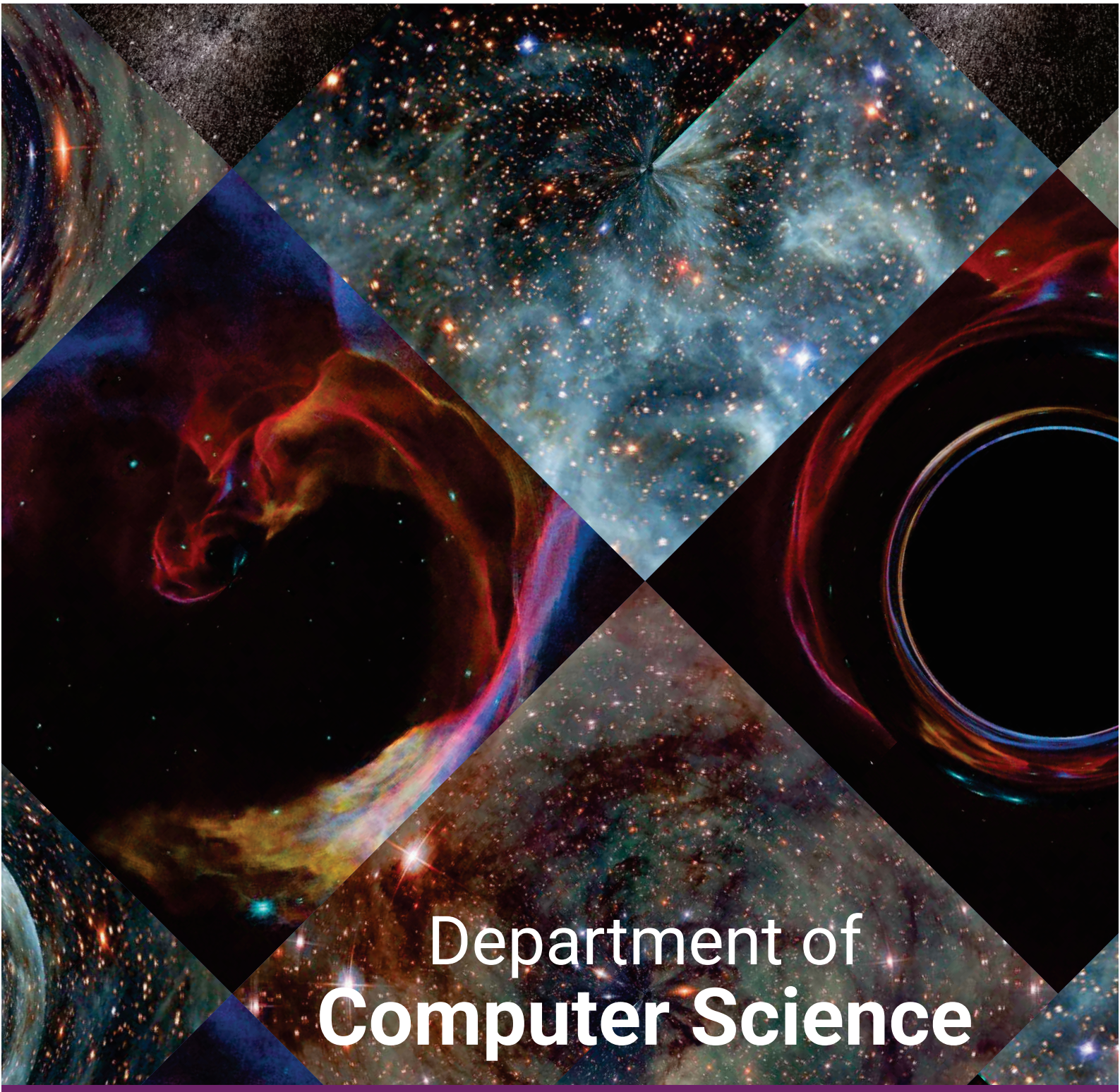
RHODES UNIVERSITY

Where leaders learn



Department of **Computer Science**

student handbook **2026**

RHODES UNIVERSITY
Where leaders learn

The Department of Computer Science

Rhodes University has a history of high achievement and is committed to meeting the challenges of the present and future. It is an internationally accepted education centre of excellence, which recognises its southern African setting and the need to meet international standards in an open society. The University is dedicated to cultivating intellects in people who will courageously pursue the truth whatever the circumstances.

Please read this handbook. It is designed to make your life easier
and facilitate the smooth running of the Department.
We welcome your comments and suggestions.

Please refer to the online version of this handbook at
https://www.ru.ac.za/computerscience/studying/handbook/
for updated information about courses and related details.

Cover Photograph

The research project from which these images were taken focused on implementing a computational approach to black hole optics using raytracing on a GPU. The images show a variety of ray-traced starfield backgrounds with and without black holes. Where no black hole is present, the images present an undistorted grid in flat spacetime; however, the presence of a black hole (with mass M = 1.0) in the images shows gravitational lensing and shadow formation. This work was done by Jessica Ackerman.

INTRODUCTION TO ICT - FIRST SEMESTER							CS1L
Week	Begins	Mon	Tues	Wed	Thurs	Fri	Topic
		Orientation week: Monday 2 to Friday 6 Feb					
1	09 Feb						Introduction
2	16 Feb						
3	23 Feb						
4	2 Mar		TEST				Presentation Software
5	9 Mar						
6	16 Mar						
	23 Mar	Vacation					
7	30 Mar		TEST			Good Friday	Spreadsheets and Problem Solving
8	6 Apr	Family Day					
9	13 Apr						
10	20 Apr		TEST				Human Computing
11	27 Apr	Freedom Day				Workers Day	
12	4 May						
13	11 May		TEST				
		Swot Time (16 May - 21 May) & June Exams (22 May - 12 Jun)					

Introduction to ICT

CS1L

Introduction to ICT, also known as CS1L, is a semester course which is offered in the first semester of the year, when it is written off. It is a compulsory course in the Pharmacy faculty, and is taken as a service course by students from across the spectrum of faculties at Rhodes.

At the end of the CS1L or Introduction to ICT course, students should be familiar with modern computing environments. They should be relatively proficient in the use of word processors, spreadsheets, presentation software and desktop publishing tools, and be able to select the appropriate tools or combinations thereof to solve mathematical problems of varying complexity, represent data in various ways, and create documents, presentations, posters, and similar documents. They should also be familiar with relevant social issues relating to computing and the Internet, including an understanding of online risks, social networks, health risks such as repetitive strain injury, and the impact of computing on society, including topical issues.

NOTE: If you plan to take CS102 or any higher credit in Computer Science, you must register for CS101 rather than CS1L.

COURSE CO-ORDINATOR

Your course co-ordinator is **Prof. Nomusa Dlodlo**, Room 002, Hamilton Building (n.dlodlo@ru.ac.za).

ENTRANCE REQUIREMENTS

Entrance requirement: none

LECTURES AND PRACTICALS

There are: 4 formal lectures per week
4 formal tests per semester (during lecture periods)
Occasional spot tests
1 formal practical session per week (3 hours per session)
Additional after-hours reading and exercises are recommended.

Lectures:	**CURRENT**		**PREVIOUS**
	Monday	4	10:30am
	Tuesday	5	11:25am
	Wednesday	No lecture	
	Thursday	2	8:40am
	Friday	3	9:35am

Practicals: Tuesday, Wednesday, Thursday or Friday afternoons starting at 14h00

Practicals will be held in the JACARANDA LABORATORY (ground floor of the New Arts Building). You will be allocated to a particular session and tutor – you cannot choose your own time.Practical work must be handed in at the end of the week, or as specified by the lecturer. You are encouraged to discuss the problems set on practical afternoons with each other, and to seek help from each other (and, of course, from your tutor). However, you are expected to hand in your OWN INDIVIDUAL SOLUTION, unless you have specifically been asked to work as part of a team. Students who don't abide by this will be dealt with severely.

Most practicals are not marked directly, but a practical test is written at the end of the module during the practical period to determine the practical mark for the class record.

NOTE: It has been shown over many years that students who attend lectures regularly perform better in summative assessments than those with similar abilities. We therefore strongly advise that you attend all timetabled lectures, tutorials, and practical sessions. If you really feel that you can master the course content by teaching yourself, then you should perhaps consider enrolling at a correspondence university, which is likely to be more cost-effective.

TEXTBOOKS AND HANDOUTS

There is no textbook for this course. Course material is available online via RUconnected. A non-refundable amount of R50-00 will be charged to your University account at the start of the course for class handouts and consumables.

COURSE OBJECTIVES AND OUTLINE

The Introduction to ICT course is intended to do more than teach basic computer literacy skills on current packages. It provides a combination of theoretical knowledge and practical skills that together comprise a mental framework that will enable the student to adapt and learn new IT packages as they change, to solve new IT problems and use additional package features that are not explicitly taught in this course. The course has a strong practical focus with the intention of enabling students to use ICTs as tools for productivity and problem-solving in their lives.

The course is delivered as four modules as described below:

Introduction [3 weeks]

This section provides an introduction to modern computing environments and the use of the Internet. Key areas covered include:

- Introduction to computing hardware and peripherals
- Information storage and retrieval
- Searching for information sources online
- Word processing
- Infrastructure and networks

Presentation Software [3 weeks]

Being able to present information and data in an accessible format is an important part of communication. This module introduces presentation software in the form of PowerPoint (MS Office) and discusses the main ideas behind presentation software. It also offers initial concepts on digital imaging to enable better practical manipulation of images. So, the key areas discussed include:

- Using PowerPoint
- Basic concepts of digital imaging

Spreadsheets and Problem Solving [3 weeks]

Building on concepts from the introductory module, this module introduces students to spreadsheets and their applications for solving common information processing challenges. The focus is on using spreadsheets as tools for modelling and addressing a variety of real-world problem types.

For example

- Tracking drugs in a pharmacy
- Investment management
- Bond repayments
- Monthly budget planning
- Lab test result tracking

Human Computing [3 weeks]

This module deals with the human aspects of computing, covering issues of both a personal and a wider social nature. Key elements include:

- Impact of computing on society
- Computing and ethics

Of course, it is too much to hope that computer problems can all be solved simply by finding the right “package”. In many cases, special packages have to be produced – and in any event, the general purpose tools for word processing, spreadsheets, communications, and so on also have to be produced somewhere! Such software packages are developed by writing computer programs. Design and implementation of computer programs is covered in other Computer Science courses.

It is important that you are up-to-date with the material covered in lectures before doing your practicals so that you are in a position to get started on the assignment straight away. This is how you will be able to take maximum advantage of the tutorial help available.

YOUR TIME COMMITMENT

The Department of Computer Science expects a CS1L student to spend a minimum of **11 hours per week** on Computer Science. This time should be divided up approximately as follows:

- 4 hours per week on attending lectures in Computer Science
- 4 hours per week on lecture revision, further reading and extra practical work, including class assignments
- 3 hours per week on practicals

DP REGULATIONS

- For your DP to be granted, you are required to maintain an average of at least 50% for your practical tests and achieve an average of at least 40% for your theory tests.
- No extensions will be granted for tests, but you may be given an average at the end of the semester if you have been granted a leave of absence.
- Practical assignments and tests missed without leave of absence will result in a mark of 0 (zero). It is in your best interest to ensure that you hand in all practical assignments and write all tests; otherwise, you will endanger your chances of achieving the minimum requirements as stated above. You are encouraged to keep your Practical and theory test marks as high as possible so that you don't endanger your chances of achieving the minimum requirements.

For more information regarding DPs, please see DP Regulations under Departmental Dynamics.

ASSESSMENT AND SUBMINIMA

- Theory test dates are marked on the course programme and are written during the lecture periods, normally in the Great Hall or Great Hall Verandah.
- The assessment of students in CS1L is based on a total of:
- 25% semester mark (calculated from the results of practicals, practical tests and theory test assessments)
- 75% 3-hour examination (theory and practical in one examination, conducted in the laboratory)
- A mark between 40% and 49% allows a student to write a Supplementary examination. Queries in this regard should be directed to your dean.
- If you obtain a pass mark for the course, but have obtained less than 40% for the examination, you will be given a Failed Subminimum (FSM) as your result. You will, however, be allowed to write the supplementary exam.

BUSINESS PROBLEM SOLVING WITH COMPUTERS							CS112
Week	Begins	Mon	Tues	Wed	Thurs	Fri	Topic
		June/July Vacation					
1	6 Jul						Introduction to the Operating Environment, IT Infrastructure and Networks
2	13 Jul						
3	20 Jul						
4	27 Jul				TEST		Spreadsheets
5	3 Aug						
6	10 Aug	Public Holiday					
	17 Aug	Vacation					
7	24 Aug				TEST		Information Systems Theory
8	31 Aug						
9	7 Sep				TEST		Ethics
10	14 Sep						
11	21 Sep				Heritage Day		
12	28 Sep				TEST	Swot week	
		Swot Time (2 Oct - 7 Oct) & October Exams (8 Oct - 5 Nov)					

Business problem solving with computers

CS112

CS112 is a semester course offered in the **second** semester of the year. The course is written off at the end of the semester. CS112 is the entry-level course for majoring in Information Systems, and is **required** for entry into IS201. It may also be taken in other degree structures where knowledge of computer fundamentals is desirable.

COURSE CO-ORDINATOR

Your course co-ordinator is **Prof Nomusa Dlodlo,** Room 002, Hamilton Building (n.dlodlo@ru.ac.za).

ENTRANCE REQUIREMENTS

Entrance requirement: none

LECTURES AND PRACTICALS

There are: 5 formal lectures per week
6 tests during the semester (during lecture periods)
1 formal practical session per week (3 hours per session)
Additional after-hours reading and exercises are recommended.

		Stream 1		Stream 2	
Lectures:	Monday	1	7:45am	2	(8:40am
	Tuesday	2	8:40am	3	9:35am
	Wednesday	3	9:35am	4	10:30am
	Thursday	4	10:30am	5	11:25am
	Friday	5	11:25am	1	7:45am

Practicals: Weekday afternoons starting at 14h00.
Practicals will be held in the JACARANDA LABORATORY (ground floor of the New Arts Building). You will be allocated to a particular session and tutor – you cannot choose your own time.

Practical work must be handed in at the end of the week or as specified by the lecturer. You are encouraged to discuss the problems set on practical afternoons with each other, and to seek help from each other (and, of course, from your tutor). However, you are expected to hand in your OWN INDIVIDUAL SOLUTION, unless you have specifically been asked to work as part of a team. Students who don't abide by this will be dealt with severely.

Most practicals are not marked directly, but a practical test is written at the end of the module during the practical period to determine the practical mark for the class record.

NOTE: It has been shown over many years that students who attend lectures regularly perform better in summative assessments than those with similar abilities. We therefore strongly advise that you attend all timetabled lecture, tutorial, and practical sessions. If you really feel that you can master the course content by teaching yourself, then you should perhaps consider enrolling at a correspondence university, which is likely to be more cost-effective.

TEXTBOOKS AND HANDOUTS

There is no textbook for this course. Course material is available online via RUconnected.

A non-refundable amount of R50-00 will be charged to your University account at the start of the course for class handouts and consumables.

COURSE OBJECTIVES AND OUTLINE

In the CS112 course, we expose students to the fundamentals of using computers and information technology (IT) to solve problems. The course provides an introduction to critical thinking and fundamental problem-solving skills. Some problems are solved using tools like spreadsheets, some are solved without the use of a computer, and some are solved by programming. No previous programming or computer experience is necessary for this course, although basic computer literacy is helpful.

Introduction to the Operational Environment, IT Infrastructure and Networks
This introductory module aims to provide students with a foundational understanding of Information and Communication Technology (ICT), IT infrastructure and networks. As technology continues to play a crucial role in various aspects of our lives, this course serves as a gateway for students to develop essential skills and knowledge in the realm of ICT. The module provides a clear insight into how data is represented, stored and processed electronically; it explores modern trends and technologies such as artificial intelligence, cloud computing, the internet and the internet of things and their impact on society and business. Using the Internet as a core example, the module also demonstrates how networks enable connectivity and support business operations. By the end of the module, students will be able to identify and describe the primary components of IT infrastructure—such as clients, servers, network devices, wired and wireless connections, network services, and security mechanisms—and understand how these elements support business functions. The module provides hands-on experience through practical exercises to reinforce theoretical concepts and encourage application of knowledge.

Spreadsheets
This module focuses on programmatic thinking using Excel to develop problem-solving skills. Excel is a vital tool for addressing a wide range of challenges, and proficiency in its functions is crucial for developing effective problem-solving skills. Students will learn to apply Excel commands, such as If-Then-Else, to solve real-world problems and fun logic puzzles, including tasks like determining grades, solving the FizzBuzz challenge, or creating a multiplication table. By the end of the module, students will have acquired the skills to approach and solve problems systematically, while also engaging in fun logic-based challenges.

Information Systems Theory
Information Systems Theory is a first-year introductory module for Information Systems (IS), which provides a theoretical background of the field.

This module consists of foundational topics such as Information Systems Fundamentals, Systems Thinking, Hard and Soft Systems Methodology, and applied IS with Information Systems in the organisation.

Although this module is theoretical, it comprises a practical component that enables the student to create high-level designs of information systems based on case studies.

Ethics
This module is a two-week exploration of the ethics and regulations (global and local) relating to data and privacy. It also introduces students to the ideas of ethical decision-making in organisational, professional and individual ICT contexts.

YOUR TIME COMMITMENT

The Department of Computer Science expects a CS112 student to spend a minimum of **12 hours per week** on Computer Science. This time should be divided approximately as follows:

- 5 hours per week on attending lectures in Computer Science
- 4 hours per week on lecture revision, practical preparation and further reading
- 3 hours per week on practicals

IMPORTANT: It is important that you are up-to-date with the material covered in lectures when you arrive at the computer laboratory for your practical session so that you are in a position to get started on the assignment straight away. This is how you will be able to take maximum advantage of the tutorial help available at practical sessions, and ensure that you complete the assignments set for the practical session.

DP REGULATIONS

- For your DP to be granted, you are required to maintain an average of at least 50% for your practical tests and achieve an average of at least 40% for your theory tests.
- No extensions will be granted for tests, but you may be given an average mark at the end of the semester for a missed test if you have been granted a leave of absence.
- Practical assignments and tests missed without leave of absence will result in a mark of 0 (zero). It is in your best interest to ensure that you hand in all practical assignments and write all tests; otherwise, you will jeopardise your chances of achieving the minimum requirements as stated above. You are encouraged to keep your practical and theory test marks as high as possible so that you don't endanger your chances of achieving the minimum requirements.

For more information regarding DPs please see DP Regulations under Department Dynamics.

ASSESSMENT AND SUBMINIMA

- Theory test dates are marked on the course programme and are written during the lecture periods, normally in the Great Hall or Great Hall Verandah.
- The assessment of students in CS112 is based on a total of:
- 25% semester mark (calculated from the results of practicals and test assessments)
- 75% 3-hour examination (theory and practical in one examination, conducted in the laboratory)
- A mark of between 40% and 49% allows a student to write a supplementary examination. Queries in this regard should be directed to your dean.
- If you obtain a pass mark for the course, but have obtained less than 40% for the examination, you will be given a Failed Subminimum (FSM) as your result. You will, however, be allowed to write the supplementary exam.