ARCH 498C
GRAPHICS PROGRAMMING IN LISP
3 Credits
Prerequisite: Computer literacy (Arch 370 or permission)

Instructor
Ellen Yi-Luen Do

Course Description
Introduces through weekly lectures, exercises, and laboratory sessions the essentials of writing interactive computer graphics code, with an emphasis on design related projects. Covers fundamental graphics data structures and algorithms, windowing and user interaction, and object-oriented programming.

Part I introduces fundamental language structure and functions in LISP including variables and function, arguments and values, basic graphics capabilities, concepts of iteration and recursion, conditional statements. Part II focuses on the use of the language to make simple graphic program, including creation of objects, lists, and creating a simple draw or paint program with animation. Part III is a term project, including proposal of the project to address certain architecture or construction related design issues, the implementation of codes, and the project presentation and documentation.

Course Objectives
This course is designed to help students learn basic programming skills to construct and debug innovative software with graphical abilities. The projects students invent are focus on supporting design process, and serves as a vehicle for discussion on design methods and theories. These projects include freehand drawing and paint program, bubble diagram editor, design games, geographic information system, building construction, and translation of 2D drawing into 3D geometry.

Current computer tools (in design and planning) do not support all phases of design. We (architects and planners) need to take control of tool-making, by having a first hand knowledge of computer programming it encourages communication of software developer of better tools, confidence to master other computer languages and environment. Computer programming is a way of thinking, very similar to architectural design, requires careful planning, designing details and debugging that can apply in other areas of professional life as well.

Course Requirements
Completion of individual projects and reading of related literature.
Presentation, participation and discussion in class.

Course Evaluation
Weekly Exercises 40%
Exam 20%
Final Project 40%

Required Texts
Related readings according to individual projects.
Weekly handouts and numerous web-based information resources.
http://courses.washington.edu/lisp/

Recommended Readings
"ANSI Common LISP"
"Common LISP the language"
"Artificial Intelligence"
"Artificial Intelligence in Design"
"Computer Aided Architecture Design Futures"
"Paradigms of Artificial Intelligence Programming: Case Studies in Common Lisp"