UNIVERSITY OF MAURITIUS
MODULE CATALOGUE

1. GENERAL INFORMATION

Academic Year: 2024-2025
Semester(s): 1 and 2

Title	Code	Duration (hrs)	No. of credits
Software Engineering Principles	ICT 1208Y	Lectures: 40	**12**
		Practical: 20	
		Self-Learning: 120	
		Other Learning Activities*: 180	
		Total Contact Hours: 60	

*working on assignments, sitting for Class Tests and preparation time for same, sitting for Examinations and preparation time for same, group work, attending Workshops/Conference recommended by the Department/Faculty, fieldwork, site visits/trips, additional practicals, presentations among peers, experiential learning, placements/internships and guest lectures.

2. PRE-REQUISITE(S)/PRE-REQUIREMENT(S)

NIL

3. AIMS

Software engineering is the systematic application of engineering approaches to the development of software. Software is the set of instructions that tells a computer what to do. Software development encompasses all of the activities required for software design, testing, deployment, maintenance, and support. Every video game, mobile app, and work-related computer program that is available has to go through this process. Hence, this module introduces students to the fundamental concepts of software engineering. The aim is to teach students how to build “good” and maintainable software by using several software process models, to learn professional and ethical responsibilities, and also introduce students to some basic concepts of software project management.

4. OUTLINE SYLLABUS

Through Contact Hours: (L/T/P 2+1+0)

Introduction to Software Engineering Concepts, Software Process Models (Plan-driven and Agile), Requirement Elicitations, Functional and Non functional Requirements, Software Design and Implementation, Software Verification and Validation, Software Configuration Management and Version Control, Software Release Management, Software Maintenance and Evolution, Managing Change, Risk Management, Quality Management,

Through Self-Learning:
Security in Software Engineering, Software Engineering Code of Ethics, Professional Ethics, Ethical Analysis, Equity, Diversity and Inclusion, Introduction to basic Software Project Management concepts.

5. LEARNING OUTCOMES AND ASSESSMENT CRITERIA

Having studied this module, the students should be able to achieve the following learning outcomes. The assessment criteria used to reflect the expected learning outcomes are also given hereunder:

Learning Outcomes	Assessment Criteria
➢ Apply the principles of software engineering when devising software.	➢ Appreciate that software engineering is a different practice from other engineering practices ➢ Appraise that software engineering is an essential aspect of building software ➢ Identify the various concepts in software engineering
➢ Apply the different software process models in building software.	➢ Identify the various software processes ➢ Differentiate among the software process models
➢ To understand that requirements engineering is a cyclical process	➢ To distinguish several requirements elicitation techniques ➢ To know different ways to structure a set of requirements
➢ Justify the use of Software Development Life Cycle (SDLC) for an Information System implementation	➢ Identify the various stages in the SDLC ➢ Adoption of system development approaches
➢ Demonstrate an appropriate level of understanding related to the implementation of software	➢ Comprehend the factors affecting choice of software ➢ Recognise the importance of software reuse in implementation phase. ➢ Identify the importance of open source development.
➢ Show a sound comprehension of all the software testing stages and techniques	➢ Differentiate between the different types of testing that can be performed on a software
➢ Comprehend the evolution processes pertaining to different software including legacy systems	➢ Understand the factors that lead to changes in software. ➢ Assessing the business value and

➢ Demonstrate an appropriate level of comprehension about software maintenance	quality of application pertaining to legacy software ➢ Identify the different maintenance stages
Semester 2	
➢ Demonstrate a sound understanding of the concepts of project management	➢ Explain the importance of project management ➢ Understand the concept of risk management and people management
➢ Comprehend the purpose of software project planning	➢ Elaborate on the factors affecting software pricing ➢ Discuss the pricing strategies ➢ Explain how planning is important in software development ➢ Describe the process of project scheduling
➢ Show a good understanding of the importance of quality management	➢ Explain the concept of software quality ➢ Discuss the software standards ➢ Elaborate on the importance of reviews and inspection ➢ Understand how software quality can be measured using different metrics
➢ Show the importance of project closure about software	➢ Explain the need for project closure ➢ Describe the steps involved during project closure
➢ Demonstrate a sound understanding of the professional and ethical responsibilities	➢ Explain the importance of professional and ethical responsibility at work

6. COORDINATORS

	Programme Coordinator	Module Coordinator
Name		Dr. Avinash Mungur
Department		Information and Communication Technologies
Building		Phase II Building, FoICDT
Room Number		2.5B
Phone No.		403 7815
E-mail address		a.mungur@uom.ac.mu
Consultation Time		*email for confirming time *

7. LECTURER(S)

Name	Dr. Avinash Mungur
Department	Information and Communication Technologies
Building	Phase II Building, FoICDT
Room Number	2.5B
Phone No.	403 7815
E-mail address	a.mungur@uom.ac.mu
Contact Hours	
Consultation Time	*email for confirming time *
Contact Address (for P/T)	

8. VENUE AND HOURS/WEEK

All lectures/Tutorials and/or Practicals will normally be held in the Room or online or according to your timetable.

9. MODULE MAP

Wk(s)	Hr(s)	Theme(s)	Lecture Title(s)	Further Reading and Self-Learning Activities	L, P, S, V, T, Test
1	**2+1**	Introduction to Software Engineering	▪ What is meant by software engineering ▪ A brief introduction to ethical issues that affect software engineering.	▪ Case Studies ▪ Watch the video on YouTube link: https://www.youtube.com/watch?v=ITlyBV4ttts and https://www.youtube.com/watch?v=WxkP5KR_Emk which gives an overview of software engineering concepts	**L+T**
2-3	**2+1**	Software Processes	▪ Software process models ▪ Process activities ▪ Coping with change ▪ Process improvement	▪ Watch the video on YouTube at : https://www.youtube.com/watch?v=smqQxsdDRII https://www.youtube.com/watch?v=x-jqSXYE4S4 https://www.youtube.com/watch?v=DZtJTwWu9rs https://www.youtube.com/watch?v=JhHkb7z5GzY these videos give additional information on the different software process models ▪ Watch the video on YouTube at: https://www.youtube.com/watch?v=afdCiAGZ42k	**L+T**
4	**2+1**	Agile Software Development	▪ Agile methods ▪ Agile development techniques	▪ Watch the video on YouTube at: What is Agile? - An Overview (youtube.com) https://www.youtube.com/watch?v=Z9QbYZh1YXY (What is Agile?)	**L+T**
5	**2+1**	Requirement engineering	▪ Functional and non-functional requirements ▪ Requirements engineering processes	▪ Watch the video on YouTube at: https://www.youtube.com/watch?v=_llqRnlrzWw This video will give you an introduction to the required engineering process ▪ Watch the video on YouTube at : https://www.youtube.com/watch?v=j4WITZFLkUM this part will give a brief update on the functional and non-functional requirements	**L+T**

Test					
6	**2+1**	Software Design and Implementation	▪ Implementation issues ▪ Open source development	▪ Watch the video at the YouTube link: https://www.youtube.com/watch?v=QQzBACyX12M This video will give a brief overview of open-source software https://www.youtube.com/watch?v=2q91vTvc7YE This video compares open-source and closed-source software	**L+P**
7-8	**2+1**	Software Testing	▪ Development testing ▪ Test-driven development ▪ Release testing ▪ User testing	▪ Watch the video on YouTube link: https://www.youtube.com/watch?v=cDQ34z0oqnQ This video gives you a brief overview of software testing	**L+T**
9-10	**2+1**	Software Evolution	▪ Evolution processes ▪ Legacy systems ▪ Software maintenance	▪ Watch the video on YouTube link: https://www.youtube.com/watch?v=TcxA-h8o5P4 This video will give you an overview of software evolution	**L+P**
Semester 2					
11	**2+1**	Project Management	▪ Risk management ▪ Managing people ▪ Teamwork	▪ Watch the video on the YouTube link: https://www.youtube.com/watch?v=TcKoUe8vRE0 This video gives an overview of risk management ▪ Watch the video on YouTube link: https://www.youtube.com/watch?v=H9LSopkLbpw This video describes how to manage people effectively	**L+P**
12-13	**2+1**	Project Planning	▪ Software pricing ▪ Plan-driven development ▪ Project scheduling	▪ Lecture Notes will be provided ▪ Watch the video on YouTube link: https://www.youtube.com/watch?v=X6CkWPjLkhg which explains the process of project planning	**L+P**
14	**2+1**	Software Quality Management	▪ Software Quality ▪ Software standards ▪ Reviews and inspections	▪ Watch the video on YouTube link: https://www.youtube.com/watch?v=B48jq8wbtuE which explains about software quality	**L+T**

			▪ Software measurement	▪ Watch the video on YouTube link: https://www.youtube.com/watch?v=0EOSC6pFlys which explains software measurements	
15		Software Security	▪ Software security concepts. ▪ Impact of Security Breaches	▪ Watch the video on YouTube link: https://www.youtube.com/watch?v=pZzaUacz06o https://owasp.org/www-project-security-culture/v10/1-Introduction/ https://www.youtube.com/watch?v=LfIlGj0LEjU https://security.berkeley.edu/services/application-security-testing-program-astp https://security.berkeley.edu/data-classification-standard	
16		Software Engineering Code of Ethics	▪ Ethical Principles	▪ Watch video on youtube link: https://www.youtube.com/watch?v=190mtY6zSG4 Code of Ethics (acm.org) https://www.youtube.com/watch?v=sDJFHloFV1s	
17-18		Equity, Diversity, and Inclusion (EDI) in Software Engineering	▪ Ethical Analysis Frameworks	▪ https://www.youtube.com/watch?v=SGzRiysyo8k	
19		Revision	▪		
20		Revision	▪		

Abbreviations: L: Lectures, P: Practicals, T: Tutorials, V: Visits, S: Seminars

10. RECOMMENDED BOOKS/JOURNALS/WEBSITES

Textbook:

1. Software Engineering (9th Edition) 9th Edition by Ian Sommerville

Reference website:

2. https://www.tutorialspoint.com/software_engineering/index.htm2.

11. ESSAY(S)/ASSIGNMENT(S)/PRACTICAL(S)

Title	Maximum Marks	Last Submission Date
1. Assignment 1	10%	Semester 1
2. Test 1	10%	Semester 1
3. Assignment 2	10%	Semester 2
4. Test 2	10%	Semester 2

12. ASSESSMENT

(i) Written Examination

Paper Structure	
Sections (if any):	No. of questions to be answered: 4
Multiple Choice Questions:	Compulsory Questions (if any): 4
Exams date:	Paper Duration: 3 hours
Weighting (%): 60	
Total Marks: 100	Pass Mark:

(ii) Continuous Assessment

	Weighting (%)
Assignment(s):	20
Practical(s):	
Seminar(s):	
Test(s):	20
Other(s):	
Total Marks:	40

13. OFFICE HOURS

Meeting with students on Friday from 9am to noon.

14. PORTFOLIO REQUIREMENT

All students should keep a portfolio of all coursework for their respective Programme of studies and same should be made available upon request, to the Faculty/Centre Examination Office.

15. OTHER INFORMATION

On plagiarism and cheating:

Plagiarism and cheating will not be tolerated. It will be dealt with according to the policies of the University of Mauritius regarding academic dishonesty. Please read these policies at http://mysites.uom.ac.mu/uomintranet/students/Student_Charter.pdf

16. APPROVAL BY HEAD OF DEPARTMENT/OIC, CILL

Module Catalogue approved at Departmental Meetings *(where applicable)* on: …….....

Head of ICT Department
Signature: …….....

A copy of the approved Module Catalogue has to be submitted to the relevant Dean of Faculty for records purposes.