

Faculty of Environmental Design

Course Title: Computer Modeling for Urban Design

Course No: EVDP 602

Instructor: Dr. Richard M. Levy, rmlevy@ucalgary.ca

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Session: Fall 2015

Time: 9:00-12:50

Location: PF 2165/2170

Office Hours and Location: Levy PF 4182, TBA; Galpern PF 3192, Open door policy

Introduction

Course Calendar Description:

Introduction to the use of computer modelling, animation and virtual reality in urban design. Professional CAD and rendering applications will be used to explore the aesthetic and technical aspects of design. Emphasis given to developing sensitivity to the application appropriate to communicating three dimensional urban and natural form using computer generated images. Also known as: (formerly Environmental Design 602)

Objectives:

In this course you will have an opportunity to develop an understanding of computer modeling and GIS used in architecture, planning, urban design and virtual reality. During the term lectures and lab sessions will introduce a variety of software applications used by design professionals. Since no single package has been designed to perform all of the functions needed by today's practitioners a goal of this course is to develop a familiarity with a wide range of products. Several assignments will be given during the term. Each assignment will help you master a specific application. A goal of these assignments will be to develop a sensitivity to the application appropriate to communicate a specific idea or set of relationships.

The objectives of this course are:

- ***Increase your awareness of the wide range of computer applications available for computer modeling and visualization.***
- ***Develop a sensitivity to the choice of application appropriate to communicate a specific idea or set of relationships***
- ***Develop skill in the use of computer applications used in practice to model the built and natural environments.***
- ***Use three dimensional and spatial data models to support design and decision-making in the built and natural environments***
- ***Develop a sensitivity to the limitations of each package in modeling.***
- ***Acquire a personal style in the creation of computer models and presentation graphics.***

Teaching Approach:

The course will be divided into two modules. The first module will focus on CAD and multi-media applications, while the second module will focus on three-dimensional landscape and spatial modelling.

In the first module, studio assignments will be combined with a wide range of topics including: the art and science of computer modeling, perception, visual impact assessment reports and video editing. Many of the lectures and class discussions will serve as an introduction to the study of the theory and practice of computer modeling. In the studio, individual assignments will be organized within the framework of an actual problem. Modeling skills will be used to develop a solution to a specific urban design problem.

In the second module the course will follow a laboratory format with lectures, skill-building exercises and hands-on coaching interspersed.

Schedule:

Day	Module	Topic
11-Sep-15	1	Introduction to Computer Modeling, AutoCAD
18-Sep-15	1	SketchUp and Urban modeling
25-Sep-15	1	SketchUp and Urban modeling
2-Oct-15	1	SketchUp and Urban modeling, PowerPoint
9-Oct-15	1	Photoshop and Premiere
16-Oct-15		Block Week
23-Oct-15	1	Urban Massing Modeling
30-Oct-15	2	ArcGIS for site cartography
6-Nov-15	2	ArcGIS for site analysis
13-Nov-15	2	ArcScene for site analysis
20-Nov-15	2	ArcGIS for site selection
27-Nov-15	2	ArcGIS for site selection
4-Dec-15	2	Google Earth Pro for remote sensing of the urban environment

Means of Evaluation:**Module 1: CAD and Multi-media**

In completing these assignments you will have the opportunity develop modeling and graphic presentation skills including:

•Site Models

- + Massing study models
- + Streetscape models
- + Terrain Models

•Architectural Modeling

- + Massing studies
- + Concept models
- + Interior Design
- + Introduction to BIM

- The Art of Presentation
 - + Plan
 - + Elevation and sections
 - + Axonometric
 - + Perspective
 - + Rendering - Shadows, painting and sketch
 - + Animation - Walk-throughs and Fly-overs
 - + Introduction to Virtual Reality

- Video Editing
 - + Story Boarding
 - + Video compression
 - + Video editing
 - + Titling and captions
 - + Special effects

In the first module all students will be required to complete three assignments.

Assignment 1: Urban Massing Modeling (SketchUp/ Photoshop) 20%

- Objectives:
 - Urban Massing Modeling for Community Planning Studies

- Due Dates:
 - October 2

Assignment: 2: Modeling and Rendering 20%

- Objectives:
 - Site Context Modeling
 - Architectural Modeling
 - Texture Mapping and Creating Maps
 - Terrain Modeling
 - Computer Rendering and Animation

- Due Dates:
 - October 23

Assignment 3: Video Editing (Premier/ Photoshop) 10%

- Objectives:
 - Storyboarding
 - Video Editing

- Due Dates:
 - October 23

Total 50%

Module 2: 3D landscape and spatial modelling

In completing these assignments you will have the opportunity develop skills in using GIS to analyze digital elevation models and urban spatial data and to interpret their conclusions.

- Three dimensional landscape modeling
 - + Digital elevation models
 - + Representing 3D landscapes in 2D
 - + Representing 3D landscapes in 3D
 - + Slope and aspect analysis
 - + Viewshed analysis
 - + Hillshade analysis
 - + Site hydrological analysis

- Spatial modeling for decision-support
 - + Modeling proximity to features of the urban environment
 - + Multi-criteria decision analysis for site selection

- Remote sensing for decision-support
 - + Analysing changing urban form over time

- The Art of Presentation
 - + Cartography
 - + Animating landscape flyovers

In the second module all students will be required to complete two assignments.

Assignment 4: Site analysis (ArcGIS/ArcScene)	25%
Objectives: Visualize, map and analyze the physical conditions at an urban site	
Due Dates: November 20	
Assignment: 5: Site selection (ArcGIS)	25%
Objectives: Use physical and urban spatial data to select an optimal site	
Due Dates: December 4	
<hr/> Total	50%

Grading Scale

Grade	Grade Point Value	4-Point Range	Percent	Description
A+	4.00	4.00	95-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	90-94.99	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	85-89.99	Very good performance
B+	3.30	3.15-3.49	80-84.99	Good performance
B	3.00	2.85-3.14	75-79.99	Satisfactory performance
B-	2.70	2.50-2.84	70-74.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	65-69.99	All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	60-64.99	
C-	1.70	1.50-1.84	55-59.99	
D+	1.30	1.15-1.49	50-54.99	
D	1.00	0.50-1.14	45-49.99	
F	0.00	0-0.49	0-44.99	

Notes:

- A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript.

Readings:

There will be no required text for this course. However, there will be a required readings list on reserve on D2L. There will also be a list of suggested readings for those interested in learning more about the applications taught in this course.

Prerequisites:

Students should have a basic knowledge of computing applications for image editing (Photoshop, Illustrator) and multimedia presentations (PowerPoint). Familiarity with Windows is a prerequisite for this course. For a link to on-line courses see:

<http://www.ucalgary.ca/it/ols>

Notes:

1. Written work, term assignments and other course related work may only be submitted by e-mail if prior permission to do so has been obtained from the course instructor. Submissions must come from an official University of Calgary (ucalgary) email account.
2. Academic Accommodations. Students who require an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to their Instructor or the designated contact person in EVDS, Jennifer Taillefer (jtaillef@ucalgary.ca). Students who require an accommodation unrelated to their coursework or the requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Vice-Provost (Student Experience). For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/
3. Plagiarism - Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when:(a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work (this includes having another impersonate the student or otherwise substituting the work of another for one's own in an examination or test), (b) parts of the work are taken from another source without reference to the original author, (c) the whole work (e.g., an essay) is copied from another source, and/or, (d) a student submits or presents work in one course which has also been submitted in another course (although it may be completely original with that student) without the knowledge of or prior agreement of the instructor involved. While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted. Plagiarism is an extremely serious academic offence. It is recognized that clause (d) does not prevent a graduate student incorporating work previously done by him or her in a thesis. Any suspicion of plagiarism will be reported to the Dean, and dealt with as per the regulations in the University of Calgary Graduate Calendar.
4. Information regarding the Freedom of Information and Protection of Privacy Act (<http://www.ucalgary.ca/secretariat/privacy>) and how this impacts the receipt and delivery of course material
5. Emergency Evacuation/Assembly Points (<http://www.ucalgary.ca/emergencyplan/assemblypoints>)
6. Safewalk information (<http://www.ucalgary.ca/security/safewalk>)
7. Contact Info for: Student Union (<http://www.su.ucalgary.ca/page/affordability-accessibility/contact>); Graduate Student representative (<http://www.ucalgary.ca/gsa/>) and Student Ombudsman's Office (<http://www.su.ucalgary.ca/page/quality-education/academic-services/student-rights>).