilities, architectural kits-of-parts are made available for downloading. The notion that multiple online resources are available, which in turn can be integrated quickly into a design process is instilled early in our students' thinking.

The entering graduate students also use computer software collaboratively. They are required to create their own building elements and exchange them with each other via the class' web page. Mandatory student web pages facilitate the recognition of imaginative solutions as students begin the habit of digitally publishing their 3D work. Web portfolios are maintained throughout the year, tracking students' progress in design studio.

Building on the introductory design course, the Advanced Computer Graphics course encourages students to think with the computer not only as an output media, but also as an internal process tool. Students are encouraged to work interactively in the digital model, manipulating volumes and forms more intuitively, in space, without sketching on paper or recording ideas with other media. These tautological models are then exported, and used as basis for animation studies. Similarly, the Kit-of-Parts Design Studio is presented as an entirely digital studio fully integrating geometric modeling in their design process. The presentation of ideas and theory-based design content is also digital in nature, including students' digital publication of their work on the Internet.

Learning to work quickly and in direct collaboration has also been facilitated by a range of software such as Autodessys FormZ, AutoCad and 3Dstudio Max. Our advanced students, working in esquisse design problems, extend their understanding by creating three-dimensional Web content in the form of Virtual Reality Modeling Language (VRML). In the Web Programming for Architecture course, VRML models are linked to Java applets to affect dynamic generation or interactive web-based modeling processes. Galleries of student work are graded via web postings. In a Design Collaboration Seminar, students are asked to visually describe a real or fictitious place. The students create vivid descriptions of these environments using 3D modeling and rendering in combination with digital image processing. In participation with other universities such as the University of Utah and Cal Poly, San Luis Obispo, these place descriptions are then used as sites for digital design collaboration and for designer/client role-playing. During role-play, each of the students acts reciprocally, as the client for a remote designer and as the remote designer. The design collaboration effort requires the quick visual exchange of architectural ideas, with different methods being shared between schools. Using scanned images, digital cameras, simple sketches, modeling and image mapping, the long-distance conversations are kept dynamic. The open-ended application of digital design tools continues to provide our students with new ways in which to shape and express their ideas.

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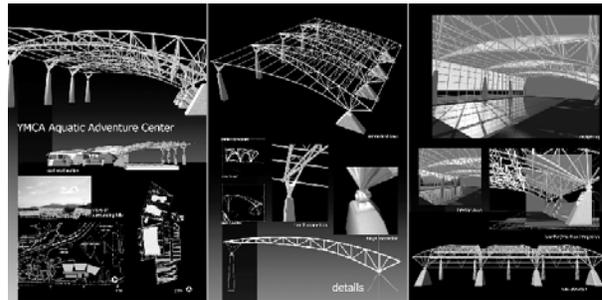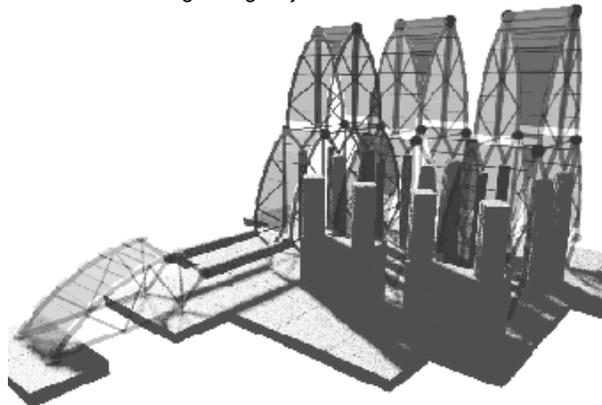

Recreation Building Design by Petra Wilm

Image by Jon Zegers