Guide lines for preparing MSc Research Proposal

The proposal is a detailed plan or 'blueprint' for the intended study, and once it is completed, the research project should flow smoothly. A clean, well-thought-out proposal forms the backbone for the research itself and hence becomes the most important step in the process of conduct of research. An MSc research thesis will take at least two semesters to complete. Prior to starting a research thesis, i.e. enrolling in the first semester research course (thesis registration), students must go through the proposal stage, during which students will develop their proposal and have it reviewed by his/her research advisor. This means that students need months of planning and background research work before the start of the first semester research. So, during the proposal stage (maximum 6 months starts just after completing courses), students should discuss their research interests with the ICS faculty members, identify a research topic, conduct preliminary literature review and develop a thesis proposal. The proposal should discuss problem statement, objectives, the proposed solution and the research methodology, research activities, and a time schedule in about 3-5 pages.

Students are not allowed to enroll in a research Thesis without an approved proposal. For students planning to start their research in the fall semester (S1 that starts on the beginning of September), the deadline for the proposal submission (to your advisor) is July 15. For those who plan to start in the spring semester (S2 that starts on the beginning of March), the proposal deadline is December 1st. A sample description of each part of the proposal is given in the following table as a guide lines and for your reference.

Sample proposal contents	Comment & Description
Title	Provide a brief and meaningful title to your thesis *Examples* - A Conceptual Framework for ………………………………………. - An Enhanced Scheduling Algorithm for …………………………. - A Modified Sentiment Analysis Technique for………………… - An Intelligent Secure Algorithm for …………………………………..
Background or introduction section	This section provides a description of the basic facts and importance of the research area. In this section, the subject matter of the thesis is defined. Grounds for the research topic's significance should be provided from a scientific perspective. What is known on the topic and what is not? Also possible significance for further application can be mentioned. What is your research area, the motivation of research, and how important is it for the industry practice/knowledge advancement, community, ……? The background section is usually a couple of pages long.
Preliminary Literature Review	Preliminary literature review: In this section you conduct a detailed review of what other scholars in the field have to say about your topic. You'll have also review the ways in which these scholars have arrived at their conclusions, the assumptions on which their work is based, the theoretical frameworks they've used, and the methods they've used to gather, marshal and present their data. In other words, this section provides a summary of previous related research on the research problem and their strength and weakness and a justification of your research, what is known/what have been done by others? and, why your research is still necessary? At the end of this section, a hypothesis can be presented. The hypothesis should rest on a well thought-out and well-understood theoretical foundation, and it does not need to be included in all thesis. A general hypothesis should be elaborated in the research plan into a working hypothesis, the validity of which is evaluated through research.
Problem Statement	Problem statement provides a clear and concise description of the issues that need to be addressed. What is the specific problem in that research area that you will address (e.g. lack of understanding of a subject, low performance, constraints and difficulty …)? The following are examples of how to start a research question that will be addressed in your thesis; 1. What are the typical constraints found in ………? 2. How to classify …………. for easier identification and modeling?

	3. What are the current industry practice as well as research advancements in modeling and resolving ……? 4. How to unify the classification knowledge and various modeling efforts into a framework for total management?
Objectives	Objectives provide a list of goals/things that will be achieved through and after finishing the proposed research. More specifically, what are the benefits/impact (e.g. better understanding, improved productivity, …) that will be generated if the research problem is answered? *Examples:* 1. The long term goal of the research is to develop ………………………. 2. The objective of the current study is to provide a comprehensive review of literatures and industry practices in relation to …………… and outline a conceptual framework for *********. 3. The study has the following objectives: • To provide a comprehensive review of sources and characteristics of ……………………………………………………… • To develop a constraint classification method for ………….. • To outline a conceptual framework for ………………………….
Methodology	The research methodology defines the research methods and logic steps; What to do and how to solve the problem and achieve proposed objectives? Which research methods (e.g. survey, modeling, case study …) will be used? *Examples:* • The primary research method for this study is literature review and conceptual modeling. Identification and classification through a structured approach is the very first step toward "……………………". • This study will first review various types of …………………… in …………………… and their characteristics. Based on this understanding, a classification method will be developed to categorize …………………… factors for the purpose of constraint identification and modeling. • In the second stage of this study, existing modeling methods will be identified based on a comprehensive review of current industry practices and academic researches. • Finally, once the classification and modeling techniques are identified, a conceptual framework for …………………………………………… will be outlined. • This study will be conducted between September 2021 and May 2022.
Tools, Datasets,………	Describe the nature of the required tools/simulators, platforms, framework, libraries, programming languages, and/or datasets. It is important to mention if they are available or you need to have them. It is important to discuss the risks of their unavailability and what is your plan if you failed to get these tools or datasets.
References	All factual material that is not original with you must be accompanied by a reference to its source. Please use IEEE guideline on reference and citation style. You may also have a look at the postgraduate section in the FICS website.

References

[1] Miner, J.T., & Miner, L.E., Models of Proposal Planning and Writing, Praegar, 2005.
[2] Writing your dissertation methodology, https://www.oxbridgeessays.com/blog/dissertation-ultimate-guide/
[3] How to Write a Research Proposal, https://www.birmingham.ac.uk/schools/law/courses/research/research-proposal.aspx [last visited 13/3/2021]