

Tutorial Letter 101/0/2021

Introduction to Programming II COS1512

Year module

School of Computing

IMPORTANT INFORMATION

Please register on myUnisa, activate your myLife e-mail account and make sure that you have regular access to the myUnisa module website, COS1512-21-Y1, as well as your e-tutor group website.

Note: This is a fully online module. It is, therefore, only available on myUnisa.

BARCODE



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1 INTRODUCTION

Dear Student

Welcome to Introduction to COS1512 Programming II. Because this is a fully online module, you will need to use myUnisa to study and complete the learning activities for this module. Visit the website for COS1512 on myUnisa and activate your TEAMS account soonest.

The website for your module is **COS1512-21-Y1**.

1.1 Getting started

Owing to the nature of this module, you can read about the module and find your study material online. Go to the website at <https://my.unisa.ac.za> and log in using your student number and password. Click on "myModules" at the top of the web page and then on "Sites" in the top right corner. In the new window, click on the grey Star icon next to the modules you want displayed on your navigation bar. Close the window in the top right corner. Then select the option "Reload to see your updated favourite sites". Now go to your navigation bar and click on the module you want to open.

We wish you every success with your studies!

2 OVERVIEW OF COS1512

2.1 Purpose

This module introduces students to the design, implementation and evaluation of algorithms-based, structured object-oriented computer programs, with the fundamentals of simple data structures, (including object-orientation). Students are equipped to think logically, creatively, and conceptually and to recognize the design rules, techniques, and components in order to compose and present a functional working program solution to a perceived computing problem of a client, for the application of these programs in the industry's process systems and organizational information systems, to specific standards (such as user-friendly, robust, solution specific, and to the satisfaction of the client). This module provides core compulsory and introductory knowledge, skills and values that will support further studies and applications in the sector of object-oriented programming computing, in the field of computer science, as part of the B-degree.

COS1512 focuses on providing an introduction to objects and the object-oriented programming environment using C++ as programming language. The following topics are included:

- file I/O streams as an introduction to objects and classes;
- using pre-defined classes such as string and vector; C-strings, pointers and dynamic arrays;
- ADTs (i.e. user-defined classes including the functions and operators for these classes as well as separate compilation);
- recursion;
- single inheritance,
- and function and class templates.

2.2 Outcomes

For this module, you will have to master several outcomes:

	Specific outcomes	Assessment criteria
1	The learner can design a logical solution to a simple programming problem, making appropriate assumptions.	<ul style="list-style-type: none"> • interpret a problem description which specifies the requirements of a program; • identify all steps necessary to solve a problem and order the steps in the correct logical sequence; • write down the logical sequence of operations that a computer should perform to solve a particular problem; • apply object-oriented principles during problem solving.
2	The learner can write C++ program code, demonstrating the principles of good programming style.	<ul style="list-style-type: none"> • use the different C++ programming constructs appropriately and correctly, in order to implement a solution to a programming problem; • write functions and use them in a program; • define classes and use object-oriented principles to implement programming problems; • recognise/locate errors in a program and correct them.
3	The learner can demonstrate an understanding of the theory underlying the basic programming concepts.	<ul style="list-style-type: none"> • Explain the purpose of a particular C++ programming construct and identify problem descriptions where they are applicable. • Define relevant programming concepts.

The specific learning *objectives* for each chapter in the prescribed book for COS1512 in order to reach the above learning outcomes are given in more detail in the study guide included in Tutorial Letter 102, available under Additional Resources on the COS1512 course website.

3 LECTURER(S) AND CONTACT DETAILS

3.1 Lecturer(s)

The primary lecturer for this module is

Dr MA Schoeman:

Department: Computer Science (School of Computing)

Telephone: 011 670 9178

E-mail: schoema@unisa.ac.za

3.2 Department

You can contact the Department of Computer Science as follows:

E-mail: computing@unisa.ac.za

3.3 University

To contact the University, follow the instructions on the Contact us page on the Unisa website. Remember to have your student number available whenever you contact the University.

Whenever you contact a lecturer via e-mail, please include your **module code and student number** in the subject line to enable the lecturer to help you more effectively. Please your **myLife e-mail** in all communication with Unisa. We have been instructed to answer only myLife e-mails from students.

4 RESOURCES

4.1 Joining myUnisa

The myUnisa learning management system is the University's online campus which will help you communicate with your lecturers, other students, and the administrative departments within Unisa. To claim your myUnisa account, please follow the steps below:

1. Visit the myUnisa website at <https://my.unisa.ac.za/portal>
2. Click on the "**Claim Unisa login**" link on the top of the screen under the orange user ID box.
3. A new screen will load, prompting you to **enter your student number**. Please enter your student number and click "**continue**".
4. Enter your surname, your full name, your date of birth and, finally, your South African ID number (for South African citizens) OR your passport number (for foreign students). Then click "continue". **Remember to enter either an ID number or a passport number, NOT both.**
5. Please read through the guidelines and **click all the check boxes** to acknowledge that you have read all the information provided. Once you are done, click the "**Acknowledge**" button to redirect you to the final page in the process.
6. The final page will display your myLife e-mail address, and your **myLife AND myUnisa password**. This password will also be sent to the cellphone number displayed on the page for safekeeping.
7. Please note that it can take up to 24 hours for your myLife e-mail account to be created.

Remember, the password provided is your myUnisa **AND** myLife password.

4.2 Prescribed book(s)

The prescribed book for this module is:

Walter Savitch. Problem Solving with C++, 10th edition. Pearson International Edition: Addison-Wesley, 2018.

You may also use the 7th, 8th or 9th edition of the prescribed book.

You are expected to purchase your own copy of the prescribed book. For contact details of official booksellers, please consult the list of official booksellers and their addresses in *Study @ Unisa*.

You can also buy an e-book version of Savitch at www.coursesmart.com.

We will refer to the prescribed book as Savitch.

In this module we cover the following chapters of Savitch:

Chapter	Topic	Sections covered
Chapter 1	Introduction to computers and C++ programming	1.1 and 1.2
Chapter 4	Overloading functions	Only 4.6
Chapter 5	Assert macro	Only 5.5
Chapter 6	I/O streams as an introduction to objects and classes	All sections
Chapter 8	C-strings and vectors	8.1 and 8.3, plus the subsection <i>Converting Between string Objects and C Strings</i> , thus excluding 8.2 with the exception of the subsection <i>Converting Between string Objects and C Strings</i>
Chapter 9	Pointers and dynamic arrays	All sections excluding the optional subsections in 9.2
Chapter 10	Defining classes	All sections
Chapter 11	Friends, overloaded operators and arrays in classes	All sections, plus Appendixes 7 and 8
Chapter 12	Separate compilation (ADTs)	12.1 and only the first two pages of 12.2
Chapter 14	Recursion	14.1 and 14.2, thus excluding 14.3
Chapter 15	Inheritance	Only 15.1, thus excluding 15.2 and 15.3
Chapter 17	Templates	All sections

Note that some of the sections (in Chapters 1, 4 and 5) are omitted, because they are covered in COS1511. The other sections that are omitted fall outside the scope of this module.

4.3 Recommended book(s)

You do not have to consult any other textbooks apart from Savitch. However, some of you may want to read more widely, and consult alternative references. The following useful books are available in the Unisa library. Please note that the library does not have multiple copies of these books and that only limited waiting lists are kept.

DS Malik. C++ Programming from problem analysis to program design. Cengage, UK, 2013.

Recommended books can be requested online, via the library catalogue.

4.4 Electronic reserves (e-reserves)

E-reserves can be downloaded from the Library catalogue. More information is available at: <https://libguides.unisa.ac.za/request/request>

4.5 Library services and resources

The Unisa Library offers a range of information services and resources:

- For detailed Library information, go to <https://unisa.ac.za/library>
- For research support and services (eg personal librarians and literature search services), go to <https://www.unisa.ac.za/sites/corporate/default/Library/Library-services/Research-support>
- The Library has created numerous Library guides: <https://libguides.unisa.ac.za>

Recommended guides:

- Request and download recommended material: <https://libguides.unisa.ac.za/request>
- Postgraduate information services: <https://libguides.unisa.ac.za/request/postgrad>
- Finding and using Library resources and tools: <https://libguides.unisa.ac.za/research-support>
- Frequently asked questions about the Library: <https://libguides.unisa.ac.za/ask>
- Services to students living with disabilities: <https://libguides.unisa.ac.za/disability>
- Assistance with technical problems accessing the Unisa Library or resources: <https://libguides.unisa.ac.za/techsupport>

You may also send an e-mail to Lib-help@unisa.ac.za (please add your student number in the subject line).

5 STUDENT SUPPORT SERVICES

The *Study @ Unisa* website is available on myUnisa: www.unisa.ac.za/brochures/studies

This website has all the tips and information you need to succeed at Unisa.

6 HOW TO STUDY ONLINE

6.1 What does it mean to study fully online?

Studying fully online modules differs completely from studying some of your other modules at Unisa.

- **All your study material and learning activities for online modules are designed to be delivered online on myUnisa.**

- **All your assignments must be submitted online.** This means that you will do all your activities and submit all your assignments on myUnisa. In other words, you may **NOT** post your assignments to Unisa using the South African Post Office.
- **All communication between you and the University happens online.** Lecturers will communicate with you via e-mail and SMS, and use the **Announcements**, the **Discussion Forums** and the **Questions and Answers** tools. You can also use all of these platforms to ask questions and contact your lecturers.

6.2 myUnisa tools

The main tool that we will use is the **Lessons tool**. This tool will provide the content of and the assessments for your module. At times you will be directed to join discussions with fellow students and complete activities and assessments before you can continue with the module.

It is very important that you log in to myUnisa regularly. We recommend that you log in at least once a week to do the following:

- **Check for new announcements.** You can also set your myLife e-mail account so that you receive the announcement e-mails on your cellphone.
- **Do the Discussion Forum activities.** When you do the activities for each learning unit, we want you to share your answers with the other students in your group. You can read the instructions and even prepare your answers offline, but you will need to go online to post your messages.
- **Do other online activities.** For some of the learning unit activities you might need to post something on the **Blog tool**, take a quiz or complete a survey under the **Self-Assessment** tool. Do not skip these activities because they will help you complete the assignments and the activities for the module.

We hope that by giving you extra ways to study the material and practise all the activities, this will help you succeed in the online module. To get the most out of the online module, you **MUST** go online regularly to complete the activities and assignments on time.

7 ASSESSMENT

7.1 Assessment plan and study schedule

Because this is an online module, the assignments are not provided in this tutorial letter. Instead, the assignments are provided online as they become due.

The assessment plan, study schedule, due dates and unique numbers for the assignments will be provided in a separate tutorial letter, at a later date, once we have received clarification on when the 2021 academic year starts.

7.2 Year mark and final mark

Your mark for this module is made up of a year mark (20%) and an examination mark (80%). The final year mark is calculated based on your performance in assignments throughout the year.

The weights allocated to the assignments for COS1512 are summarized as follows:

Assignment number	Weight
1	5%
2	30%
3	35%
4	30%

Your final mark is calculated as 20% year mark (from all the assignments, all assignments are compulsory) and 80% examination mark.

8 CONCLUSION

Do not hesitate to contact us by e-mail if you are experiencing problems with the content of this tutorial letter or with any academic aspect of the module.

We wish you a fascinating and satisfying journey through the learning material, and trust that you will complete the module successfully.

Enjoy the journey!

Dr MA Schoeman – lecturer for COS1512

DEPARTMENT OF COMPUTER SCIENCE

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