Media II: Digital Media (Fundamentals of 3d Modeling)

LARP542 continues the curricular emphasis on visual communication and design. The course provides an intensive hands-on inquiry into the exploration, enhancement, and extrapolation of digital media and the subsequent modes of conceptual, organizational, and formal expression. Through a series of working labs, students are introduced to various software applications and numerically driven techniques as a means to learn rigorous surface construction and control through form processing. Instead of understanding computer modeling simply as an end, this course considers digital media as a compulsory tool in design processes.

The course will provide students with the necessary digital modeling techniques to explore and examine precision surface profiles and landforming strategies. These models provide a basis to speculate on what processes and programs might be engendered or instigated. Through an emphasis on temporal and relational techniques, Media II addresses the increasing recognition that dynamic processes are explicit components of analysis and generation.

Design is increasingly dependent on the collection and control of organized information. Cheap computing and the pervasiveness of data have led to an increased ability to analyze and visualize complex physical organizations and processes. The result is that the description of a terrain is no longer limited to mapping spatial structure or perceptible features alone, as objects and surfaces, but also includes topological properties, which chart relationships among a variety of processes that flow through the landscape. Generated from data and parametric relationships, today’s geometric organizations are imbued with information in ways not previously possible.

Course Objectives

This course provides a platform to teach a range of computer skills that are essential for all designers, not just those interested in production of complex forms. It will address appropriate strategies for managing and converting data and methods for streamlining workflow through various computer applications.

As in analog media, craft is paramount in digital media. Information is not limited by scale or medium. As such, digital models not only need to look good, they need to perform well. Poorly executed and managed models flatten their potential to mere image. An intelligent computational strategy allows for an endless expansion of digital information to be expressed through material outputs.

Course Structure

The class will meet during one action-packed session per week. Each session will include a demonstration of relevant techniques, precedents, and readings (available online as a PDF). In-class laboratory time, with expert guidance, will be provided. Most time will be spent, however, working on developing your familiarity and skills within the three-dimensional modeling environment. Lab time will also be provided outside of class meetings. This time will be set with teaching assistants and will be posted online.

The course will use a series of short skill-based exercises to introduce concepts, tools, and techniques. Exercises offer an opportunity to attempt different approaches and methods.

Students will work individually throughout the semester.

Assignments

Modeling assignments will emphasize the precise collection, assembly, and refinement of data across a variety of software platforms. Assignments are due on a weekly basis. The short assignments will culminate with a half-semester exploratory project. All assignments must be submitted digitally.
Course readings provide a basis for understanding the larger intellectual implications of crafting digitally conceptualized environments. Students are required to submit a 200 word summary of each required reading. All summaries must be submitted digitally.

**Seminar Software**

Rhino will be the primary modeling platform. Associated plug-ins of Grasshopper, Rhino Terrain, V-ray, and T-Splines will help extend the toolset. GIS will facilitate the collection of extent data. The Adobe CS6 Creative Suite will also be used for documenting and expressing modeling processes through static and time-based visualizations.

**Grading**

*Class attendance and punctuality is mandatory*, as much of the content involves hands-on demonstrations. More than three absences will result in a reduced grade. Late submittals will be penalized 1/3 grade per day.

The weekly assignments comprising the first part of the semester will account for 30% of the course grade. In the latter animation projects, you will work towards creating a composite animation, which will account for 60% of the course grade. Course participation constitutes 10%. Projects will be presented in class, for review, during the seventh week and on the final day of meeting. A digital copy of both weekly pieces and final compilation will be required for final grade assignment.

A+ (4.0) = Excellent; exceptional work quality + no missed or late assignments  
A (4.0) = Very Good; above average work quality + no missed or late assignments  
A- (3.7) = Good; above average work quality + a missed or late assignment  
B+ (3.3) = Satisfactory; average work quality + a missed or late assignment  
B (3.0) = Marginal; average work quality + missed or late assignment(s)  
B- (2.7) = Unsatisfactory; below average work quality + missed or late assignment(s)  
C+ (2.3) = Very poor; poor quality + missed or late assignments  
C (2.0) = Unacceptable; poor quality + missed or late assignments  
C- (1.7) = Unacceptable; poor work quality + missed or late assignments  
F (0.0) = Unacceptable; poor work quality + missed or late assignments

**Cheating is a serious academic offense and grounds for course failure and/ or school expulsion.** Cheating is the use or attempted use of another’s material as your own. This includes any idea, image, drawing, or text that is taken from another source, such as an article or online. Any use of ideas or materials must be properly credited by citing the author(s) and source(s). Refer to the [Code of Academic Integrity](http://www.upenn.edu/academicintegrity/ai_codeofacademicintegrity.html) for details.

**Pre-requisites**

Each core course is a pre-requisite of the one that numerically follows it. The Department of Landscape Architecture will drop a student from a core Studio, Media or Workshop course if the student has not successfully completed the course in the previous semester or resolved an “Incomplete” grade prior to the start of the subsequent semester, unless special circumstances prevail.

**Technical Assistants**

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## PRELIMINARY SCHEDULE

| Week 1 | ORIENTATION | (Jan. 15) | Course overview  
Orientation & Interface |
|--------|-------------|-----------|------------------|
| Week 2 | DIGITAL TERRAINS | (Jan. 22) | Computational Geometry  
Points, Lines, & Surfaces  
(SCHENK-WOODMAN DUE) |
| Week 3 | NETWORKED TERRAINS | (Jan. 29) | Data terrains  
GIS search indices  
Assignment #1 – Orthographic Surfaces; Reading #1—Pedagogical Foundations: Deploying Digital Techniques in Design/ research Practice, Walliss et al. |
| Week 4 | EXTENSIVE TERRAINS | (Feb. 5) | Topological terrains  
Rhino Terrain  
Assignment #2 – Networked Terrains |
| Week 5 | PARAMETRIC TERRAINS | (Feb. 12) | Iterative surfaces  
Digital sketching  
Assignment #3 – Extensive Terrains  
(PLAYSCAPE ASSIGNED) |
| Week 6 | IN-FORMED TERRAINS | (Feb. 19) | Trees, Lists, & Maths  
Assignment #4 – Parametric Terrains; Reading #2—Digital Culture of Landscape Architecture, Picon |
| Week 7 | IN-FORMED TERRAINS II | (Feb. 26) | Slopes & aspects  
Sorting & sampling  
Assignment #5a – In-formed Terrains |
| Week 8 | PLIANT TERRAINS | (Mar. 5) | Land molding  
T-Splines  
Assignment #5b– In-formed Terrains II  
(502 MID-REVIEW) |
| Week 9 | SPRING BREAK | (Mar. 12) | (NO CLASS!) |
| Week 10 | PLAYSCAPE INTERIM | (Mar. 19) | Review  
(PLAYSCAPE MID-REVIEW) |
Week 11  HYBRID IMAGE  
(Mar. 26)  Atmospheric notations  
Playscape Development  
Reading #3—Structuring Relations: From Montage to Model in Composite Imaging, M'Closkey

Week 12  MOVEMENT & MEASURE  
(Apr. 2)  Temporal captures  
AfterEffects & Bongo  
Playscape Development

Week 13  PLAYSCAPE INTERIM  
(Apr. 9)  Playscape Development  
(PLAYSCAPE REVIEW)

Week 14  WORKING SESSION  
(Apr. 16)  Playscape Development

Week 15  FINAL  
(Apr. 23)  Review  
(PLAYSCAPE FINAL)

FINAL SUBMITTAL:  CD's with all Playscape Files must be submitted at the Final Presentation to pass this course.