



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

Faculty of Computing and Informatics

Computer Science

ICG511S (Introduction to Computing)

STATEMENT ABOUT ACADEMIC HONESTY AND INTEGRITY

All staff and students of the Namibia University of Science and Technology (NUST), upon signing their employment contracts and registration forms, commit themselves to abide by the policies and rules of the institution. The core activity of NUST is learning and in this respect academic honesty and integrity is very important to ensure that learning is valid, reliable and credible.

NUST therefore does not condone any form of academic dishonesty, including plagiarism and cheating on tests and assessments, amongst other such practices. NUST requires students to always do their own assignments and to produce their own academic work, unless given a group assignment.

Academic Dishonesty includes, but is not limited to:

- Using the ideas, words, works or inventions of someone else as if it is your own work.
- Using the direct words of someone else without quotation marks, even if it is referenced.
- Copying from writings (books, articles, webpages, other students' assignments, etc.), published or unpublished, without referencing.
- Syndication of a piece of work, all or part of an assignment, by a group of students, unless the assignment was a legitimate group assignment.
- The borrowing and use of another person's assignment, with or without their knowledge or permission.
- Infringing copyright, including documents copied or cut and pasted from the internet.
- Asking someone else to prepare an assignment for you or to write or sit an assessment for you, whether this is against payment or not.
- Re-submitting work done already for another course or programme as new work, so-called self-plagiarism.
- Bringing notes into an examination or test venue, regardless of whether the notes were used to copy or not.
- Receiving any outside assistance in any form or shape during an examination or test.

All forms of academic dishonesty are viewed as misconduct under NUST Student Rules and Regulations. Students who make themselves guilty of academic dishonesty will be brought before a Disciplinary Committee and may be suspended from studying for a certain time or may be expelled. All students who are found guilty of academic dishonesty shall have an appropriate endorsement on their academic record, which will never be erased.

NUST COVID-19 ADHERENCE CLAUSE

Campus activities that involve physical contact, whether in a meeting, laboratory, assessment, tutorial/lecture will be held under strict COVID-19 National Health and Safety Protocols. Students not adhering to such National Regulations, i.e. wearing masks correctly to cover both the mouth and nose, social distancing of at least 1.5m, hand sanitising and refraining from campus activities when experiencing COVID-19 symptoms, will not be allowed into a venue.

COURSE INFORMATION

COURSE CODE AND TITLE:

ICG511S, Introduction to Computing

DEPARTMENT:

Computer Science

PROGRAMME:

07BACS Bachelor of Computer Science, 07BAIF Bachelor of Informatics

CONTACT HOURS:

Contact hours 30, Self-study hours 30, Assessment hours 20

NQF LEVEL AND CREDIT:

NQF level 5, 8 credits

COURSE DESCRIPTION:

This course introduces students to programming concepts and techniques required to solve computing related problems. Students will learn how to brainstorm about a given problem, decompose and reduce its complexity and define the modules that form parts of the solution. They will be exposed to how to represent data as a compact bloc of information, define a sequence of instructions as part of the solution, iterate over a subset of those instructions or select a part of it.

OPTIONS:

Core Compulsory

PRE-REQUISITES:

None

COURSE EQUIVALENCIES:

None

COURSE DELIVERY METHODS:

Blended mode

The blended mode will be delivered through following learning activities (face to face or online)::

- Lectures - this will present the underpinning theories of the course and students are expected to deepen their knowledge and understanding of the covered subjects through guided self-study.
- Tutorials – this will be an avenue for the students to try out to solve problems in a more interactive way by applying the theoretical knowledge gained. Certain tasks however, will be completed individually as specified in the tutorial materials that will be made available.
- Online Quizzes – allow students to reflect on concepts learned in both lectures and tutorials.

The following communication tools will be used in this course:

E-learning Platform (Moodle)

Course Format:

- 30 hours of face-to-face between students and lecturer
- 50 hours of out-of-class study time, to be used as follows:
 - 20 hours of laboratory (practical) session
 - 20 hours of reading prescribed material
 - 5 hours of sorting, completing and annotating own lecture notes
 - 15 hours of working on assignments
 - 5 hours of consultations with lecturer, laboratory session manager and fellow students

EFFECTIVE DATE:

6 April 2021

LECTURER INFORMATION

Lecturer's name: Ndinelago Nashandi
Email: nnashandi@nust.na
Office phone: 2072911
Office location: IT House

Lecturer's name: Ruusa lipinge
Email: ripinge@nust.na
Office phone: 0816943400
Office location: Room 404, Polyheights

Lecturer's name: Steven Tjiraso
Email: stjiraso@nust.na
Office phone: 2072097
Office location: IT House

Lecturer's name: Kapuire Gereon
Email: gkapuire@nust.na
Office phone: +264 61 207 2334
Office location: IT House

NB: Office hours are from 07:30 – 16:30 and 17:15 – 21:20 (confirm by email). An appointment can be made telephonically or via email.

STUDENT READINESS

Technology & Equipment Readiness:

Due to COVID19 and current mode of teaching, Students are requested to have access to personal computers and Internet (Wi-Fi pocket from NUST). Students are allowed to use their own laptops for assessments and must ensure appropriate back up.

Student Commitments and Contact Times:

1. Classes will be attended online via MS teams and face to face by coming to the campus , , all students are expected to attend all classes and make appropriate notes. The presentations used in class and tutorial materials will be made available on Moodle or in the event of a glitch then on isnotes. If a student fails to attend a class, it is their responsibility to catch-up on what was covered.
2. After every class, and before the start of the next class, the student should sort, complete and annotate own lecture notes, and select further reading in case any particular item was not understood on first attempt.
3. Student must fully utilise their notational hours on revising, practicing or/and completing homework for the course.
4. Consult recommended material to further broaden knowledge and understanding of the subject.

Course Resources:

Presentation slides, tutorial materials and additional materials will be made available on Moodle.

Prescribed Reading:

Abelson, H., & Sussman, G. (1996). *Structure and Interpretation of Computer Programs* (2nd ed.). MIT Press. ISBN-0262011530

Felleisen, M., Findler, R., Flatt, M. & Krishnamurthi, S. (2018). *How to design programs: an introduction to programming and computing*. Cambridge, Massachusetts: The MIT Press

Recommended Reading:

Felleisen, M., Findler, R.B., Flatt, M. & Krishnamurthi, S. (2001). *How to design programs*. MIT Press. ISBN-0-262-06218-6

Knut, D. (1997). *The art of computer programming*. Addison Wesley Longman Publishing Co., Inc. ISBN-0-201-89683-4

Web notes on Introduction to Computer Programming
<http://guyhaas.com/bfoit/itp/itp.html>

STUDENT LEARNING

Learning Outcomes:

On completing the course students will, through assessment activities, show evidence of their ability to:

1. Create data representation, define variables and reason about program state.
2. Apply abstraction principles in problem solving.
3. Decompose a problem into modules, procedures and functions.

4. Define programs as a sequence of instructions.
5. Use iteration and selection in their programs.
6. Represent solutions as diagrams and flowcharts; and
7. Apply security good practices into their problem-solving approach.

COURSE SCHEDULE:

Semester week #	Week Starting on	Topic	Activities
1	15 Mar	Course Introduction: Lecturer Intro, Course outline, Students, House rules	Discussing the Course outline
2	22 Mar	Introduction (online) <ul style="list-style-type: none"> What is Computing? <i>(think in terms of input, process and then output)</i> Understanding Problems; <i>(identify input, output, and process tasks in a given problem)</i> 	Tutorial 1(online) (ONLY Self-Study Period to be used for Face-to-Face Consultation) <i>Goal: To help students read and understand problems before attempting to solve them.</i> Online discussion on computing in general Mastery Learning Quiz 1
3	29 Mar	Data Representation (online) <ul style="list-style-type: none"> Computer Storage: Binary & Data Data as Characters: ASCII & Unicode Data Types Constants, Variables; Operations on Data Arithmetic Operations; Unary Operations; Logical Operations; 	Tutorial 2(online) (ONLY Self-Study Period to be used for Face-to-Face Consultation) <i>Goal: Identify different types of data and do some basic operations of the data.</i> Mastery Learning Quiz 2
4	5 Apr	Program Representation(online) <ul style="list-style-type: none"> Pseudocode Flowcharts Sequential Statements 	Tutorial 3(online) (ONLY Self-Study Period to be used for Face-to-Face Consultation) <i>Goal: Present a solution in a structured format.</i> Online discussion on AI and how programming is changing the world Mastery Learning Quiz 3
5	12 Apr	Group Assignment(online) <ul style="list-style-type: none"> Expectations; Groupings; Slack for collaboration Git repository to archive work 	<i>Group Assignment Released and students introduced to tools they are expected to use</i> Mastery Learning Quiz 4
6	19 Apr	Control Structure (online) <ul style="list-style-type: none"> Selection; Linear ifs Nested ifs 	Tutorial 4 (online) (ONLY Self-Study Period to be used for Face-to-Face Consultation) <i>Goal: Solve problems and present the solution in both pseudocode and flowcharts</i> Online discussion
7	26 Apr	Control Structure (online) <ul style="list-style-type: none"> Iteration while, do-while, counted loops 	Tutorial 5(online) (ONLY Self-Study Period to be used for Face-to-Face Consultation) Mastery Learning Quiz 5

8	3 May	Problem Solving (online) <ul style="list-style-type: none"> Decomposition; <i>(breaking down complex tasks into modules)</i> Abstraction; <i>(remove complexity and make problems more general)</i> 	Tutorial 6(online) (ONLY Self-Study Period to be used for Face-to-Face Consultation) <i>Goal: Apply decomposition and abstraction on given problems.</i> Online discussion
9	10 May	Functions (online) <ul style="list-style-type: none"> defining functions invoking functions 	Tutorial 7(online) (ONLY Self-Study Period to be used for Face-to-Face Consultation) <i>Goal: Use functions to make complex tasks manageable</i> Mastery Learning Quiz 6
10	17 May	Security Concepts in Problem Solving(online) <ul style="list-style-type: none"> Software Bugs Testing Example Vulnerabilities 	Tutorial 8'(online) (ONLY Self-Study Period to be used for Face-to-Face Consultation) <i>Goal: To test, detect and solve security breaches in given solutions</i> Group Assignment Due
11	24 May	Introduction to Programming(online)	Test (face to face) 27 May 2021 Time:17h30-19h30
12	31 May	Revision (online) <i>(Students expected to double check their marks on the kiosk and report any errors to facilitators of the course)</i>	Revision
13	7 June	Group Assignment Presentations(online)	Supplementary Test (face to face) 8 June 2021 Time:17h30-19h30
11 June		Lecture ends	

NOTE: Test and assignment dates are subject to change based on the needs of the students at the lecturer's prerogative. Students will be notified ahead of time of any changes.

ASSESSMENT AND EVALUATION:

The final course mark is the sum of quizzes, individual assignment and group assignment.

Assessment	Weight
Quizzes (best 3 of 6)	20%
Test	50%
Group Assignment	30%
Total:	100%

Minimum pass requirement for this course: 50%

COURSE POLICIES

General Academic Policies:

It is the student's responsibility to be familiar with and adhere to NUST's Policies. These Policies can be found in NUST Prospectus or online at www.nust.na/prospectus.

Supplementary Policies:

Two copies of assignments should be submitted to the class lecturer. One should be a printed hard copy. The soft copy must be submitted as indicated in the assignment document.

All Late Submissions will not be accepted after the due date and time and thus marked as 0%.

DATE REVISED: 16 March 2021

FAILURE TO PAY FEES:

A student who fails to pay his/her fees may not be allowed to write the examination and if allowed, the results will be withheld until all outstanding fees are paid in full.

IMPORTANT STUDENT SERVICES AT NUST

There are a variety of services which you can use at the NUST. These services are to your advantage – Use them!!! They include the following:

- Student Counseling and Career Development – Department: Students Services
- Writing Centre and student academic problems –Teaching and Learning Unit (CTL)
- Campus Health and Wellness Centre (CHWC) - Student Services'/ NUST Clinic

AUTHORISATION:

This course is authorised for use by:



06/04/2021

Head of Department

Date

ACKNOWLEDGEMENT BY STUDENT

(To be completed by all students on the course, detached from the course outline and kept on record in the department)

I, (insert name), (Student number), hereby acknowledge that I have received this course outline for (insert course title and code), and that I have familiarised myself with its content, in particular the statement about academic honesty and integrity. I agree to abide by the Policies and arrangements spelt out in this course outline.

Signature of Student

Date