**EVDA 782.07 Senior Research Architecture Studio**
Winter 2012  (Full course)
M, Tu, W, F  14:00-18:00 hrs.
Instructors:    Prof. Joshua M. Taron, josh@synthetiques.net
TA:             Matt Parker
Rooms:          PF 4170

## INTRODUCTION

The tendency toward design accessibility and interoperability between software has provided researchers, designers and architects with the ability to design and design with tools that actively communicate with one another.  This is especially useful when dealing with complex architectural environments where robust and novel solutions are often required when intuition just doesn't suffice.  Another way of putting this is to say that designers can now partner with intelligent computational design tools toward producing new design solutions.  This senior research studio is a platform for exploring explicit processes that integrate agent-based models, structural analysis software, and evolutionary engines through parametric environments.  These processes yield Structurally Intelligent Swarms (SIS); a morphologically-biased search space that exploits the latent intelligent in 3 dimensional agent-based models for the purpose of discovering novel structural formations and efficiencies.  These formations will be evaluated through their ability to provide subtractive design solutions within existing built environments.

It is strongly recommended that students in the studio take EVDS 697.52 which provides an opportunity to explore and develop a history of swarms both in and as architecture.

*The following CACB Student Performance Criteria will be covered in this course at a secondary level:*
*A3: Graphic Skills; B1: Design Skills; B7: Structural Systems; C3: Technical Documentation.*

## OBJECTIVES

1.  Introduce, train and familiarize students with SIS:  explicitly defined processes that integrate particle swarms, parametric modeling environments, structural analysis software and evolutionary engines for the purpose of producing novel, structurally viable morphologies.
2.  Describe and develop emergent morphologies within individually developed SIS assemblies.
3.  Explore formal, programmatic and material potentials afforded through SIS.
4.  Identify and occupy appropriate building typologies/sites for the deployment and use of SIS.

## TEACHING APPROACH + GENERAL SCHEDULE

The studio is formatted to frame a set of particular problems during each phase of the term with material support provided by both the instructor and TA in order to broaden the range of programmatic applications and morphological potentials of SIS.

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| Weeks 1-3 | Module 1:  SIS tutorials / initial design exercises |
| Weeks 4-6 | Module 2:  Morphology + Integrative Tactics (Workshop format) |
| Week 7 | Reading Week |
| Weeks 8-10 | Module 3:  Fabrication + Physicality |
| Weeks 11-13 | Module 4:  Subtractive Projection / Project Resolution |

**COURSE EXPECTATIONS AND MEANS OF EVALUATION**

Students will be expected to follow all assignments, to be present in studio on Tuesdays and Fridays, attend all lectures and reviews. Students will also be expected to read any assigned readings. The following is the general breakdown of assignments:

| | |
|---|---|
| Module 1: | 10% |
| Module 2: | 25% |
| Module 3: | 25% |
| Module 4: | 25% |
| Course Portfolio: | 15% |

All assignments will be evaluated in terms of focus (clarity), research effort (iteration + exploration), organization (structure) and support (documentation).

At the discretion of the instructor, assignments submitted after the deadline **may** be penalized with the loss of a grade (e.g.: A- to B+) for each day late. The following equivalencies (the University of Calgary has no official percentage scale system) will be used in calculating grades: **A+** (92-100); **A** (87-91.9); **A-** (82-86.9); **B+** (77-81.9); **B** (72-76.9); **B-** (67-71.9); **C+** (62-66.9); **C** (57-61.9); **C-** (52-56.9); **D+** (47-51.9); **D** (42-46.9); **F** (0-41.9).

**READINGS**

Tutorial documents, software definitions.

**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.
2. It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. (http://www.ucalgary.ca/drc/node/46) Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.
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/su-structure/contact-info); 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).