LIMKOKWING UNIVERSITY OF CREATIVE TECHNOLOGY
— LESOTHO —

CLOUD COMPUTING DICC2210/BICC2210

MODULE DETAILS

Course Location	: LESOTHO
Department	: Faculty of Information Communication Technology
Program Name	: Diploma Software Engineering
	Diploma Information Technology
	Diploma Business Information Technology
	Degree in Software Engineering
	Degree in Information Technology
	Degree in Business Information Technology
Semester	: 4
Credits	: 10
Status	: Major
Contact hours	: 3 hours (2 hours lecture + 1 hours tutorial)
No. of weeks	: 14 teaching weeks + 1 Final examination week + 1 week Midterm Break
Teaching Patterns	: Lectures & Tutorial sessions
Pre-requisite	: None
No. of Examinations	: 2
No. of Assignments	: 1
No. of Tests	: 2
Lecturer's Name	: Hlabeli, Ntho & Molaoa

Prepared by: Mr Hlabeli   Checked by : Mr Bhila

Signature : *BHlabeli*   Date 13/01/2025   Signature: Date 13/01/2025

This document comprises the following:

- Essential Information
- Specific Course Information
- Course Rules & Regulations
- Grades
- Plagiarism
- Course Introduction
- Course Aims & Objectives
- Learning Outcome
- Specific Generic Learning Skills
- Syllabus + Lecture Outline
- References
- Assignment Schedule
- Assessment Criteria
- Specific Criteria

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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 sit for those who fail to submit a major piece of assessment (major assignment) or sit for either the mid-term examination, class test 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 that date.**
- **A student cannot pass this module without having to submit a MAJOR ASSIGNMENT AND THE FINAL EXAMINATION work by the due date or an approved extension of that date.**
- All assignments are to be handed on time on the due date. Students will be penalised 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.
- 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:

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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.

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+	
85 – 89	A	Pass with Distinction
80 – 84	A-	
75 – 79	B+	
74 – 70	B	Pass with Credit
65 – 69	B-	
60 – 64	C+	
55 – 59	C	Pass
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

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DNC   Did Not Complete Module

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

See LIMKOKWING, HIGH FLYERS HANDOUT, pg 10.

6.0 MODULE INTRODUCTION

In this course students are taught concepts of cloud computing, the services of cloud computing, and models of cloud computing. Students are further taught about the migration from virtualization to cloud computing. The module draws on big data analysis for unstructured data (social media data), Internet of Things and digitization, and Internet of Things, and industry.

7.0 MODULE AIMS AND OBJECTIVES

On completion of this course students will be able:

- Understand visualization from cloud computing stance.
- Identify appropriate deployment models for the services.
- Have enough knowledge on integration of big data, cloud computing and internet of things.

8.0 LEARNING OUTCOME

On the successful completion of the course the student will:

- Understand the concepts of visualization.
- Understand the cloud deployment models.
- Apply big data and internet of things concepts on the cloud.

9.0 SPECIFIC GENERIC LEARNING SKILLS

The student will have an understanding of the concepts of cloud computing, the services of cloud computing, and models of cloud computing. Students are further taught about the migration from virtualization to cloud computing. The module draws on big data analysis for unstructured data (social media data), Internet of Things and digitization, and Internet of Things, and industry.

10.0 UNIT SYLLABUS + LECTURE OUTLINE:

WEEK   1
LECTURE 1:   INTRODUCTION
Lecture Synopsis:
                1.1   History of Internet
                1.2   Communicating Via the Internet
                1.3   The TCP/IP
                1.4   The Client–Server Computing
                1.5   Cloud Computing Technological Drivers
                1.7   Cloud Capabilities

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Handout: Module Outline

WEEK   2
LECTURE 2:   **UNDERSTANDING THE CLOUD CONTINUUM**
Lecture Synopsis:

    2.1   Architecture of Cloud and Deployment Models
    2.2   Service Class Models

WEEK   3
LECTURE 3:   **VIRTUALIZATION**
Lecture Synopsis:

    3.1   Server Virtualization
    3.2   Storage Virtualization
    3.3   Network Virtualization
    3.4   Memory Virtualization
    3.5   Desktop Virtualization
    3.6   Data Virtualization
    3.7   Application Virtualization

    Practical Test 1

WEEK   4
LECTURE 4:   **CLOUD DEPLOYMENT MODELS**
Lecture Synopsis:

    4.1   Private cloud
    4.2   Public cloud
    4.3   Community cloud
    4.4   Hybrid cloud

WEEK   5
LECTURE 5:   **CLOUD SERVICE MODELS**
Lecture Synopsis:

    5.1   SaaS
    5.2   PaaS
    5.3   IaaS

    Practical Test 2

WEEK   6
LECTURE 6:   **FROM VIRTUALIZATION TO CLOUD COMPUTING**
Lecture Synopsis:

    6.1   SaaS
    6.2   PaaS
    6.3   IaaS

    Project Assignment

WEEK   7
             MIDTERM EXAM

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WEEK	8
	MIDTERM BREAK

WEEK	9
LECTURE 7:	**INTERNET OF THINGS (IOT)**
Lecture Synopsis:	

7.1   IoT and Digitization
7.2   IoT and Industry
7.3   Architectures and reference models
7.4   IoT Frameworks and Platforms

WEEK	10
LECTURE 8:	**BIG DATA**
Lecture Synopsis:	

8.1   Real-Time Analytics
8.2   Big Data Analytics for Social Media
8.3   Deep Learning and Its Parallelization
8.4   Database Techniques for Big Data

Handin: *Assignment 2*

WEEK	11
LECTURE 9:	**INTERNET OF THINGS, BIG DATA & CLOUD COMPUTING**
Lecture Synopsis:	

9.1   IoT and Big Data
9.2   Big Data and Cloud Computing
9.3   IoT and Cloud Computing
9.4   IoT, Big Data and Cloud Computing

WEEK	12
LECTURE 10:	**INTERNET OF THINGS, BIG DATA & CLOUD COMPUTING APPLICATION**
Lecture Synopsis:	

10.1   Internet of Things case studies
10.2   Cloud computing case studies
10.3   Big Data Case studies
10.4   Real-world application scenarios (IoT, Cloud Computing & Big Data **combined**)
10.5   **The future of IoT, Big Data, & Cloud Computing in Lesotho**

WEEK	13
	(TUTORIAL)

Handin: ***Project***

WEEK	14

WEEK	15

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| WEEK | 16 & 17 |
| | **(FINAL EXAMINATION WEEK)** |

10.0 REFERENCES

- Chellammal Surianarayanan & Pethuru Raj Chelliah, "Essentials of Cloud Computing", SSN 1868-0941, ISSN 1868-095X **(electronic)**, ISBN 978-3-030-13133-3, ISBN 978-3-030-13134-0 **(eBook)**, https://doi.org/10.1007/978-3-030-13134-0, Published by Springer Nature Switzerland AG, 2019.

- Dimitrios Serpanos & Marilyn Wolf," Internet-of-Things (IoT) Systems: Architectures, Algorithms, Methodologies", ISBN 978-3-319-69714-7, ISBN 978-3-319-69715-4 (eBook), https://doi.org/10.1007/978-3-319-69715-4, Published by Springer International Publishing AG, Gewerbestrasse 11, 6330 Cham, Switzerland, 2018.

- Judith Hurwitz, Marcia Kaufman, & Fern Halper, "Cloud Services For Dummies", IBM Limited Edition, Published by John Wiley & Sons, Inc., Hoboken, New Jersey, 2012.

- K. Chandrasekaran, "Essentials of CLOUD COMPUTING", International Standard Book Number-13: 978-1-4822-0544-2 (eBook - PDF), Printed by Taylor & Francis Group, 2015.

- Mostapha Zbakh, Mohammed Essaaidi, Pierre Manneback & Chunming Rong, "Cloud Computing and Big Data: Technologies, Applications and Security", Lecture Notes in Networks and Systems, Volume 2, 2019.

- Rajkumar Buyya, Rodrigo N. Calheiros, & Amir Vahid Dastjerdi, "Big Data Principles and Paradigms", Published by Elsevier Inc, ISBN: 978-0-12-805394-2, 2016.

11.0   ASSESSMENT SCHEDULE

Assignment description	issue date	due date	%
TEST 1	Week 3	Week 3	10%
TEST 2	Week 5	Week 5	10%
MIDTERM EXAM	Week 7	Week 7	20%
GROUP PROJECT	Week 6	Week 13	20%
FINAL EXAMINATION	Week 16	week 17	40%
TOTAL			**100 %**

THIS IS SUBJECT TO CHANGE

13.0 ASSESSMENT CRITERIA

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

14.0 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.
- 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

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