DRAFT Sample Proposal Form
Master's Thesis - Turner

Submit a proposal of this general form with these sections to Dr. Turner for approval before CSC 599 registration. Expect to perform CSC 500 for development of this proposal in the preceding term.

1. **Type of Master's Work Proposed.**   Do you propose a hypothesis test, to perform an *experiment* to see if some process can be automated? Would you prefer to solve a problem by building a software system as a *"proof of concept"* regarding some interesting area? Do you propose to perform a survey of University students and use science to discover a set of user requirements for some proposed *system requirements analysis*? Would you like to do a *theoretical analysis* of some specific set of requirements or social set of constraints on sets of software requirements? Would you like to write up a thorough *survey* of some special technical topic for publication? It is important to categorize your work at the outset, even if you change it later (and I am flexible regarding change.) I generally recognize 4 basic types of Master's work: Project, Survey, Theoretical Analysis and Experiment. These types are not mutually exclusive, but I want you to map out your preliminary plan with one label.

2. **Relevant Definitions.** What is an Analysis? What is a Project? What is an Experiment? Define exactly what you mean by the term you've used to describe they type of your proposed work in a way that captures your understanding of its essence. This will help define the requirements you must fulfill with me in order to finish. You may use any sources you wish, please intersect with some Cal Poly definitions and check the Department's definitions. Consider that part of the task is to become a technical "expert" in some CSC topic, where you really have some knowledge and experience that shows the maturity you've reached in your graduate coursework here at Cal Poly. Make this section concise and understandable so that your mother or father would understand it at a high level.

3. **Expected Abstract of Master's Work.** Write up one or two paragraphs of abstract to describe what you think the finished project will be about and what you expect to conclude. One paragraph should describe the state of the art and the main issue to be addressed, another paragraph should describe your expected result. In the course of your work, you may find that your preliminary thinking was totally wrong, that is fine. This section requires a preliminary hypothesis regarding the completion of your project. What is your target?

4. **Proposed Table of Contents** Give as detailed a picture of the Table of Contents as is possible at this point. The sections must include (1) Abstract; (2) Introduction where you generally describe your problem area; (2) Problem description where you carefully and in detail describe the problem you are interested in; (3) Survey of relevant work where you describe the state of the world in your problem area and further describe how others have looked at this problem; (4) your Contribution that consists of some (possibly small) variation on

current solutions, a new synthesis or combination of solutions, an analytic criticism of some known solutions, a model to test some hypothesis about the solutions (software) or a mature description of open questions in the area; (5) <u>Evaluation of contribution</u> where you explain how your work has meaning in some context (you need not change the world but should show some improvement or novel evaluation for some element of your solution, experiment or survey), and note that this section explicitly includes *both strengths and weaknesses* of your approach; (6) <u>Conclusion</u>, and <u>Bibliography</u>. Note that, if your thesis work has any ethical implications whatsoever, it must be noted and analyzed. Review the ACM/IEEE Software Engineering Code of Ethics and if you are performing an experiment with human involvement, consult the human subjects board (IRB).

5. **<u>Proposed Process Model for Completion of your Master's Degree.</u>** Here you propose *how* you plan to carry out your project. It should include a timetable with proposed work schedule (timesheets are required: remember to expect 10 – 15 hours per week to work on the project). It must show the synchronization points for evaluation of work (by you and by me.) The process model also needs to include features such as change management and alternative considerations (such as if your original idea totally fails.) All paths should lead to some kind of success (M.S. degree) in a reasonable time.

6. **<u>Basic Requirements for your Master's Work.</u>** You can think of this proposal as an extended requirements document for your Master's Work. What do *you* expect to accomplish with this work? You should begin with a "Goals" section where you'll describe your professional goals and interests. Further explain how this Master's work supports you in your goals. Then detail the set of requirements you expect to satisfy in order to establish yourself deserving of a Master's degree from Cal Poly. Remember to include a rich set of "nonfunctional" requirements that apply to your work.

7. **<u>Test Plan.</u>** You must have some idea how to *know* (how to prove to me as your advisor) when you are "***done***." You must also have some way to evaluate your work and your results so that you can manage your expectations for completion and for quality evaluation. A test plan will guide such an effort: it will be based on your requirements as approved by me. The test plan should include a proposed set of acceptance tests to be executed along with the resulting quality evaluations (grades) you would think would be fair. This is not necessarily set in stone, much is negotiable as the work proceeds; however, it is absolutely necessary to have it in place at the outset of your work.

8. **<u>Necessary Resources</u>** List the resources you'll need and include everything you can imagine. Include time off from work, reduced courseloads, extra computing resources, hardware, time with Professor Turner, time with other consultants, books, papers, library time, and access to anything special you need. It is important to be explicit at this point. This section should include an annotated bibliography of critical written resources.