

//Digital Emergence Computational Design with Intelligent Systems

Sciarc.edu

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Structure:

- This course [digital emergence] is divided into two parts, each segment structured to introduce and apply modes of computation as a design tool.

The first part covers a general introduction of the theory and implementation of the tool set using Maya's MEL (Maya Embedded Language), as it is the most relevant to the knowledge and studies of the current student.

- Topics include – visual mathematics theory, sociological functions to produce form, linear and non linear time based systems, and methods of producing mutation.
- History of theory behind such systems
- Subsequent methodology includes visualization and representational techniques as a working toolset.

The second part is an accelerated course of individual and group participation in specific research into structure, skin, and form. Students will be given the freedom to research the potential of scripting where the Maya software becomes a platform to either launch robotics or to open up to "speak" to other programs or to proceed in base programming language outside of the interface.

Lastly in this segment, non-linear generative systems will be introduced such as emergent flocking conditions, cellular automata, eugenic and evolutionary logics, etc.

Suggested Course Resources:

Gould, David A. D. "Complete Maya Programming. An Extensive Guide to MEL and the C++ API" 2003

Theodore A. Cook, Theodore A. "Curves of Life"

Thompson, D'Arcy Wentworth. "On Growth and Form"

DeLanda, Manuel. "A Thousand Years of Nonlinear History"

Spiller, Neil. "A+D Reflexive Architecture"

GSAPP class tutorials <http://www.arch.columbia.edu/index.php?pageData=50637>

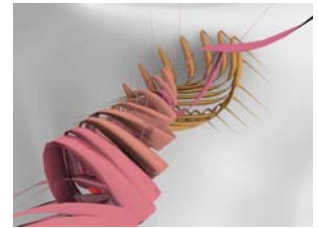
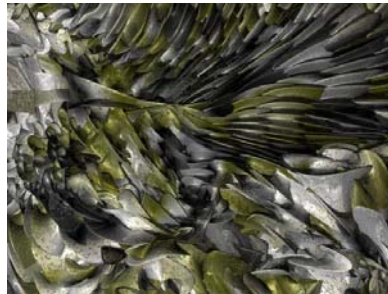
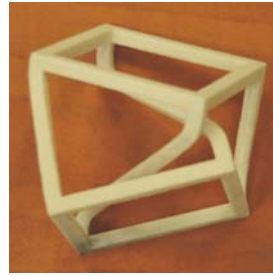
Cory Clarke website NTHD.org

Nick Puckett MEL resource website TBA

Programmer MEL/Maya resource <http://highend3d.com/maya>

MEL / C++ Basics;

- [1.0]MEL - Introduction>>
- [2.0]MEL - Scripts>>
- [3.0]MEL - Running>>
- [4.0]MEL - Bypass GUI>>
- [5.0]MEL - Execution>>
- [6.0]MEL - Variables>>
- [7.0]MEL - Scripting logic>>
- [8.0]MEL - Loops>>
- [9.0]MEL - Procedures>>
- [10.0]MEL - Others>>
- [11.0]MEL - Assistance>>
- [12.0]MEL - Querying attribute>>
- [13.0]MEL - Using Time>>



Weekly Topics:

topics[] = { Week1 , week2 , week3 , week4 , week5 , week6 , week7 , week8 };

- topics[1]= "Variables-Declarations/conversions" + Operators
- topics[2]= if, else if, loops, and basic Maya commands.
- topics[3]= Analyzing existing geometry and getting, printing & connecting attributes.
- topics[4]= expressions and intermediate mathematics
- topics[5]= Representational scripting and dynamic display
- topics[6]= Procedures, parametrics and rationalization of existing geometry
- topics[7]= "Simulation as Medium" - time and sequence of execution - runtime expressions vs coded time variables
- topics[8]= "Repetition vs. Iteration vs. Recursion" (macros(authored intelligence) vs. script as embedded intelligence)

(\$ADVANCED) includes the exploration in to the techniques for visualization

- topics[1A]= cellular automata and basic neighbor influence
- topics[2A]= advanced global and local influence (flocking)
- topics[3A]= "Non-linear Time", and Evolution and Eugenics
- topics[4A]= Robotics and program-to-program communication
- topics[5A]= Advanced programming.