



CS5703


Software Engineering Quality

Lecture 1

Prof Ita Richardson


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Who am I? Ita Richardson

- Professor of Software Quality in Dept of Computer Science & Information Systems
- Lecture to Undergraduate / Postgraduate classes
- Deputy Director & Co-Principal Investigator in Lero – the Irish Software Research Centre
- Supervise PhD students
- Roles in Equality, Diversity and Inclusion

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Lecture recordings

- Please note this lecture will be recorded for academic purposes as part of this module and will be made available on Brightspace. Any questions/comments you make during these educational sessions may be heard on the recording. The recordings will be retained on Brightspace for a period of 13 months. If you have any questions or concerns about this, please contact me, Prof Ita Richardson, at ita.richardson@ul.ie.
- You should not copy, modify or distribute recordings of a lecture/tutorial/education session to which you have access, without first seeking permission to do so.


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My Research Interests

- Lero – the Science Foundation Ireland Research Centre for Software
- Software Quality through:
 - Health and Medical Software Development
 - Software Process Improvement
 - Global Software Development
- Women in STEM
 - Encouraging more female students
 - Understanding the success of interventions
- Industry focus:
 - Small software development companies (HomeSafe Care)
 - Large companies (Ocuco, IBM, JnJ)
- Health Organisations (Health Service Executive, CCIO)
- International Conferences / Journal Publications


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Lecture Summary

- Introduce Me – Ita Richardson!
- Introduce Module
- Problem Based Learning
- Software Systems and Quality
- Wrap-up

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My Teaching Interests

- Software Engineering
 - Professional Issues
 - Analysis and Design of Information systems (Requirements engineering)
- Software Quality
 - Software quality in healthcare
 - Software processes
 - Global software development
- Apart from CSIS students: Healthcare professionals, People working in industry on Medical device quality
- Final Year and MSc Project supervision
- Teaching internationally: Uganda, Finland, Ghana.

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Use of Brightspace

Brightspace : Virtual Learning Environment

- Announcements
- Submission of Assignments
- Resources
- Forums
 - Queries, unless personal, should be submitted here
 - Allows all students to participate in the conversation
 - Allows all students to get answers to questions
- Personal queries: ita.Richardson@ul.ie

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Module – CS5703

- M.Sc. in Software Engineering
- All lectures will be
 - Recorded and available
 - Uploaded as pdf file post-lecture
- Group work: lectures include discussion exercises which will help your understanding of the topic

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Module Outline

- Aims and Objectives:
 - To provide an understanding of the processes and techniques used to develop and maintain quality software
- Course Topics
 - Software quality assurance
 - Process / product quality
 - Software process models
 - Software Development Life-Cycle (SDLC)
 - SDLC stages

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Lecture Schedule

Lectures face-to-face

- One double lecture per week (recording will be available if possible)
 - Thursday 11h00-13h00, KBG15 or Friday 11h00-13h00, room to be advised
 - Please keep Monday 16h00-18h00 free weeks 6, 7, 9, 10
 - See Brightspace for current lecture days and times
 - Timetable is subject to change

You will have notice of lectures both in lectures and through Brightspace announcements

- Office hours on request on-line (9h00-10h00 Thursdays)

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Module Assessment

- Assessment
 - Individual/Group assignment 15% (5%/10%) given to you week 2, due weeks 5 & 6
 - Group assignment 35%, given to you week 2, due week 12
 - Final exam 50%, scheduled Weeks 14/15
- Solution to a problem to be developed through problem-based learning
- Problem based learning - PBL
 - Starting point for learning is a problem to be solved
 - Constructing and teaching courses using problems as the motivation and focus for students' activity.

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Discuss the module

- Why should you be taking this module?
- Comparing to other modules
 - What is different about this module?
 - What is similar about this module?
- Have you any concerns at this point?



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Problem-Based Learning

- Learning is student-centered
- Learning occurs in small student groups
- Tutor is present as a facilitator or guide
- Authentic problems are presented at the beginning of the learning sequence, before any preparation or study has occurred
- Problems encountered are used as tools to achieve the required knowledge and the problem-solving skills necessary to eventually solve the problems
- New information is acquired through self-directed learning



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MSc dissertation project

- Industry-based project: Data collection & software
- Technology-Enabled care: interest in Healthcare
- **Literature review to be started immediately**
- Workshops with the company
- Leading to software project over summer
- Team: led by me, + Software Engineer and Occupational Therapist
- Talk to me after class
- Short CV, including Semester 1 grades to ita.richardson@lero.ie



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PBL requires you to Read

- Books
- Published journal / conference papers available through library web pages
- Papers notified in class (will also be examinable)
- Reading outside class is important for portfolio and exam



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Today.....

- Walkabout on campus
- List 5 software systems which
 - Exist on campus
 - Could exist on campus
 - Should exist on campus
- Where would you locate them?
- Return in 20 minutes

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Feedback to class: List these software systems

- | | |
|--------------------------------|---------------------------------|
| • Bicycle hub | • Water filling stations G |
| • Traffic signals B | • Emergency systems B |
| • Emergency phone lines | • Fire Alarm system B G |
| • Vending machines | • Security video monitoring |
| • Library book system G | • Desk reservation in library |
| • Car parking | • Brightspace B G |
| • Sports arena | • Laptop reservation in library |
| • Biometric systems for access | • Meeting room booking system |
| • Light motion sensors G | • ID swiping system |
| • Campus Map G B | • Printer system |

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Taking notes & studying

- You couldwrite approximately 250 words on:
 - Discuss one concept that you have learned from each lecture
 - Summary of 1 article that you have read (including reference)
 - What you learned from your personal research and team, including input to the project

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So now consider.....

- Pick what you consider to be 3 good quality systems?
 - Why are they good quality?
- What makes each system a bad quality system?
 - Why are they bad quality?

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Suggested reading: any one of these papers : Reading is examinable

- Andry, J.F., Suroso, J.S. and Bernanda, D.Y., 2018. Improving quality of SMEs information system solution with ISO 9126. *Journal of Theoretical and Applied Information Technology*, 96(14), pp.4610-4620.
- Bogner, J., Fritsch, J., Wagner, S. and Zimmermann, A., 2019. March. Microservices in industry: insights into technologies, characteristics, and software quality. In *2019 IEEE International Conference on Software Architecture Companion (ICSA-C)* (pp. 187-195). IEEE.
- Carroll, N., Kuziemyk, C. and Richardson, I., 2017, July. Software engineering for connected health (journal first session). In *Proceedings of the 2017 International Conference on Software and System Process* (pp. 3-4).
- Khinvasara, T., Ness, S. and Tzenios, N., 2023. Risk Management in Medical Device Industry. *Journal of Engineering Research and Reports*, 25(8), pp.130-140.
- Pramudito, D.K., Arijanti, S., Rukmana, A.Y., Oetomo, D.S. and Kraugustelliana, K., 2023. The Implementation of End User Computing Satisfaction and Delone & Mclean Model to Analyze User Satisfaction of M. TIX Application. *Jurnal Informasi dan Teknologi*, pp.7-12.
- Kabir, M.J., Heidari, A., Sadri, S. and Khatimamani, Z., 2022. User Satisfaction about the Quality of Health Information Software in GolestanProvince. *Iranian Journal of Culture and Health Promotion*, 6(3), pp.570-578.

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Reminder

- Lecture Week 2 Thursday 10h00-12h00
- Lectures Week 3 Thursday 10h00-12h00 and Friday 11h00-13h00
- On-line office hours (e-mail for appointment) 9h00-10h00 Thursdays

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Software for a better world

Questions? Discussion?



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Software for a better world

Thank you



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