

## Research Project

### Objective:

Every student enrolled in Advanced Reconfigurable Computing will develop a research project and produce a technical report. Projects will also be presented in class during the last two weeks of the semester. Those taking the 8090 version of the course are expected to conduct doctoral-level research; the significance of the project will be weighed when the project is evaluated. It is expected that some students will complete the project with a technical paper suitable for submission to a peer-reviewed conference or journal.

### Evaluation:

This project uses a *gated* grading scheme. There are six gates and the last five gates are worth 20% of the final project grade. The first four gates are pass/fail and the student must complete the gates in order. That is, the first gate must be finished before working on the second gate; gate two must be completed before gate three; and so on. The final gate is subjective. This means that every student that completes the first four gates is guaranteed to earn a score of at least 80%. The remaining 20% is determined by the overall product which includes both the quality of the research *and* how the results are communicated in the technical paper and presentation.

This project is worth 50% of the student's semester grade.

### Gates:

To complete a gate, the student must make an appointment with the instructor and present supporting materials. It is the sole responsibility of the student to stay on track and to schedule appointments!

The six gates, listed on the next page, are structured to help the student complete a research project in a 15-week period. Not every gate represents an equal amount of work. Rather, the gates represent critical steps and some steps needed to be completed early in the semester in order to finish on time. (For example, having a clearly defined project with carefully delineated requirements early in the semester is crucial to success.)

- G0** initial discussion of project idea; to pass this gate, the instructor must agree with project idea
- G1** initial write-up of “main idea” and what experiments are required
- G2** background (formal literature search) and description of test methods; again, this is presented in written form
- G3** written proposal; to pass this gate, these issues must be addressed in a written document:
  - thesis question (what will we learn?)
  - motivation (why is this significant?)
  - issues/context/background (are there alternative approaches? what are the trade-offs? what else has been done?)
  - expected outcomes (what data should we observe? how will it be presented? graphs, tables?)
- G4** raw data and preliminary analysis; this gate does not require a report
- G5** final paper

For each of the gates, the written reports will be marked up by the instructor. This includes technical questions that need to be answered *and* the technical writing. Students need to demonstrate at the next gate that these issues have been corrected. (It is expected that most of the intermediate writing will contribute to the final report due at the last gate.)

In addition to the formal gates, students are encouraged to visit the instructor whenever questions arise. This is especially true between gates G3 and G4 when the experiments are being conducted. The schedule to the right is provided as a guide. Students are strongly encouraged to keep to this schedule; it helps avoid common pit-falls that have trapped students in the past. Again, if any problems arise, talk to the instructor immediately. Deviations from the original proposal must be approved.

### Fall 2008 Schedule

| Gate                 | Target Date   |
|----------------------|---|
| <b>G0</b>            | Fri, August 29 (5pm)                                    |
| <b>G1</b>            | Tue, September 2 (2pm)<br>(feedback: Fri, September 12) |
| <b>G2</b>            | Mon, September 15                                       |
| <b>G3</b>            | Fri, September 29                                       |
| <b>G4</b>            | Fri, November 14  |
| <b>G5</b>            | Mon, December 1   |
| <b>presentations</b> | December 3, 8, 15                                       |

### Acceptable Topics:

A broad range of reconfigurable computing proposals are acceptable. Doctoral students already engaged in research are encouraged to select a project that will complement their on-going work. New students, with no prior research experience can use this project as a way to ‘dip their toe in the water’ to see if this area is appealing for further study. For specific ideas or suggestions, schedule an appointment with the instructor.

*revised: 25 August 2008*