University of St Andrews

School of Computer Science

CS5030 - Software Engineering Principles

Reading List for 2022/23

Textbooks

- **Software Engineering (Global Edition)**
  - Ian Sommerville
  - Pearson, 2016
  - ISBN: 9781292096131
  - Digital book in library
  - Essential

- **Software Engineering: A Practitioner's Approach**
  - Roger Pressman & Bruce Maxim
  - McGraw-Hill, 2019
  - ISBN: 9781259872976
  - Physical copies in library
  - Recommended

- **Learning UML 2.0**
  - Russ Miles & Kim Hamilton
  - O'Reilly, 2006
  - ISBN: 9780596009823
  - Digital book in library
  - Recommended

- **Clean Code Collection**
  - Robert Martin
  - Pearson, 2011
  - ISBN: 9780132911221
  - Digital book in library
  - Mainly Clean Coder book
  - Recommended

Papers / articles from digital libraries

- Use institutional login for access
- University credentials

Weekly Reading

Week 1 – Introduction and overview of software engineering

- Software Engineering (Sommerville)
  - Chapter 1

For interest:

- Software Engineering: A Practitioner's Approach
  - Chapter 1, up to and including section 1.2

- The Standish Group Chaos Report (2015)
  - https://www.standishgroup.com/sample_research_files/CHAOSReport2015-Final.pdf

- No Silver Bullet - Essence and Accident in Software Engineering
  - Frederick P Brooks, Jr, 1986
  - http://worrydream.com/refs/Brooks-NoSilverBullet.pdf
  - As you can see, this is an old paper. However, it might interest you to note that many of the challenges mentioned here still apply.

Week 2 – Software lifecycle, processes and ethics

- Software Engineering (Sommerville)
  - Chapters 2 & 3

- ACM / IEEE Software Engineering Code of Ethics and Professional Practice
  - https://www.computer.org/education/code-of-ethics

For interest:

- The Definitive Guide to Scrum: The Rules of the Game
  - Ken Schwaber & Jeff Sutherland
  - https://www.scrumguides.org/index.html

- Software Engineering: A Practitioner's Approach
  - Chapters 2 & 3

- DevOps
  - Christof Ebert, Gorka Gallardo, Josune Hernantes & Nicolas Serrano
  - IEEE Software (33, 3), 2016
  - https://ieeexplore.ieee.org/document/7458761

- Scrum case studies
  - Examples of Scrum being applied to real systems
  - https://appliedframeworks.com/scrum-case-studies-examples/

- Translating Principles into Practices of Digital Ethics: Five Risks of Being Unethical
  - Luciano Floridi, 2019
  - https://link.springer.com/article/10.1007/s13347-019-00354-x

- The Clean Coder (Robert Martin)
  - Chapter 1

Week 3 – Requirements engineering

- Software Engineering (Sommerville)
  - Chapter 4

For interest:

- Software Engineering: A Practitioner's Approach
  - Chapter 7

- Requirements Engineering
  - Amel Bennaceur, Thein Than Tun, Yijun Yu & Bashar Nuseibeh
  - Handbook of Software Engineering
  - Springer, 2019.
  - https://link.springer.com/content/pdf/10.1007%2F978-3-030-00262-6_2.pdf

Week 4 – Software architecture

- Software Engineering (Sommerville)
  - Chapters 6

- Software Architecture Guide
  - Martin Fowler
  - https://martinfowler.com/architecture/

For interest:

- Agile Architecture: Strategies for Scaling Agile Development
  - Scott Ambler
  - http://agilemodeling.com/essays/agileArchitecture.htm

- Between the Waterfall Wasteland and the Agile Outback
  - Eltjo Poort
  - IEEE Software, 2020
  - https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8938108

Week 5 – Software design, models, UML

- Software Engineering (Sommerville)
  - Chapters 5 & 7

- Learning UML 2.0 (Miles & Hamilton)
  - Chapters 1 & 2

For interest:

- Is Design Dead?
  - Martin Fowler
  - https://martinfowler.com/articles/designDead.html

- Ethics is a Software Design Concern
  - Ipek Ozkaya
  - IEEE Software (36, 3), 2019
  - https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8693077

Week 6 – Software sustainability (independent study)

- ACM TechBriefs: Computing and Climate Change
  - https://dl.acm.org/doi/pdf/10.1145/3483410

- Understanding Green Software Development: A Conceptual Framework
  - Luca Ardito, Giuseppe Procaccianti, Marco Torchiano & Antonio Vetrò
  - IT Professional (17, 1), 2015
  - https://dl.acm.org/doi/pdf/10.1145/3483410

For interest:

- Climate Change: A Grand Software Challenge
  - Steve Easterbrook
  - FSE/SDP Workshop on Future of Software Engineering Research, 2010
  - https://www.cs.toronto.edu/~sme/papers/2010/Easterbrook-FSE2010-wkshp.pdf

- How Green Is Your Software?
  - Sanjay Podder, Adam Burden, Shalabh Kumar Singh & Regina Maruca
  - Harvard Business Review
  - https://hbr.org/2020/09/how-green-is-your-software

- Chasing Carbon: The Elusive Environmental Footprint of Computing
  - Udit Gupta, Young Geun Kim, Sylvia Lee, Jordan Tse, Hsien-Hsin S Lee, Gu-Yeon Wei, David Brooks & Carole-Jean Wu
  - IEEE Micro (42, 4), 2022
  - https://ieeexplore.ieee.org/abstract/document/9744492