

Module Outline

Semester: 02
From January 2020 to May 2020

PRINCIPLES OF SOFTWARE ENGINEERING:

PROG 102

MODULE DETAILS

Course Location : Freetown, Sierra Leone
Department : Faculty of Information & Communication Technology
Program Name : Principles of Software Engineering
Semester : 2
Credits : 3
Status : Core Subject
Contact hours : 3 hours (3 hours lecture)
No. of weeks : 14 teaching weeks + 1 Final examination week + 1 week Midterm Break
Teaching Pattern : Lectures
Pre-requisite : BCOMP2406 System Development Methods & Tools
No. of assignments : 2
Lecturer's Name : Mr. Richard Aruna
Contact Number : +23299447337
E-Mail : richard.aruna@limkokwing.edu.sl
Portfolio : N/A
Venue :
Day :

Prepared by : Richard Aruna

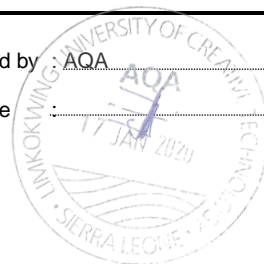
Signature : Date

Verified by : Oluwatosin Ayorinde

Signature : Date

Approved by : AQA

Signature : Date



This document comprises the following:

- Essential Information
- Specific Module Information
- Module Rules & Regulations
- Grades
- Plagiarism
- Module Introduction
- Module Aims & Objectives

Module Outline

Semester: 02
From January 2020 to May 2020

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- Learning Outcome
 - Specific Generic Learning Skills
 - Syllabus + Lecture Outline
 - References
 - Assessment Schedule
 - Assessment Criteria
 - Learning Activities
 - Specific Criteria

Other documents as follows will be issued to you on an ongoing basis throughout the semester:

- Handouts for Assignments
 - Submission Requirements + Guidelines
-

1.0 ESSENTIAL INFORMATION

- All modules other than electives are **'significant modules'**
- As an indicator of workload one credit carries and additional 2 hours of self study per week. For example, a module worth 3 credits require that the student spends an additional 6 hours per week, either reading, completing the assignment or doing self directed research for that module.
- Submission of ALL assignment work is compulsory in this module. Failure to do so, a DNS (Did Not Submit) grade would be awarded. An overall Grade of DNC (Did Not Complete) would be awarded for those who fail to submit a major piece of assessment work (Major Assignment) or sit for either the midterm examination or final Examination. A student cannot pass this module without having to submit ALL assignment work by the due date or an approved extension of the date
- All assignments are to be handed on time on the due date. Students will be penalized 10 percent for the first day and 5 percent per day thereafter for late submission (a weekend or a public holiday counts as one day). Late submission, after the date Board of Studies meeting will not be accepted.
- Due dates, compulsory assignment requirements and submission requirements may only be altered with the consent of the majority of students enrolled in this module at the beginning/early in the program.
- Extensions of time for submission of assignment work may be granted if the application for extension is accompanied by a medical certificate.
- Overseas travel is not an acceptable reason for seeking a change in the examination schedule.
- Only the Head of School can grant approval for extension of submission beyond the assignment deadline.
- Re-submission of work can only receive a 50% maximum pass rate.

Module Outline

Semester: 02
From January 2020 to May 2020

- Supplementary exams can only be granted if the level of work is satisfactory **AND** the semester work has been completed.
- Harvard referencing and plagiarism policy will apply on all written assignments.

2.0 SPECIFIC MODULE INFORMATION

- Attendance rate of 80% is mandatory for passing module.
- All grades are subject to attendance and participation.
- Absenteeism at any scheduled presentations will result in zero mark for that presentation.
- Visual presentation work in drawn and model form must be the original work of the student.
- The attached semester program is subject to change at short notice.

3.0 MODULE RULES AND REGULATIONS:

Assessment procedure:

- These rules and regulations are to be read in conjunction with the UNIT AIMS AND OBJECTIVES
- All assignments/projects must be completed and presented for marking by the due date.
- Marks will be deducted for late work and invalid reasons.
- All assignments must be delivered by the student in person to the lecturer concerned. No other lecturer is allowed to accept students' assignments.
- All tests/examinations are compulsory.
- Students must sit the test/examination on the notified date.
- Students are expected to familiarise themselves with the test/examination timetable.
- Students who miss a test/examination will not be allowed to pass.
- Any scheduling of tutorials, both during or after lecture hours, is **TOTALLY** the responsibility of each student. Appointments are to be proposed, arranged, confirmed, and kept, by each student. Failure to do so in a professional manner may result in penalty of grades. Tutorials **WITHOUT** appointments will also **NOT** be entertained.
- Note that every assignment is given an ample time frame for completion. This, together with advanced information pertaining deadlines gives you **NO EXCUSE** not to submit assignments on time.

Module Outline

Semester: 02
From January 2020 to May 2020

4.0 GRADES

All modules and assessable projects will be graded according to the following system. With respect to those units that are designated 'Approved for Pass/Fail' the grade will be either PA or F:

Grade	Numeric Grade	Description
90 – 100	A+	Pass with Distinction
85 – 89	A	
80 – 84	A-	
75 – 79	B+	Pass with Credit
74 – 70	B	
65 – 69	B-	
60 – 64	C+	Pass
55 – 59	C	
50 – 54	C-, PX, PC	
0 – 49	F	Fail



EXP	Exempted
PC	Pass Conceded
PP	Pass Provisional with extra work needed
PX	Pass after extra work is given and passed
X	Ineligible for assessment due to unsatisfactory attendance
D	Deferred
W	Withdraw
DNA	Did Not Attend Module
DNC	Did Not Complete Module

5.0 PLAGIARISM, COPYRIGHT, PATENTS, OWNERSHIP OF WORK: STUDENT MAJOR PROJECT, THESES & WORKS

Module Outline

Semester: 02
From January 2020 to May 2020

See LIMKOKWING, HIGH FLYERS HANDOUT, pg 10.

6.0 MODULE INTRODUCTION

This module introduces software engineering, places it in a broader systems context and presents the notions of software engineering processes and management. It also covers the processes, techniques and deliverables that are associated with requirements engineering in order to provide students with a background of how software engineering is used.

7.0 MODULE AIMS AND OBJECTIVES

- The module aims to provide a thorough grounding in software engineering and its importance.
- Students will be exposed to the idea and concept of a software processes, software process models and software project management.
- To provide thorough understanding of the basics of requirements engineering.

8.0 LEARNING OUTCOME

Upon completion of the module, student will be able to:

- Discuss and analyze the arising issues and problems related to software engineering.
- Explain the software process models and when they might be used.
- Illustrate the graphical representations (bar charts and activity charts) to represent software project schedules.
- Compare and contrast the concepts of user requirements and system requirements.
- Apply several techniques of requirements elicitation and analysis in the requirements engineering process.
- Describe the notions of process capability and process maturity.
- Identify the techniques for software verification and validation.

9.0 SPECIFIC GENERIC LEARNING SKILLS

Upon completion of the module, student will acquire skills in:

- Explaining the answers to key questions in software engineering.

Module Outline

Semester: 02
From January 2020 to May 2020

- Identifying the activities involved in software requirements engineering, software development, testing and evolution.
- Planning the software development project.
- Organizing different requirements in a software requirements document.

10.0 UNIT SYLLABUS + LECTURE OUTLINE:

Week: 1
LECTURE 1: INTRODUCTION
Lecture Synopsis:
1.1 Software and Software engineering
1.2 Software quality
1.3 Activities common to SW projects
1.4 Difficulties and Risks in SW engineering as a whole

Journal/Article: Gilda Pour, Martin Griss, and Michael Lutz, "The Push to Make Software Engineering Respectable." *IEEE Computer*, May 2000, 35-43.

Steve McConnell, *After the Gold Rush: Creating a True Profession of Software Engineering*. Microsoft Press, 1999.

Week: 2 & 3
LECTURE 2: SOFTWARE PROCESS AND PROCESS MODELS
Lecture Synopsis:
2.1 Generic View of the Process
2.2 Layered Technology and a Process Framework
2.3 Capability Maturity Model Integration (CMMI)
2.4 The Waterfall Model
2.5 The Spiral Model
2.6 Rational Unified Process
2.7 Agile Approaches

Week 2: Assignment 1 handout
Week 3: Assignment 1 hand in

Handouts: Lectures Notes

Week: 4
LECTURE 3: REQUIREMENT ANALYSIS AND DESIGN
Lecture Synopsis:
3.1 Developing Requirements
3.2 Types of Requirements
3.3 Some techniques for gathering Requirements

Module Outline

Semester: 02
From January 2020 to May 2020

3.4 Difficulties and Risks in domain and Requirements analysis
3.7 Data Structured Oriented
3.8 Logical Construction of System
3.9 Object-Oriented Design
3.10 Software Quality Metrics
3.11 Statistical Quality Assurance

Assignment 2 handout

Journal / Article: Sim D'Hertefelt, "13 common objections against user requirements analysis, and why you should not believe them", 9 June 2000,
<http://www.interactionarchitect.com/articles/article20000609b.htm>

Week: 5 & 6
LECTURE 4 : PROJECT MANAGEMENT
Lecture Synopsis:
4.1 Metrics
4.2 Estimation Model
4.3 Decomposition Technique & Planning Tools
4.4 Software Project Planning & Control
4.5 Gantt Chart
4.6 PERT/CPM
4.7 Work Breakdown Structures

Week 6: assignment 2 hand in

Week 6: Major Assignment Handout

Journal/Article: Karl E. Wiegers, "Secrets of Successful Project Management",
http://www.processimpact.com/articles/proj_mgmt_tips.html



Week: 7

MID TERM EXAMINATION

Week: 8
SEMESTER BREAK

Module Outline

Semester: 02
From January 2020 to May 2020

Week: 9
LECTURE 7: **PROFESSIONAL ISSUES IN SOFTWARE ENGINEERING**
Lecture Synopsis:

- 5.1 Ethics and Software engineering
- 5.2 Code of Ethics and Code of Conduct
- 5.3 Computer Contracts
- 5.4 Intellectual property rights (Copy rights, Confidential Information, Acts Permitted in relation to copyright works, Trade marks, Patents)
- 5.5 Regulation and Control of personal Information. (Data protection, defamation and related issues)

Bott F., Coleman A., et al, Professional Issues in Software Engineering, 3rd Edition, Taylor and Francis, 2004

Week: 10
LECTURE 8: **CLASSIFICATION OF SPECIFICATION**
Lecture Synopsis:

- 6.1 Classification of Specification
- 6.2 Operational Specification
- 6.3 Dataflow diagram
 - 6.3.1 Transition Diagrams
- 6.4 Description Specification
 - 6.4.1 ER Diagram
 - 6.4.2 Logic Specification
 - 6.4.3 Algebraic Specification



Week: 11
LECTURE 9: **SOFTWARE TESTING (VERIFICATION & VALIDATION)**

- 7.1 Verification & Validation
- 7.2 Test Cases & Design
- 7.3 Approaches to Verification & Testing
- 7.4 Debugging
- 7.5 Factors affecting Quality
- 7.6 Review Technique
- 7.7 Reliability & Performance
- 7.8 Quality Standards
- 7.9 Capability Maturity Model

Exercise 2

Journal/Article : "User Acceptance Testing of a Software Product",
<http://www.astrainfotech.com/pdf/articles/article-02.pdf>

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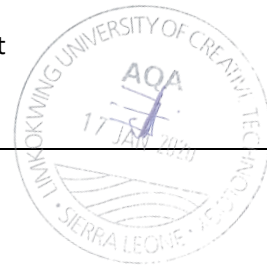
Week: 12
LECTURE 10: MAINTAINABILITY and Professional Issues
8.1 Maintainability
8.2 Software Configuration Management
8.3 Monitoring & Controlling Projects
8.4 Evaluation

Major Assignment Hand in

Journal/Article: Philippe Kruchten, "Putting the Engineering into Software Engineering." *Innovations*, 4 (1), January 2000, pp. 23-24.

Week: 13
LECTURE 11: CASE TOOLS
9.1 CASE Tools
9.1.1 Analysis Tools
9.1.2 Project Management Tools
9.1.3 Configuration Management Tools
9.1.4 Editors
9.1.5 Linkers
9.1.6 Code Generators
9.1.7 Testing Tools
9.1.8 User Interface Management Tools
9.2 Integrated CASE Environments

Journal/Article: Edward V. Berard, *Be Careful With "Use Cases"*, The Object Agency, Inc. <http://www.toa.com/shnn?searticles>



Week: 14
FINAL EXAMINATION WEEK

Week: 15
FINAL EXAMINATION WEEK

11.0 REFERENCES

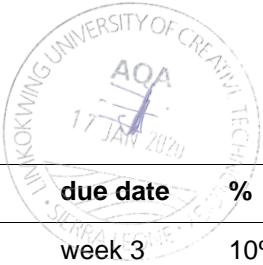
Ian Sommerville, Software Engineering, 7th Edition, Addison Wesley, 2004

Module Outline

Semester: 02
From January 2020 to May 2020

Pressman, R.S., Software Engineering: A Practitioner's Approach, McGraw-Hill, 2001
David G., Schaum's Outline of Software Engineering, McGraw-Hill, 2002
Bott F., Coleman A., et al, Professional Issues in Software Engineering, 3rd Edition, Taylor and Francis, 2004

12.0 ASSESSMENT SCHEDULE



Assignment description	issue date	due date	%
ASSIGNMENT 1	week 2	week 3	10%
ASSIGNMENT 2	week 4	week 6	10%
MAJOR ASSIGNMENT	week 6	week 13	30%
MID TERM EXAMINATION	week 7	week 7	20%
FINAL EXAMINATION	week 15	week 15	30%
TOTAL			100%

13.0 ASSESSMENT CRITERIA

Process of grading and criteria used to determine the grades, passes and high distinctions.

14.0 LEARNING ACTIVITIES

- Students will have to show that indeed they understand the Software engineering by undertaking assignments on the module.

15.0 SPECIFIC CRITERIA

- Each assignment will be handed out with the project brief and will vary, depending on the teaching and learning objectives of the specific assignment.

Module Outline

Semester: 02
From January 2020 to May 2020

- Each student will receive a completed assessment sheet back with their marks, thereby giving student feedback on each set criterion and the project as a whole.
- Marks for each project will be posted on the Bulletin Board with student number within 2 weeks of hand-in date

