Research Methods in Computer Science
Honours Project Proposal

Department of Computer Science
University of Cape Town

1. Instruction on Preparing the Proposal

This proposal is a team effort and the whole project team will hand in a single proposal. Thus all members must contribute equally to the proposal.

Purpose: To enable the Department to judge the feasibility and acceptable standard of the project as a whole, as well as each student component.

It is essential that each student have a clearly identifiable individual piece of work that constitutes a fair subdivision of the load. The work done by each individual student must be able to stand alone as a Computer Science project for examination purposes.

Clearly formulate your research problem according to the guidelines presented in the Research Method lectures. Select the most appropriate research method and the supporting research methods. Write a research proposal for this project.

Decide on the stages of the project and the dependencies between them. Draw up a list of deliverables and milestones. Compile a project plan and draw the corresponding Gantt chart. Use specific dates so that you finish on time for the final hand-in and presentation.

Length: 2000-4000 words (the upper limit must be strictly observed).

Required Components

The document must contain the following information:

1. **Project Title** (which captures the project as you intend doing it).
2. **Project Description**: high-level introduction.
3. **Problem Statement** (Research Questions) — Important Section. Unambiguously deal with the central issue that you will be confronting in the project, leave ancillary issues to your methods section..
    a. What is being investigated? What are the main research questions you are asking?
    b. Why is the problem important, has anyone else said so?
    c. If your project is more of a Software Engineering project (rather than research) then state the most important requirements here. For example: who are the clients and the users, what do they want?
4. **Procedures and Methods**: show that you have specific methods to solve the problems stated above. Work out which other problems will have to be solved on the way. Explain why you are proposing your strategy and why it is necessary.

    Also make sure you cover the following if they apply:

    a. If a system or prototype is to be developed then state design features, development platform, implementation strategy and expected challenges.
    b. You should have a plan for testing your system when it is complete. Work this out now; everything will be wasted if you finish your implementation but cannot evaluate your "advance" convincingly. These can be performance measurements, user experiments, or client satisfaction measures.
    c. If you anticipate having a theoretical or mathematical contribution as part of your project then explain what it will be used for and what methods of analysis will be employed.

5. **Ethical, Professional and Legal Issues**: Are there any legal implications for your work? Should you get ethics clearance for any experiments? What decisions have been taken about intellectual property rights that might result from the project?
6. **Related Work**: Just a few key works to show how others have tackled your specific issues or to provide more information on the methods you intend using. You have already done a related work paper so this is just to include those works (if any) that are key to understanding your proposal. All work must be properly cited.
7. **Anticipated Outcomes:** Major results, including:
    a. System (software, key features, major design challenges)
    b. Expected impact of your project (What results do you expect? What difference will they make?)
    c. Key success factors – how will you judge whether the project has succeeded or not
8. **Project Plan**:
    a. Risks (e.g., delays in obtaining key resources) and Risk Management Strategies.
    b. Timeline, including Gantt chart.
    c. Resources required (equipment, people, special software etc)
    d. Deliverables
    e. Milestones (which should refer to the Timeline)
    f. Work Allocation to team members such that each has a viable project in their own right.

2. Marking

The outcome of the marking should be an overall judgement of the value of the proposal. We would normally expect all team members to get the same mark for the proposal, except if there is evidence that contributions have differed substantially.

The broad guidelines are:

First (75% or more): This is a highly professional and outstanding proposal which reflects a clear appreciation of the Computer Science research or software engineering problem. It is supported by a technically sound and state-of-the-art design (either of the experimental system and experiments or of the proposed software system). The project implementation is carefully planned and team's roles clearly defined.

It is well organized with excellent development of ideas and description of technical issues, reflecting the intellectual qualities of a good Computer Science Team. The presentation, text, figures and references are clear and concise, showing that the authors are in control of the standard conventions of technical writing.

Upper Second (70% – 75%: This is a very good proposal which responds well to the research or software engineering problem. It shows evidence of clear thought, careful design, and good planning.

It is well organized and correctly formatted, with adequate supporting details; it is of satisfactory professional quality. The writing is fluent, the graphics are clear, the technical design is viable, and the project planning is in order. There are slight errors, omissions and presentation deficiencies which detract from the overall quality of the proposal.

Second (60% – 70%): This is a satisfactory proposal which mostly responds to the project set, showing a moderate level of attention to design, project planning and documentary presentation. There are several omissions, errors and demonstrations of inadequate understanding which render it marginally acceptable for execution in the honours year. The actual plans will have to be adapted according to the comments before they are practical, but a revision of this proposal is not essential. There is no evidence of any particular strengths that characterize this proposal.

Third (50% – 60%): This is a sub-standard proposal which is not acceptable at honours level without revision. There may not be enough scope in it for Computer Science work at honours level. It

may have difficulty with the logical flow of the design, reflect inadequate attention to planning, or it may be poorly written and presented. It does not convey to the supervisor a favourable impression of the project team's capability to solve a Computer Science problem. It must be revised according to the comments; this mark will stand.

Fail (< 50%): This proposal does not address a problem or it fails adequately to describe a workable design solution. The technical approach may be erroneous, or the poor documentary presentation may not convey a technically feasible approach. The team will pretty much have to start from scratch with a new proposal for the supervisor, but this mark will stand.

3. Next Steps

Once the proposal has been submitted you need to prepare a presentation of the proposal for the staff and students. In the mean time your supervisor and second reader will mark the proposal and give you feedback.

You will have an opportunity to revise your proposal based on the comments received during the presentation and form your supervisor. This is to ensure that you have a feasible project, but it will not change your proposal mark.

Proposal Mark Allocation

	Category	Total Marks
	Presentation	**6**
a.	Language (Grammar and Spelling — comment only)	0
b.	Style suitable for scientific communication. Well organized, with logical sections. Correct length.	6
	Content	**26**
c.	Project Description (suitable high-level introduction)	4
d.	Problem Statement (or Research Questions for experimental type project): problem clearly identified, why is it worth doing	6
e.	Procedures and Methods: Experiments, Design, etc	6
f.	Ethical, Professional and Legal Issues addressed.	4
g.	Related Work (Showing relevance, properly cited)	2
h.	Outcomes: Expected Impact: Expected Results, effects; Key success factors.	4
	Project Plan	**10**
i.	Real and important risks anticipated	2
j.	Timeline, milestones and deliverables (including but not limited to honours milestones specified by the Department).	6
k.	Team members work specified.	2
	Overall Excellence	**8**
l.	Technical Soundness (Completely correct, sound, partial, major errors, unsound) and Originality (Award Quality, Excellent, Good, Fair, Poor)	8
		50