Course Title	Master Thesis
Course Code	CYS690
Course Type	Compulsory
Level	Master (2nd cycle)
Year / Semester	2nd Year / 3rd Semester
Teacher's Name	TBA

ECTS	22	Lectures / week	None	Laboratories / week	None

Course Purpose and Objectives	• The student acquires the necessary skills to enable the successful completion of a project. Established research methods for independent research are introduced using methical processes. This is related to general objectives 5 and 6. • Develop an ability to organize and carry out an extended, independent and novel scientific research work at postgraduate level, employing concepts and methods learned in the program • Synthesize concepts and methods learned in more than one course, and exhibit awareness of previous work in the area of study. • Give a deeper knowledge of the subject at hand and to give an insight into the working processes used within a company, other institutions or within a department. • Extend the knowledge and skills developed in the taught components of the courses of the program • Prepare the student for future independent work as a Master of Science.
Learning Outcomes	Upon successful completion of this course students should be able to: • Demonstrate written and oral technical research skills. • Select and justify a research topic. • Use various resources to carry out a literature search. • Structure and format the project to agreed conventions. • 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. • Plan and manage their work. • Evaluate a proposed solution and prove its worth to the client. • Critically evaluate the project and the proposed solution. • Recognise and describe legal, social or ethical obligations.		
Prerequisites	Consent of Instructor	Co-requisites	None
Course Content	Part A: Research Methods: The nature of research: Definitions and types of research; research process; topic selection and scope; feasibility and value. The literature search: Sources of information; differentiating between types of sources; 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: Students will submit an initial proposal for a project. The project co-coordinator will then allocate an academic supervisor who will liaise with the student to review the initial proposal and to ensure that that the scope of the project is consistent with that of a Masters degree. This will then be followed by an initial report of about 10 pages, which will further expand on: • What the project is intend to achieve. • Why the project is important from an academic and industrial perspective. • How the project will be achieved including proposed methods and techniques. • How the project will be managed.		

	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. To attend any presentation or demonstration of the project
Teaching Methodology	For Part A: Research Methods there will be research seminars and a number of face–to–face sessions with the instructor. For Part B: Face-to-face
Bibliography	Specified by the instructor Howard, K. & Sharp, J.A., THE MANAGEMENT OF A STUDENT RESEARCH PROJECT, Gower Turk, C. & Kirkman, J., EFFECTIVE WRITING: IMPROVING SCIENTIFIC, TECHNICAL AND BUSINESS COMMUNICATION, Chapman & Hall J. Zobel., WRITING FOR COMPUTER SCIENCE, Springer.

	W. Navidi, Statistics for Engineers and Scientists, McGraw-Hill Science/Engineering/Math; Latest Edition. Statistical Methods for Engineers, by Geoffrey Vining and Scott M. Kowalski, Thomson, Brooks/Cole, Latest Edition. J.G. Paradis, M., Zimmerman,THE MIT GUIDE TO SCIENCE AND ENGINEERING COMMUNICATION, The MIT Press. D. Madsen, SUCCESSFUL DISSERTATIONS AND THESES., A GUIDE TO GRADUATE STUDENT RESEARCH FROM PROPOSAL TO COMPLETION, Jossey Bass. T. Cornford, S. Smithson, PROJECT RESEARCH IN INFORMATION SYSTEMS., A STUDENT'S GUIDE, Macmillian

Assessment	**ASSESSMENT STRATEGY:**
	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:
	    (a) A proposed solution to a real-world problem.
	    (b) A proof of concept, which demonstrates the validity of the proposed solution.
	    (c) 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
	    • Ability to select and use appropriate methods and techniques
	                    10% 20 marks
	
	    • The clarity, coherence and succinctness with which the solution is developed
	                    30% 60 marks

	• Novelty. Does the work improve significantly the current state of the art?
	
	                               30% 60 marks
	
	• Ability to critically review the project and assess its implications for future work in view of the project recommendations and conclusions
	
	                               10% 20 marks
	
	• Project Management: Ability to plan and control the project
	
	                               10% 20 marks
	
	                               <u>100%</u> <u>200 marks</u>
	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:
	
	Project: 100%

Language	English