Module Guide

Faculty	Information Technology		
Module Code	ITOO311	Module Name	Object-Oriented Systems Analysis and Design
NQF Level	7	Credit Value	15
Semester	1/2020	Year Level	3
Module Leader	Mr Ayo Akindolani	Copy Editor	Mr Kevin Levy
Lecturing Hours	54 (04 hours a week)	Tutorial Hours	N/A
Notional Hours	150	Pre-Requisites	ITOO121

The module guide must be read in conjunction with the prescribed textbook. This document will be the first port of call to understanding what will be assessed and which assessments form part of the module.

The purpose of the module guide is to highlight:

- The learning outcomes and assessment criteria that need to be met to pass the module
- The assessment required to be completed for the module
- The additional resources required for the module
- The topics that will be focused on for the module

Module Aim

The aim of this module is to further students' knowledge of systems analysis and design by focusing on object-oriented systems analysis and design. The aim is for students to learn about the object-oriented approach to systems development by gaining knowledge of Unified Modelling Language (UML); the various UML diagrams drawn in this approach; architecture styles; and the value of reusability in systems analysis and design. Students will be exposed to various topics relating to the object-oriented approach to systems analysis and design.

Module Description

This module focuses on the object-oriented approach to systems development. This approach is useful for specific projects and saves development time by adopting reuse strategies and using efficient processes to produce systems faster. This approach uses Unified Modelling Language (UML) which supports analysts and developers to create complete models and diagrams of systems with various views which are useful in understanding complete systems. A use case diagram is one of the diagrams explored in this module to show the importance of documenting complete user requirements.

Learning Outcomes

By the end of this module, you will be able to:

Learning Outcomes	Assessment Criteria
1. Specify, construct and document the artefacts of software systems.	1.1 Identify the phases in the system 1.2 Illustrate the application of generalisation and specialisation principles to identify super class/subclass relationships. 1.3 Develop requirements models using use-case diagrams
2. Model the business and other non-software systems	2.1 Develop models using state, interaction and activity diagrams 2.2 Establish the concept of object responsibility and how it is related to message sending between object types 2.3 Define Unified Modelling Language (UML) and its various types of diagrams
3. Explore alternative designs	3.1 Differentiate between the different types of object classes 3.2 Recognise the concept of object responsibility and how it is related to message sending between object types 3.3 Describe the object reusability concept and the use of design patterns 3.4 Identify the design relationships

4.	Validate architectural design of the software	4.1	Identify an architectural style
		4.2	Identify the different factors which influence the chosen architectural style
		4.3	Draw UML diagrams using a UML modelling tool for a given case

Prescribed Resource(s)

Textbook(s)

Bennett, S., McRobb, S. & Farmer, R., 2010. Object-oriented Systems Analysis and Design using UML. 4th ed. London: McGraw-Hill.

Recommended Resource(s)

Take note that all disciplines and their corresponding textbooks are frequently updated. Therefore, you should use the latest editions, where available. Recommended resources should be used for research purposes. There is a range of resources related to this module, including the following:

Textbook(s)

Avison, D. & Fitzgerald, G. 2002. Information systems development methodologies, techniques and tools. 4th edition. England: McGrawHill Education.

Sommerville, I. 2011. Software engineering. 9th edition. Schweiz: Pearson Education Limited.

Website(s)

Web pages provide access to a further range of Internet information sources. Lecturers may download the web-related material for you to access offline. You must use this resource with care, justifying the use of information gathered.

CIO Review. 2018. *DevOps and Agile are Changing Automation in Business Processes.* [Online] Available at: https://www.cioreview.com/news/devops-and-agile-are-changing-automation-in-business-processes-nid-27372-cid-200.html. [Accessed: 5 November 2018].

UML. 2018. [Online] Available at: http://www.uml.org/. [Accessed: 5 November 2018] .

Supporting Documents

Geyer, L., Levin, A., Makati, P., Pierce, R., Potter, M., and Wheeler, A. 2019. *PIHE Guide to Referencing (Harvard Referencing Method).* Unpublished document. Pearson Institute of Higher Education

Essential Requirements

- Access to a resource centre or a library with a wide range of relevant resources including textbooks, newspaper articles, journal articles, organisational publications and databases.
- Access to a range of academic journals in electronic format via PROQUEST or other databases.

Employer Engagement and Vocational Contexts

- Students will not work directly in the IT industry but will gain skills and competencies necessary for constructing UML diagrams through individual and group activities.
- The lecturer will invite at least one guest speaker to present on any topic related to this module. The aim of this lecture is to enhance students' knowledge of object-oriented systems analysis and design and agile development in the IT industry.

ICT Requirements

ICT Required	Reason	Lecture Week(s)
PC with internet access	Lab work	All
Microsoft Office 2016	For research, class activities and completing the assignment	All
Microsoft Visio 2016	For research, class activities and completing the assignment	All

All lab work must be completed on desktop computers.

Formative Assessment(s)

Continuous Assessments

Continual formative assessment is conducted so that you are given feedback on your progress in the achievement of specific learning outcomes. The formative assessment tasks occur every fortnight and can take the form of one of the following:

- A five-item multiple choice test
- A short-questions test
- Construction of concept maps
- Take home tests with long questions
- Short practical tasks
- Short class presentations

Students could be expected to complete assessments on *my*LMS as well as other digital platforms.

Guidelines for online *my*LMS assessments:

- Time limits should be checked before commencing assessments.
- Ensure that the Internet connection is stable.
- In some cases, assessments are not available indefinitely and will only be available for a day or two.
- Marks may only be available (with a memorandum) after all students have attempted the assessment after the assessment due date.
- Two attempts may be awarded in cases where there is poor Internet connection. Note that no more than two attempts may be awarded in some cases.

Test(s)

There will be one test for this module. The tests will count 20% towards the final mark.

If a test is missed because of illness, a doctor's note must be presented within 48 hours of the missed test to the Academic Manager/Administrator/Coordinator.

To make up for this missing assessment, you may be able to write a deferred test. However, in order to gain entry to this test, you will have to follow various procedures and meet certain criteria. You must complete a *Deferred Test Application Form* available on *my*LMS. You will be

required to pay a non-refundable fee per application. Each test missed requires a separate application. This will be your only opportunity to make up for a missed test.

It is the students' responsibility to collect their tests and verify their marks on the day they are handed out. No adjustment of marks will be entertained beyond the date scripts are returned to students after marking.

Assignment(s)

There will be one assignment for this module. The assignment is to be completed individually. The assignment is based on applying the theory covered in class to a practical case study. In order for students to achieve a 50% (pass) on the assignment they should spend approximately 20 – 30 hours working on the assignment. The assignment will count 20% towards the final mark.

Assignments must be submitted on or before the due date to the lecturer in class or as per arrangement. Five percent (5%) will be deducted for every day that the assignment is late, up to a maximum of three days. Assignments that are more than three days late will be awarded a zero.

Summative Assessment

Summative assessment is concerned with the judgement of learning in relation to the exit-level outcomes of the qualification. Such judgement includes integrated assessment(s), which test your ability to integrate the larger body of Software Development knowledge, skills and attitudes that are represented by the exit-level outcomes as a whole.

Plagiarism

All assignments and reports must be submitted to the online similarity checker (Turnitin) available on *my*LMS prior to being submitted for marking. When submitting your assignment/report, it is compulsory to submit the entire Turnitin report. Marks will be deducted in accordance with the institutional policy.

Also, when submitting assessments, you should include the completion and signing of the applicable Assessment Coversheet as an acknowledgement that the work submitted is your own original work, except for source material explicitly acknowledged. This declaration will serve as proof that you are aware of the Institution's policies and regulations on academic integrity.

Final Mark

In order to pass the module, a sub-minimum mark of 40% or higher is required for the examination and a final average of 50% or higher is required for the entire module.

The final mark is calculated as follows:

Coursework Mark [(Continuous assessment percentage × 0.10) + (Test percentage × 0.20) + (Assignment percentage × 0.20)] + **Examination Mark** [(Examination percentage × 0.50)]

Details of Assessments

Methods of Assessment	Weighting[1]	Dates
Semester 1		
Assignment	20%	14/04/2020 – 17/04/2020 Scope of coverage: Weeks 1 – 8
Test	20%	23/03/2020 – 27/03/2020 Scope of coverage: Weeks 1 – 8
Deferred Test		14/04/2020 – 17/04/2020 Scope of coverage: Weeks 1 – 8
Continuous Assessment	10%	Lecturer will stipulate the date(s) of these assessments and scope of coverage.
All formative marks captured		21 May 2020
Initial Examination	50%	1: 25/05/2020 – 08/06/2020
Supplementary/Deferred Examination		1: 29/06/2020 – 10/07/2020

Putting Together a Portfolio of Evidence

You must demonstrate, through the presentation of evidence, that you have met all module requirements within the qualification being undertaken. To do this, you must organise your evidence into what is known as a 'portfolio'.

A portfolio will take time and effort to complete. It is a means of focusing and demonstrating to others your strengths and achievements. A portfolio is an important resource that you may find useful to retain once you have achieved your qualification, particularly when applying for future positions.

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[1] Refer to the **Conditions of Enrolment**, available on *my*LMS.

You are encouraged to read more about building a portfolio and to begin populating your evidence to illustrate your full skill-set to future employers.

Consultations

Consultation times will be pinned onto the lecturer's office door/notice board. You must give lecturers 24 hours' notice for appointments. Meetings can be requested in-class or via email. It is important that you detail the requirements (chapter, section, etc.) for your consultation.

Module Content

You are required to attend all classes. In addition, exercises and activities, which are supplied by lecturers, are compulsory.

Continuous assessments may run throughout the semester.

Semester 1: Schedule

Lecture Weeks	Topics and Assessment Criteria Covered	Assessments	References
1 1: 03/02/2020 – 07/02/2020	Introduction to object-oriented systems analysis and design AC: 1.1		• Chapter 4: Section 4.3 - 4.5 (p. 106-111) • Chapter A1: p. 4-7
2 1: 10/02/2020 – 14/02/2020	Systems development lifecycles AC: 1.1		• Chapter 3: Section 3.3 - 3.5 (p. 70-82)
3 1: 17/02/2020 – 21/02/2020	Classes and objects AC: 3.1		• Chapter 4: Section 4.1 - 4.2.3 (p. 90-96); 4.2.5 - 4.2.7 (p. 101-106)

Week	Topic	Assessment	Reading
4 1: 24/02/2020 – 28/02/2020	Object interaction AC: 2.2, 3.2 Models and diagrams AC: 2.3		• Chapter 9: Section 9.1 - 9.2 (p. 259-262) • Chapter 5: Section 5.1 - 5.2 (p. 113-122) • Appendix A
5 1: 02/03/2020 – 06/02/2020	Use case diagrams and requirements AC: 1.3		• Chapter 6: Section 6.5 - 6.8 (p. 152-164)
6 1: 09/03/2020 – 13/03/2020	Generalisation and specialisation AC: 1.2		• Chapter 4: Section 4.2.4 (p. 96-101) • Chapter 8: Section 8.3 (p. 237-246)
7 1: 16/03/2020 – 20/03/2020	Class diagrams AC: 4.3		• Chapter 7: Section 7.1 - 7.3 (p. 180-194)
8 1: 23/03/2020 – 27/03/2020	Activity and state diagrams AC: 2.1	Test	• Chapter 5: Section 5.3 (p. 122-128) • Chapter 11: Section 11.1 - 11.3 (p. 313-321)
1: 30/03/2020 – 03/04/2020	**Academic and Work Readiness Mastery**		
1: 06/04/2020 – 10/04/2020	**Semester Break**		
9 1: 14/04/2020 – 17/04/2020	Object reuse AC: 3.3	Assignment Deferred Test	• Chapter 8: Section 8.1 - 8.2 (p. 233-237) • Chapter 20: Section 20.1 - 20.22 (p. 584-588)

10 1: 20/04/2020 – 24/04/2020	Design patterns AC: 3.3		• Chapter 15: Section 15.1 - 15.4.1 (p. 422-426)
11 1: 28/04/2020 – 30/04/2020	System design AC: 3.4		• Chapter 12: Entire chapter (p. 347-361)
12 1: 04/05/2020 – 08/05/2020	System architecture AC: 4.1, 4.2		• Chapter 13: Section 13.1 - 13.5.1 (p. 363-374)
13 1: 11/05/2020 – 15/05/2020	Diagram exercises (use case; class; activity; state) AC: 1.3, 2.1, 4.3		• Past module assessments (past tests and examinations)
Revision 1: 18/05/2020 – 22/05/2020	**Revision and examination preparation**		
1: 25/05/2020 – 08/06/2020	**Initial examination**		
1: 29/06/2020 – 10/07/2020	**Supplementary/Deferred examination**		