

CSC7426 : Software and Data Engineering

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Introduction to Software Engineering

<http://jpaulgibson.synology.me/Teaching/TSP/CSC7426/>

Objectives :

Capacity to identify and describe the software life cycle, data management, roles, artefacts, and activities. Understand the concepts of software "best practices" and when they apply. Be able to adapt a software development process to ones needs and select an appropriate set of best practices that will guide you in completing a software development project.

Keywords : Discipline, Professionalism, Understanding, Fundamentals

Prerequisites : None (except basic programming experience)

Evaluation :

I do not expect you to complete all of the problems that I have set, but you should read all the lecture material that I have provided. I do, however, expect you all to complete at least 5 of the problems. Your continual assessment mark will be based on your 5 best problem solutions - if you complete more than 5 then only the top 5 marks will be used to calculate your final continuous assessment (CA) mark.

The deadline for the final problem submissions is TO BE DECIDED. No work submitted after this date will be graded for the final evaluation.

I will also require you to submit a written essay once you have finished the problem solutions. You will have a number of topics to choose from, but they will all be focused on what you have learned from working on the problems.

You will be given 1 week in which to write the essay (limited to 3 pages). I will soon after organise a short interview (10-15 minutes) with each student in order to discuss your essay submission and to finalise your essay mark. The deadline for your interview is TO BE DECIDED, and you must submit all your work (problem solutions and essay) one day before the interview. Your final mark will be calculated as follows:

If your continuous assessment (work on problems) is better than your essay then:

2/3 CA mark + 1/3 Essay mark , otherwise

2/3 Essay mark + 1/3 CA mark

Program :

To understand the true nature of software and appreciate that software should be engineered in a disciplined fashion, following professional standards.

To realise that engineering software has similarities to other engineering disciplines, but that there are aspects of engineering software which are unique to that discipline.

Place current (and future) technologies in software engineering into the context of software development techniques and tools that have appeared throughout the history of the discipline.

Provide the ‘big picture’ of software engineering so that students can progress to studying specialist techniques/tools/methods

Material to Cover

- History of Software Engineering
- The Nature of Software : modelling and abstraction
- Software Process Lifecycle : analysis, requirements, design, implementation, testing, maintenance
- Rigour and formality : Specification, validation, verification and testing
- Software Quality and Software Process Improvement : international standards
- Project Management : roles in software development teams
- Ethics and Software Engineering as a Profession
- Data Engineering Fundamentals



Teaching-CSC7426 (2023) for Dr J. Paul Gibson, INFormatique (INF), Telecom SudParis, France.

Software and Data Engineering

This web site is for the module *MSc CSN - Software and Data Engineering (CSC7426)*: it is part of the (*Master Year 1 Computer Science for Networks, IPParis.*)

The material will be uploaded dynamically: the teaching approach is based on Problem-based learning (PBL) and much of the learning will be through interaction/group work during the assigned lecturing time. (Please check the website for updates before every session - the **problems** are noted in **bold red** font.)

Learning Objectives: Capacity to identify and describe the software life cycle, data management, roles, artifacts, and activities. Understand the concepts of software "best practices" and when they apply. Be able to adapt a software development process to ones needs and select an appropriate set of best practices that will guide you in completing a software development project.

Questionnaire

Please complete the following quick questionnaire in order to help the lecturer understand your background, interests and motivation:

 [CSC7426-Questionnaire.](#)

Assessment

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