

Module Guide

Software Engineering

CSI_5_SFE

School of Engineering

Level 5

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1. [MODULE DETAILS](#)

Module Title:	Software Engineering
Module Level:	5
Module Reference Number:	CSI_5_SFE
Credit Value:	20
Student Study Hours:	200
Contact Hours:	65
Private Study Hours:	135
Pre-requisite Learning (If applicable):	none
Co-requisite Modules (If applicable):	none
Course(s):	4637.1
Year and Semester:	2019-20, Semester 1
Module Coordinator (MC):	Lucia Otoyó
MC Contact Details (Tel, Email, Room):	020-7815-7480, lucia.otoyo@lsbu.ac.uk, FW-205
Teaching Team & Contact Details:	Lucia Otoyó 020-7815-7480, lucia.otoyo@lsbu.ac.uk, FW-205 Emeka Ugwuanyi 020-7815-7511, ugwuanye@lsbu.ac.uk, FW-210
Summary of Assessment Method:	Coursework 100%
External Examiner appointed for module:	Emmanouil Panaousis, e.panaousis@surrey.ac.uk

2. [SHORT DESCRIPTION](#)

This module covers all aspects of Software Engineering, the application of systematic, disciplined approaches to the development, testing, maintenance and ongoing development of software. It covers the fundamental requirements and established concepts necessary for effective software development projects and investigates diverse methodologies we seek to attain them.

3. [AIMS OF THE MODULE](#)

This module aims to give students a thorough understanding of the methodologies and techniques that software engineers use to ensure the successful design, delivery and maintenance of complex yet reliable software systems. Students will gain experience of the tools and notations used and an overview of the entire process of system design from inception and requirements elicitation to delivery, testing and ongoing maintenance.

4. LEARNING OUTCOMES

L01: Knowledge and Understanding. You will be able to:

- Apply the main practices, techniques, notations and methodologies used in software engineering.

L02: Intellectual Skills. You will be able to:

- Critically evaluate and compare software engineering approaches and techniques. (Maps to: BCS 2.2.1 a1-a5, a7-a9;)

L03: Practical Skills. You will be able to:

- Identify requirements and produce corresponding specifications and development plans for complex software systems. (Maps to: BCS 2.2.1; b1-b4)

L04: Transferable Skills. You will be able to:

- Document systems in both technical and non-technical terms. (Course CS d1, d2, d3)

5. ASSESSMENT OF THE MODULE

COURSEWORK 100% (CW1 50%, CW2 50%)

Summative Assessment

CW1: Individual report submission and development of a software artefact based on a student chosen topic of their interest.

CW2: Team-based report submission and development of a software artefact for a real client.

Students will have opportunities to develop their ability to work with their colleagues towards a common goal. This should involve developing a software system and produce software process artefacts like a requirements specification, design and architecture documents and a test plan.

Formative Assessment

Skills for the summative assessment will be embedded throughout formative opportunities in Lectures and Workshops. Formative assessment will take different forms, such as:

- interactive revision quizzes
- think-pair-share concept and class discussions
- verbal feedback on tutorial activities
- observation and questioning to provide instant feedback as the student takes part in learning activities

6. [FEEDBACK](#)

Feedback will normally be given to students 15 working days after the final submission of an assignment or as advised by their module leader.

General feedback, applying to all students, will also be placed on the module VLE site within 15 working days.

7. [INTRODUCTION TO STUDYING THE MODULE](#)

A. Overview of the Main Content

- Introduction to software process models (e.g., waterfall, incremental, agile)
- Software requirements elicitation
- Describing functional requirements using, for example, use cases or user stories
- Describing system data using, for example, class diagrams or entity-relationship diagrams
- Relationships between requirements and designs: transformation of models, design of contracts, invariants
- Design Paradigms such as structured design (top-down functional decomposition), object-oriented analysis and design, event driven design, component-level design, data-structured centred, aspect oriented, function oriented, service oriented
- Software configuration management and version control
- Software reliability engineering concepts
- Verification and validation concepts
- Software change, concerns and concern location, refactoring

B. Overview of Types of Classes

The module will be delivered using a combination of lecture/seminar sessions and computer lab/workshop sessions. The lecture/seminars will consist of the delivery, discussion and intellectual investigation of factual and conceptual material. The laboratory sessions will consist of practical exercises using relevant technologies and provide opportunities for students to develop their understanding through independent experimentation.

C. Importance of Student Self-Managed Learning Time

Student responsibility in the learning and development process will be emphasised. Students are required to undertake directed self-study and prepare solutions/discussions to questions relative to various topic areas. Students will be encouraged to identify for themselves particular problems of difficulty and to use seminar discussions, where appropriate, for the resolution of these. Students must regularly access the Moodle site for this module. They should

download the class/lecture material from the Moodle site, and do the recommended reading, before each lecture/class.

Where appropriate, students are also expected to download the relevant seminar questions and study them in advance of each seminar, in order to derive maximum benefit from seminar time. The programme of teaching, learning and assessment gives guidance on the textbook reading required for each week, the purpose of which is to encourage further reading both on and around the topic.

D. Employability

The specification and development of computing and information systems is now required in every field of human activity. The ability to recognise and identify the requirements of systems and match them to corresponding specifications is of value to any employer who needs to select, commission and use systems. In developer roles, a good grasp of software engineering principles is essential to plan, manage and successfully complete projects, whilst these skills also have more general organisational and strategic applications in general project management scenarios.

8. [THE PROGRAMME OF TEACHING, LEARNING AND ASSESSMENT](#)

Weekly teaching and learning programme (indicative):

Week	Lecture/Tutorial Topic	Assessment
1	Introduction	
2	Software Processes	
3	Agile software development	
4	Requirements Engineering	
5	Requirements Engineering	
6	Data Modelling	
7	Software Design	CWK 1 due
8	Design and Implementation	
9	Software Validation	
10	Software Verification	
11	Software Evolution	
12	CW support	
13	CW support	CWK 2 due
14	No lessons	
15	No lessons	

9. [STUDENT EVALUATION](#)

This module run for the second time last year and 100% of the students either agreed or strongly agreed with the statement that “Overall, I was satisfied with the quality of this module”.

Students found the module engaging and learned a lot from both courseworks as they gained practical team skills, working with real clients and delivering projects to client specification. They had a feeling of achievement at the end of their coursework.

10. [LEARNING RESOURCES](#)

Reading List

Core textbook:

- Sommerville, I. (2015) *Software Engineering*. Pearson; ISBN 1292096136

Further reading:

- Stephens, R. (2015) *Beginning Software Engineering*. Wrox; ISBN 1118969146
- Pressman, R.S. (2014) *Software Engineering: A Practitioner's Approach*. McGraw-Hill Higher Education; ISBN 1259253155

The online version of this reading list can be found on Reading Lists Online: <http://readinglists.lsbu.ac.uk>. It can also be accessed via the Moodle site of this module.

A brief description to **Library and Learning Resources (LLR)** services:

Library webpage: <https://libguides.lsbu.ac.uk/subjects> > select your subject (e.g. Electrical and Electronic Engineering). On every subject guide, you can

- search for books and e-books, journal articles and British Standards;
- get help about referencing your work and how to avoid plagiarism;
- contact us for training and 1:1 support

Electronic resources are available 24/7 and are accessible from home.

Library support for students:

- You are encouraged to book additional workshops to learn how to find research materials and reference them: MyLSBU > Library > Events and Workshops
- Visit the drop-in Research Help Desk located on Level 3 Bridge in the Perry Library (open Monday-Friday 11:00-16:00 term time).
- If you would like further help, please contact the Information Skills Librarian at: LLReng@lsbu.ac.uk.

Students IT support and training

- Students can contact LRC for IT issues such as LSBU account, printing, and accessing wifi network: LLRithelpdesk@lsbu.ac.uk. IT workshops can be booked via MyLSBU > Library > Events and Workshops.
- If you need further help in using a particular software (e.g. Excel or SPSS) or application, please contact IT and Digital Skills Training team: digitalskills@lsbu.ac.uk

Self-learning materials on Lynda.com

LSBU has subscribed to video platform called Lynda.com. It has 4000+ video courses in different technology areas including MatLab, project management and Excel applications.

How to sign up: go to <https://www.lynda.com/> and click "Sign In". Click 'Sign in with your organization portal', and type **lsbu.ac.uk**. Continue. Follow the steps to enter your LSBU logins.