CSCU9P6: Software Engineering II Spring 2025

Software Project Management Seminars

During Weeks 1 and 4-6 there will be tutorials on Software Project Management. Each student is required to prepare and deliver a presentation on an assigned topic. This document explains how these are organised.

The first tutorial (in Week 1) will take the form of a group discussion about Software Project Management. **For this tutorial only**, there are no assigned presenters, and all students are expected to come prepared to take part in the discussion.

For the tutorials in Weeks 4-6, there will be two assigned topics, and two or three students will be asked to present each topic. Students may choose to give individual talks (about 7-10 minutes long) or to give a longer group presentation. Each talk will be followed by a discussion which will include questions from the audience. Students who choose to give individual talks are encouraged to liaise with the others assigned to the same topic when preparing their talks, so that they do not repeat each other's material. All students are expected to come prepared to contribute to the discussion after each presentation.

Presentation arrangements:

To ensure that your presentation files are available on the day, you are also asked to submit them via Canvas in advance. You can upload PowerPoint, OpenOffice, or PDF files directly to Canvas. If you are using online presentation software (e.g., Prezi or Google Slides) you should submit a shareable link to your presentation.

For joint presentations, one student should submit the slides and the other(s) must submit a note explaining that it is joint and stating the names of the other presenters.

There is also the option to submit a pre-recorded video presentation. If you choose to do this, the video will be played during your assigned slot and you must attend the class and be available to answer questions.

Live presentations will be recorded during the class. This is necessary to allow independent second-marking.

Assessment:

The presentation is assessed and contributes 20% of your module mark. The marking will consider the quality of the research; the level of understanding of the topic, as demonstrated by applying it to examples; referencing and citation of sources; use of graphics; structure and flow of the presentation; and audience engagement.

A more detailed marking rubric will be provided on Canvas. For joint presentations, all presenters will get the same mark.

Case studies:

You must illustrate your discussion topic by showing how it could apply to at least one concrete case study. Below are brief introductions to two imaginary case studies, taken from *Software Project Management*, by Hughes and Cotterell. Consult the book to find out more details about each case study and how to relate them to your topic. You may use these case studies in your talk or choose other examples that you find in your research.

Case Study 1: Payroll Processing at Brightmouth College

Brightmouth College is a higher education institution which used to be managed by a local government authority but has now become autonomous. Its payroll is still administered by the local authority and pay slips and other output are produced in the local authority's computer centre. The authority now charges the college for this service. The college management are of the opinion that it would be cheaper to obtain an "off-the-shelf" payroll package and do the payroll processing themselves.

Brightmouth College have recently hired a new Information Systems Development Officer, who has been asked to manage the independent payroll processing project.

Case Study 2: International Office Equipment Group Maintenance Accounts

International Office Equipment (IOE) is a company which manufactures and supplies various items of high-technology office equipment. An expanding area of their work is the maintenance of ICT equipment. They have now started to undertake maintenance of equipment for which they were not originally the suppliers. A computer-based batch processing system deals with invoicing on a job-by-job basis. An organization might have to call IOE out several times to deal with different bits of equipment and there is a need to be able to group the invoice details for work done into "group accounts" for which monthly statements will be produced. A new project manager has been given the task of implementing this extension to the invoicing system.

Presentation topics:

Planning and Monitoring Progress

As the saying goes, if you fail to prepare, prepare to fail. Project planning is an essential part of traditional project management. We touched on this topic already in CSCU9E5, where we looked at some methods for activity planning, such as activity network diagrams, Gantt charts, PERT charts, and critical path analysis. For this topic, you are asked to delve deeper. What are some guidelines for finding an effective activity plan? Who should produce the plan? What approaches can be used to identify and organise the activities that make up a project? And how can we monitor the progress of a project to check if the plan is being followed, and to replan or make corrections if they become necessary. How would you approach planning and monitoring for the Brightmouth College and IOE case studies?

References

- Hughes, *Project Management for IT-related Projects*, 3rd edition, Chapters 2 & 3
- Sommerville, *Software Engineering*, 10th edition, Chapter 23, Sections 2-4.
- https://project-management.com/what-is-critical-path/ A short but clear explanation of critical path analysis
- http://www.projectreference.com/#Scheduling A collection of links to websites about scheduling and estimation.
- http://www.rspa.com/spi/project-sched.html Articles on project scheduling by R.S. Pressman.

Estimating Cost and Effort

We have all heard stories of software projects that have run vastly over time and over budget. How can we estimate the effort and cost that a project will involve? Why is it important to make these estimates? Why is it difficult to make these estimates? What methods might be used (e.g., Function Point Analysis, COCOMO, …)? Are these methods effective? How might these methods be applied in the Brightmouth College and IOE case studies given above?

References:

- Hughes, *Project Management for IT-related Projects*, 3rd edition, Chapter 6.
- Sommerville, *Software Engineering*, 10th edition, Chapter 23, Sections 5-6.
- https://en.wikipedia.org/wiki/Software_development_effort_estimation Wikipedia
- http://www.devdaily.com/FunctionPoints/FunctionPoints.shtml Excellent tutorial introduction to Function Point Analysis
- https://www.toptal.com/agile/software-costs-estimation-in-agile-project-management A very different approach, using Agile Contracts
- http://www.projectreference.com/#Metrics A collection of links to websites with information about metrics, some of which are useful in cost and effort estimation.
- http://www.projectreference.com/#Scheduling A collection of links to websites about scheduling and estimation.
- http://www.rspa.com/spi/project-plan.html Articles on estimation by R.S. Pressman.
- http://www.rspa.com/spi/metrics-process.html Articles on metrics by R.S. Pressman.

Managing the Project Team

Selecting and managing a team of individuals can be one of the most challenging aspects of software project management. What considerations are there in selecting and training new staff? How can staff be motivated and encouraged to work together as a team? Are there any basic principles to follow? Are there any pitfalls to avoid? Suggest how the project managers at Brightmouth College and IOE could go about selecting and managing a team for their respective projects.

References:

- Sommerville, *Software Engineering*, 10th edition, Chapter 22, Sections 3-4
- Hughes, *Project Management for IT-related Projects*, 3rd edition, Chapter 8
- https://en.wikipedia.org/wiki/Team_management Wikipedia gives a nice overview and a useful list of references.
- http://www.projectreference.com/#Teams A collection of links to websites about team management.

Managing risk

Software projects are subject to a variety of risks. A good project manager will attempt to foresee problems and make plans to manage them. What risks are of concern when managing a software project? How can their effects be foreseen? How can their potential impact be measured? How can risk be monitored during the course of a project? What is a RMMM plan? Discuss the possible risks faced by the Brightmouth College and IOE projects, and suggest how they could be managed.

References:

- Hughes, *Project Management for IT-related Projects*, 3rd editionLinks to an external site., Chapter 7
- Sommerville, *Software Engineering*, 10th editionLinks to an external site., Chapter 22, Section 1
- http://www.projectreference.com/#RiskLinks to an external site. A collection of links to websites about risk management.
- http://www.sei.cmu.edu/riskLinks to an external site. Broad discussion of risk management.
- http://www.rspa.com/spi/project-risk.htmlLinks to an external site. Articles about risk management by R.S. Pressman.

Software Quality Assurance

What is software quality? Can software quality be measured? What mechanisms are appropriate to ensure quality? Is quality assurance simply a matter of sufficient testing? What standards exist for quality, and what do they specify? Use this list of questions as a starting point for your investigation.

How could quality assurance be applied to the Brightmouth College and IOE projects?

References:

- Hughes, *Project Management for IT-related Projects*, 3rd edition, Chapter 5
- Sommerville, *Software Engineering*, 10th edition, Chapter 24
- http://www.rspa.com/spi/SQA.html. Articles by R.S. Pressman on software quality assurance.
- http://asq.org/learn-about-quality/iso-9000/overview/overview.html. Information about the ISO 9000 group of standards.
- http://cmmiinstitute.com/ Information about the Capability Maturity Model Integration rating program
- http://www.projectreference.com/#QA. A collection of links to websites about quality issues.

Project Management Tools

There are various software tools available to help with project management. Microsoft Project is the best known, but there are others too. Find out about some project management tools. What do they do? How do they compare with each other? Do you think these tools would be useful for the Brightmouth College and IOE projects? Would they be useful to you in your own projects?

References:

- Hughes, *Project Management for IT-related Projects*, 3rd edition, Chapter 2
- http://en.wikipedia.org/wiki/Project_management_software Wikipedia overview article.
- https://uk.pcmag.com/project-management/9161/the-best-project-management-software PC magazine article reviewing various project management tools.
- http://www.web-enable.com/industry/ms_project_tutorial/project_management.asp. A Microsoft Project tutorial