

# CMSI 499

## INDEPENDENT STUDIES: COMPUTER GRAPHICS PRACTICUM

*<http://myweb.lmu.edu/dondi/spring2010/cmsi499la>*

**Spring 2010** — Doolan 106  
Variable sessions and meetings, 3 semester hours  
Office Hours: TR 3–6pm, or by appointment

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### Objectives and Outcomes

To embark on a self-directed course of study in a specific area of computer science, under the guidance of the instructor. The student selects the topic and assists in identifying source material. In addition to learning more about the specific topic, the student will learn how to organize, execute, and document an intensive, individualized semester of self-study. Additional objectives depend on the selected subject matter.

### Prerequisites/Prior Background

Since the target of this computer graphics practicum is a 3D interface for graph structures, the student must be familiar with the needs of the target mathematician/topologist user. The target implementation technology requires proficiency in Java and OpenGL.

### Materials and Texts

Mostly to be identified and reported by the student. Primary leads, for this particular project, include any resources or documents available for the OpenGL Shading Language (GLSL) and the Java Bindings for OpenGL (JOGL) library.

### Course Work and Grading

Graded coursework consists of 1 online study journal (20%), 1 final study report (40%), and modifications or extensions to some open source web browser code base (40%). Letter grades are determined as follows:  $\geq 90\%$  gets an A– or better;  $\geq 80\%$  gets a B– or better;  $\geq 70\%$  gets a C– or better. I may curve grades upward based on qualitative considerations such as degree of difficulty, effort, class participation, time constraints, and overall attitude throughout the course. Grades are never curved downward.

### Online Study Journal

You will maintain an online study journal of your progress. No particular technology or software is required; you may select whatever is most available or convenient, ranging from an externally hosted blog to something that you run from your own Keck lab user account.

Your study journal will be graded according to the same criteria as the final paper (see below). The frequency and number of journal entries affects the content and organization components of the study journal's grade.

The study journal will be graded at the end of finals week, May 7. You are, of course, free to maintain the journal beyond the semester — the spirit of this course is, after all, to give you an opportunity to get official credit for something that you would want to study on your own anyway. Continuing the journal provides you with a framework for pursuing this study beyond the semester.

### Final Study Report

You will formally document the overall result of your studies in the form of a final report to be submitted at the end of the semester. The report shall consist of at least the following sections:

1. An introduction that states the background and motivation for this course of study,
2. A literature review describing the source materials studied,
3. A summary or survey of what was learned during the semester, and
4. A technical description of the software that you have written: an overview of its design and context (i.e., existing code into which it was integrated, if applicable), followed by any relevant implementation details and possible future work, with a focus on what was learned during the semester.

To help you to focus on the actual work and content of the report (as opposed to busy work such as formatting and reference management), it must be written using LaTeX.

There are no hard limits on length, but 10–20 pages in LaTeX’s default article format, not including the list of references cited, is typical. The report will be evaluated along the following criteria:

1. *Content (40%)*: What is the quality of the work? Are the background and motivation relevant and well-stated? Is the literature review thorough and well-described? Is the summary or survey complete and substantive? How well-documented is the programming project?
2. *Organization (30%)*: Is the text structured well? Are its ideas and flow easy to follow? Are distinct sections or topics clearly identified?
3. *Writing (20%)*: Are statements clear and easy to follow? Is the language precise and grammatically correct? Is the paper’s tone appropriate?
4. *Polish (10%)*: Is the content properly proofread? Are there any misspellings, typos, or other formatting faux pas?

The final study report is due at the end of finals week, May 7.

## Open Source Contributions

You will apply what you learn in the form of modifications or extensions to some open source web browser code base, or at the operating system level with the Chromium OS open source project. This work will be graded along these criteria:

1. *Design (30%)*: Clarity, flexibility, and ease of maintenance; elegance and innovation; applies proper separation of concerns; satisfies the “one change, one place” property
2. *Functionality (30%)*: Works as intended; produces correct answers/results; performs in a reasonable amount of time; includes tests that demonstrate correct behavior
3. *Naming (20%)*: Clarity and consistency; names correspond to roles, types, or actions
4. *Documentation (15%)*: Presence of README or overview material; abundance of comments in code; genuinely useful information
5. *Version control (5%)*: Sufficient frequency; informative commit log

The state of any code at the end of finals week, May 7, will serve as the basis for this grade.

## Attendance

Meeting and session schedules are determined individually, and may vary according to the specific subject matter and/or course work. The last day to add or drop a class without a grade of W is January 25. The withdrawal or credit/no-credit deadline is March 26.

## Special Accommodations

Students with special needs who need reasonable modifications, special assistance, or accommodations in this course (such as a documented disability [physical, learning, or psychological]) should contact the Disability Services Office (Daum Hall, Room 224, x84535, <http://www.lmu.edu/dss>) as early in the semester as possible. All discussions will remain confidential. In addition, please schedule an appointment with the instructor early in the semester to discuss any accommodations for this course for which you have been approved.

## University Policy on Academic Honesty

Loyola Marymount University expects high standards of honesty and integrity from all members of its community. All students are expected to follow the LMU honor code, as stated in the *LMU Undergraduate Bulletin 2008-2010*, pp. 58–59 (online at <http://www.lmu.edu/Page13245.aspx#honorcode>).

## Topics and Important Dates

Dependent on the specific subject matter and on-going progress.