

Course Title	Master Thesis				
Course Code	CSE670				
Course Type	Compulsory (for students choosing the Master Thesis) Optional (for students choosing the elective courses)				
Level	Master (2 nd cycle)				
Year / Semester	2 nd Year/3 rd Semester				
Teacher's Name	TBA				
ECTS	30	Lectures / week	None	Laboratories / week	None
Course Purpose and Objectives	The course's purpose is to provide guidance on how to write a successful Master's Thesis. It aims to provide skills in research methods, regardless of the student's subfield of study (as long as it is in the general field of Computer Science). It also aims to equip the student with the tools required to manage a project as large as a Master's thesis, through providing project management techniques. Finally, it aims to prepare the student for independent work as a recipient of a Master's degree.				
Learning Outcomes	<p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> • Demonstrate written and oral technical research skills. • Select and justify a research topic, and use various resources to carry out a literature search. • Design, execute, interpret and report results from empirical research projects. • Manage a project and explain the relevant techniques and tools needed in order to complete it successfully on time and within budgeted resources. • Identify real-world problems to which academic concepts and methods can be realistically applied to improve or resolve the problem situation. • Select and use effectively the methods and techniques appropriate for particular cases, and plan and manage their work. • Evaluate a proposed solution and prove its worth to the client. • Critically evaluate the project and the proposed solution, as well as recognize and describe legal, social or ethical obligations stemming from the project. 				
Prerequisites	Consent of Instructor	Co-requisites	CYS600		
Course Content	<p>Part A: Research Methods: The nature of research: Definitions and types of research; research process; topic selection and scope; feasibility and value.</p> <p>The literature search: Sources of information; differentiating between types of sources;</p>				

primary, secondary and tertiary sources; using the library and digital databases to conduct efficient literature reviews; searching the Internet; role of the supervisor.

Project management:

Methods, techniques and tools for research design, and data collection.

Analysis and synthesis:

Statistical and qualitative techniques for data analysis; use of appropriate software. Reliability and validity of research projects.

Presentation of research findings:

Project structure; conventions on citation and quotations; style of writing a report.

Part B: Thesis:

The student selects a topic from the Thesis Topics Catalogue which becomes available on the first day of the first week of the semester. Students receive the catalogue via a personal email sent to them by the course instructor, and they are also available on the departmental website. Once the students receive the topics, they have two weeks (by the second Friday of the semester) to choose a topic. Topics are assigned on a First-Come, First-Served basis, given that the students have passed all the pre-requisite courses for a specific topic. Once a topic is selected and agreed upon with the associated supervisor, the course follows the weekly breakdown structure as that is provided in the study guide. See Master Thesis study guide for further details.

The specific deliverables for each individual's project must be discussed and decided upon in consultation with the academic and industrial supervisors. The roles and responsibilities are outlined below:

Student:

- To identify and scope a suitable problem
- Explain the value of the research
- To plan and control the project
- To carry out the necessary work
- To review and evaluate the work done
- To prepare and present the project deliverables
- To initiate and maintain contact with the academic supervisor

Academic Supervisor:

- To comment on the suitability of the selected project
- To discuss the mapping of the project onto the course requirements
- To discuss and approve the intended deliverables
- To suggest starting points for consideration of background research
- To discuss the nature of the thesis and comment on early drafts
- To provide advice on issues associated with the project such as design, implementation, and proof of concept as appropriate.

	<ul style="list-style-type: none"> To attend any presentation or demonstration of the project <p>Program-specific content</p> <p>As this course is taught in a variety of Master's programs offered by the department of Computer Science, the last part of the course will discuss specific research methods for each discipline. The specific topics will be provided by the instructor of the course according to the specific needs of the audience.</p>
Teaching Methodology	E-Learning
Bibliography	<p>Any material suitable for the subfield in which the student is undertaking the thesis will be specified by the instructor.</p> <p>Howard, K. & Sharp, J.A., The Management of a Student Research Project, Gower</p> <p>Turk, C. & Kirkman, J., Effective Writing: Improving Scientific, Technical and Business Communication, Chapman & Hall</p> <p>J. Zobel., Writing for Computer Science, Springer.</p> <p>W. Navidi, Statistics for Engineers and Scientists, McGraw-Hill Science/Engineering/Math; Latest Edition.</p> <p>J.G. Paradis, M., Zimmerman, The MIT Guide to Science and Engineering Communication, The MIT Press.</p> <p>Edgar, T. W. and Manz, D. O. Research Methods for Cyber Security. Cambridge, MA: Syngress.</p> <p>Argyrous, G. Statistics for Research: with a guide to SPSS. Los Angeles, CA: Sage.</p> <p>King, R. S. Research Methods for Information Systems, Dallas, TX: Mercury Learning & Information</p>
Assessment	<p>ASSESSMENT STRATEGY:</p> <p>The specific deliverables for each individual's project must be discussed and decided upon in consultation with the academic and industrial supervisors. However, each project must involve deliverables falling into the following general categories:</p> <ol style="list-style-type: none"> A proposed solution to a real-world problem. A proof of concept, which demonstrates the validity of the proposed solution. Clear indication of knowledge of relevant work by others in the field.

(d) The selection and application of appropriate theoretical concepts and methods.

(e) A project thesis of between 12,000 to 16,000 words.

Projects will be marked in two ways.

Firstly, according to the following scheme:

- Project justification including its relationship to the current state of the art

10%	20 marks
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 - Ability to select and use appropriate methods and techniques

10%	20 marks
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 - The clarity, coherence and succinctness with which the solution is developed

30%	60 marks
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 - Novelty. Does the work improve significantly the current state of the art?

30%	60 marks
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 - Ability to critically review the project and assess its implications for future work in view of the project recommendations and conclusions

10%	20 marks
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 - Project Management: Ability to plan and control the project

10%	20 marks
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| <u>100%</u> | <u>200 marks</u> |
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In addition, students are reminded about presentation issues: Is the document format (including spelling) of good quality? Is it well organized into appropriate sections? Is the style of language used appropriate for an academic report?

ASSESSMENT:

Written Thesis: 80%
 Oral Presentation 20%

Language	English
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