



## Course Syllabus

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
COMP-500DL	Research Seminars and Methodology	6
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Computer Science	Spring
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Required	Computer Science	English
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Prof. Athena Stassopoulou	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Distance Learning	N/A	None

### Course Objectives:

This course is designed to provide a deep and systematic understanding of the nature and conduct of CS research and to equip students with the ability to undertake independent research. The course will consist of three parts:

- a) Introduction to research: This will include lectures on research strategy and tactics, how to search and review literature, how to evaluate research, how to present research (both written and oral). The course will also include a section on basic statistical analysis and on designing experiments for the purpose of testing research hypotheses, and evaluating experimental results.
- b) Research Seminars: The course will include CS seminars from faculty of the Department or/and other Universities as well as from research centers and the industry. Each seminar will focus on the area of specialization of the speaker and will clearly detail the approach used such as models, methodologies, algorithms, experimental set up and results etc.
- c) Literature Review: Students will undertake a literature review on a specific topic within one area of specialization (e.g. Distributed Systems, System Security, Networks, Mobile Computing, Artificial Intelligence, etc). The student will do a literature search and write the findings of this search in the form of a paper which will then be presented in class at a mini-conference. Students opting for the thesis option for their MSc, can use this part of the coursework to perform introductory-background work for their thesis.

**Learning Outcomes:**

After completion of the course students are expected to be able to:

- demonstrate an understanding of how established techniques of research and enquiry are used to extend, create and interpret knowledge in Computer Science.
- evaluate critically current research in Computer Science, and propose possible alternative directions for further work.
- design experiment for the purpose of testing research hypotheses, and evaluate the results of those experiments.
- deal with complex issues at the forefront of the academic discipline of Computer Science in a systematic and creative manner and to communicate conclusions clearly to both specialists and non-specialists.
- demonstrate independence and originality in tackling and solving problems within the area of Computer Science, and to act autonomously in planning and implementing solutions in a professional manner.
- continue to advance their knowledge and understanding, and to develop new skills to a high level, and become independent life-long learners across the discipline of Computer Science.
- define and plan a piece of independent research.

**Course Content:**

1. Introduction and overview
2. The nature of Computer Science research: what is research
3. Literature searches, information gathering
4. Reading and understanding research papers
5. Technical writing, referencing, bibliographies
6. Presentation skills, written and oral
7. A series of research seminars from academia and industry
8. Review of legal, ethical, social and professional issues including data protection and standards

**Learning Activities and Teaching Methods:**

Lectures, Seminars, Assignments.

**Assessment Methods:**

Homework, Projects, Presentation

**Required Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Practical Research: Planning and Design (10th edition)	P. D. Leedy and J. E. Ormrod	Pearson	2014	1-292-02117-9
The Elements of Style (4th edition)	W. Strunk Jr. and E. B. White	Longman	1999	9780205309023
Thesis Projects A Guide for Students in Computer Science (2 <sup>nd</sup> edition)	M. Berndtsson, J. Hansson, B. Olsson and B. Lundell	Springer	2008	978-1-84800- 008-7
The Art of Computer Systems Performance Analysis: Techniques for Experimental Design, Measurement, Simulation, and Modeling	Raj Jain	Wiley	2007	ebook