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College of Computer Science and Engineering  
Information and Computer Science Department**

**Master Thesis Proposal Guidelines**

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## **1. Introduction**

This guideline document intends to help graduate students in the ICS department prepare their master thesis proposal under the supervision of their thesis advisor. The main purpose of the proposal is to organize ideas, material and objectives in order to:

- to formulate a scientific question
- to present scientific approach to solve the problem
- to interpret, discuss and communicate scientific results in written form
- to gain experience in writing a scientific proposal

## **2. Stages of Development of Master's proposal document**

It is recommended that the student goes through the following stages to prepare his thesis proposal:

1. Choose the topic for the thesis in collaboration with the thesis supervisor
2. For MS thesis:
  - Choose at least two faculty members as thesis committee members
  - At least one committee member should have the Associate professor rank
  - The thesis committee should be composed of either 3 or 5 members (odd number)
  - The majority of the thesis committee members should be from the ICS department
3. For PhD dissertation:
  - Choose four faculty members as thesis committee members
  - At least one committee member should have the professor rank and the remaining should be of associate professor rank (exceptions require approval of the deanship of graduate studies).
  - The majority of the thesis committee members should be from the ICS department
4. Discuss the research questions, goals, approach you intend to take, methodology, data needed and time plan with your committee members.
5. Define and read key literature.
6. Construct a logical outline for the thesis work.
7. Write a complete proposal in scientific proposal format (see below).
8. Hand in the final version to your main supervisor and committee members for approval.
9. Submit the thesis proposal through the Graduate Studies (GS) online system.
  - Note that, according to GS rules, the time period between the date of submission of your thesis proposal and the date of your MS thesis defense cannot be less than 4 months. For PhD, it cannot be less than 8 months.

## **3. Recommended Length and Structure**

The length of a proposal depends on the area, the topic, and how much work has been already done in the literature. Normally, the length of master thesis proposal is between 10 and 30 pages. This is a guideline and the actual length of your proposal is best discussed with your advisor. Be aware, however, that excessively lengthy documents may be sent back unread to be revised to provide better focus. An upper bound of close to 30 pages is a good limit in practice.

While the structure of the document might be different from one proposal to another, it should discuss the following components:

1. A **title page** that includes your proposed thesis title, your name and student number, your advisor(s)' name(s), and the date of submission.
2. An **abstract** that, in one or two paragraphs, provides a concise summary of the work you are proposing including a statement of the problem that you are trying to solve and how you expect to solve it. It is probably best to write the abstract last!
3. A concise **problem statement** that, in one to three sentences, describes specifically what the problem is that you intend to solve. The problem statement can, if you like, be provided at the beginning of the Introduction section but should certainly be somewhere very near the beginning of the proposal to help provide context (for the reader) to the material you later provide.
4. An **introduction** that describes the problem area and motivates the need for your proposed work. In the introduction you need to say why you are doing the proposed work and what its significance is. (i.e. Does anyone else care about what you are doing?). The introduction should be understandable by itself without the rest of the proposal.
5. A **related work (literature survey)** section that surveys previous work related to what you are proposing. This section should be carefully written and organized to make the relationships between the earlier research efforts clear and to also explain how that research relates to your proposed work. It is primarily this section that makes it apparent to the committee that you are, in fact, prepared to undertake your proposed work. The work you reference should be quite extensive, relevant and recent. Your selected papers should reflect a reasonable amount of breadth in terms of authorship and source. Insufficient breadth might lead the committee to fear that you are following individual opinion instead of well-founded and widely accepted scientific results.
6. A detailed **problem description**. Although you have already described the problem you are addressing in general terms, you need to ensure the committee that you have thought of all the details of that problem (and the environment(s) in which it occurs) that might affect your proposed solution. The detailed problem description further convinces the committee that you know everything that is necessary to undertake your proposed work.
7. A description of your proposed **solution strategy (methodology)** and expected results. Although you may not know the precise details of how you will solve the problem you have just described, you should be able to give the committee sufficient detail to convince them that what you are proposing is a good idea that can be done within the time constraints of an MSc degree and that you understand the issues associated with the techniques you intend to apply. This section should include any experimental and/or data collection setup you intend to use.

8. A description of how you are planning to carry out the **evaluation** of your work. Depending on your topic, the evaluation might be a formal proof, an empirical analysis, etc. If your evaluation is empirical, you should specify details the experimental setup, the dataset collection, the resources you need to build your setup, etc. In the evaluation try to be as objective as possible in comparing with other existing approaches.
9. A **timeline** of your proposed thesis work, preferably in a tabular format.
10. A brief (one to two paragraph) **summary** of the proposal (i.e. the previous sections) that highlights the key points in the proposal and provides a list of contributions to the field that you expect your work to provide.
11. A **bibliography** of the papers, etc. you have read and cited in your proposal. The selected papers in your bibliography should be carefully chosen to be up to date, important references in the field.

**Notes:**

1. The DGS does not provide a specific template to follow for the proposal. However, the final thesis format should follow the template provides by the DGS and can be found in their website.
2. Along with the proposal submission, the DGS requires a similarity report to be submitted.