Tutorial Letter 101/0/2022

Networks IV
IRM4721

Year module

Department of Computer Science

IMPORTANT INFORMATION

Please register on myUnisa, activate your myLife email address and make sure that you have regular access to the myUnisa module website, IRM4721-22-Y1, as well as your group website.

Note: This is a fully online module and therefore it is only available on myUnisa.

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1 INTRODUCTION

Dear Student

Welcome to Networks IV (IRM4721).

As part of this tutorial letter, we wish to inform you that Unisa has implemented a transformation charter based on five pillars and eight dimensions. In response to this charter, we have also placed curriculum transformation high on the agenda. For your information, curriculum transformation includes the following pillars: student-centred scholarship, the pedagogical renewal of teaching and assessment practices, the scholarship of teaching and learning, and the infusion of African epistemologies and philosophies. These pillars and their principles will be integrated at both the programme and module levels, as a phased-in approach. You will notice the implementation in your modules, and we encourage you to fully embrace these changes during your studies at Unisa.

Because this is a fully online module, you will need to use myUnisa to study and complete the learning activities. Visit the website for IRM4721 on myUnisa as soon as you are registered for this module. The website for your module is IRM4721-22-Y1.

1.1 Getting started...

Given the nature of this module, you can read about it 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. You will see IRM4721-22-Y1 in the row of modules displayed in the orange blocks at the top of the web page. Select the More tab if you cannot find the module you require in the blocks displayed. Then click on the module you wish to open.

This module is a fourth year module on Computer Network systems, and at this stage students should be well versed in the fundamental aspects of computer networking technologies, protocols, topologies etc. However, due to the fact that this module is also offered as an elective, experience has showed us that there are quite a number of students without a firm understanding of the fundamental network technologies. For this reason, this module will initially focus on some fundamentals, and then move onto more complex aspects of computer networking.

The module has a number of practical aspects that you need to perform during the year, and for this reason, you will need a PC or laptop (or at least access to a computing device). In fact, considering that this is a fourth year IT related subject, all assignments must be neatly typed out (we will not accept any hand written assignments at all)..

In this tutorial letter you will find information relating to assignments which you need to complete and deliver on MyUnisa on, or before the due dates. Please study this information carefully and make sure that you complete the assignments on time. Always ensure that you use the correct unique assignment number as stated in this tutorial letter, and match this unique number with the same unique assignment number on MyUnisa

We will be making use of myUnisa during the course of the year. You are required to regularly access myUnisa to read announcements and submit your all your assignments. We will post all the assignment criteria as well as resource documents on your Module website on

MyUnisa. Right from the start we would like to point out that you must read all information you receive during the semester immediately and carefully, as they always contain important and, sometime, very urgent information. The tutorial letters will be available on MyUnisa as well.

We hope that you will enjoy this course, and that this course will make a positive contribution to your learning experience at UNISA!

We wish you every success in your studies!

Kind regards
Prof B.L. Tait (Primary lecturer)

2 OVERVIEW OF IRM4721

2.1 Purpose

Students who have completed this module successfully will be equipped with a fundamental understanding of the various aspects that govern the successful working of a well-planned network. This module will provide the learner with the necessary skills to make autonomous decisions and to ensure the best utilization of resources in a proposed networked system. Various aspects must be well planned before a Network system will function to optimum performance, often a badly planned network will still function, but with enormous frustration to the people using this network. This module equips the learner with all the tools and cognitive abilities to ensure an optimum solution is developed.

2.2 Outcomes

In order to complete this module, you will have to master several outcomes:

- Specific Outcome 1: Selection of appropriate routing methods and apply them effectively
  - Select appropriate routing methods and apply them effectively.
  - Explain and define all concepts relating to routing methods.
  - List the purpose of the routing concepts
  - Identification of appropriate and applicable routing methods.
  - Demonstrates ability to select the most relevant routing method.
  - explanation must indicate the ability to practically use and implement of various routing concepts.
  - Define an arbitrary routing table for a small prototype network.
  - Propose an optimized routing table for a small prototype network.
  - Collapse a verbose routing table to efficient concise routing table.
  - Discuss the Djikstra algorithm in relation to routing table costing
- Specific Outcome 2: Evaluate and analyze the design of Internetworking systems as a communication channel

  - Discuss standards applicable to internetworking.
  - Evaluate typical issues associated with the communication channel.
  - Project the performance of a proposed internetworking system.
  - Discuss the associated protocols for a network.
  - Evaluate communication channel bridging solutions among various protocols.

- Specific outcome 3: Applications and analysis of internetworking systems with reference to applications that support commerce and society.
  - Describe the right type of network for a proposed criterion.
  - Critical evaluation of an existing network application.
  - Demonstrate an understanding of the various types of network solutions.
  - Discuss current network solutions.
  - Practically implement a network solution.
  - Illustrate the best fit application of a network for a specific commerce application.
  - Discuss various firewall application systems (hardware and software based).
  - Illustrate the network domain with reference to the firewall application to setup a DMZ.
  - Illustrate the internal components found in a firewall system.

- Specific outcome 4: Technical and theoretical aspects of privacy and security in Internetworking systems
  - Discussion of current network security mechanisms such as the Secure Socket Layer (SSL).
  - Implement a network security hierarchy with the appropriate Certificate authorities (CA).
  - List and discuss the importance of security concepts such as encryption in commercial network systems.
  - Discuss network threats.
  - Identify and describe the various network security controls, methods and techniques.
  - Identify and describe the various network security tools.
  - Apply the appropriate techniques or tools in design to secure a network.
  - Critically discuss privacy in the age of the Internet.
  - Identify and discuss the methods, principles, policies and tools used to ensure privacy.
  - Discuss the effect of various online tools and methods on privacy.
  - Critically discuss the impact of emerging technologies on privacy.

- Specific outcome 4: Compile and interpret network performance data.
  - Research software packages to assist in the evaluation of a network environment.
  - Choose an applicable software tool to assist in a network probe.
  - Set up and configure the network analysis software package.
  - Execute a well-controlled network probe.
  - Discuss and evaluate the results as presented by the network analysis software.

3 CURRICULUM TRANSFORMATION

Unisa has implemented a transformation charter based on five pillars and eight dimensions. In response to this charter, we have placed curriculum transformation high on the teaching and learning agenda. Curriculum transformation includes the following pillars: student-centred scholarship, the pedagogical renewal of teaching and assessment practices, the scholarship of teaching and learning, and the infusion of African epistemologies and philosophies. These pillars and their principles will be integrated at both programme and module levels as a phased-in approach. You will notice a marked change in the teaching and learning strategy implemented by Unisa, together with how the content is conceptualised in your modules. We encourage you to embrace these changes during your studies at Unisa in a responsive way within the framework of transformation.

4 LECTURER(S) AND CONTACT DETAILS

4.1 Lecturer(s)

The name(s) and contact details of the lecturer(s) responsible for this module can be found in the tutorial letter entitled COSALLF/301/0/2022, which is compiled by the School of Computing. The details of the lecturer responsible will also be supplied in the welcome message on myUnisa.

Primary Lecturer: Prof B.L. Tait
Email address: Taitbl@unisa.ac.za
Office number: 011-670-9195

4.2 Department

You can contact the Department of Computer Science as follows:

Telephone number: 011 670 9200
E-mail: computing@unisa.ac.za

4.3 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 student number in the subject line to enable the lecturer to help you more effectively.

5 RESOURCES

5.1 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

5.2 Recommended books

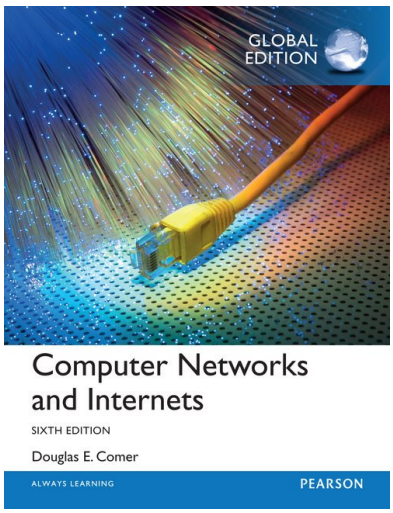

Figure 1: Computer networks and Internets 6th edition (global edition).

The prescribed Book is: Computer networks and Internets 6th edition (global edition)
Author: Douglas E. Comer
Publishers: Pearson
ISBN-10: 1-292-06117-0
ISBN-13: 978-1-292-06117-7 (Soft cover version)
E-book: https://www.vanschaik.com/ebook/58edbd910947b/

In order to complete this module, you need to **procure the prescribed book for this module.** It must be noted that his module also has a fundamental research part, this means you

have to find information and resources to assist you in completing your module. You may use the scholarly Internet resources to assist you with your research, and you need to ensure that during this research and presentation of your research results, you do not plagiarise in any way!

5.3 Electronic reserves (e-reserves)

E-reserves can be downloaded from the library catalogue. More information is available at: http://libguides.unisa.ac.za/request/request

5.4 Library services and resources information

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

- for brief information go to:
  https://www.unisa.ac.za/library/libatglance
- for more detailed Library information, go to
  http://www.unisa.ac.za/sites/corporate/default/Library
- for research support and services (e.g. Personal Librarians and literature search services), go to
  http://www.unisa.ac.za/sites/corporate/default/Library/Library-services/Research-support

The Library has created numerous Library guides:

http://libguides.unisa.ac.za

Recommended guides:

- request and find library material/download recommended material:
  http://libguides.unisa.ac.za/request/request
- postgraduate information services:
  http://libguides.unisa.ac.za/request/postgrad
- finding and using library resources and tools:
  http://libguides.unisa.ac.za/Research_skills
- Frequently asked questions about the Library:
  http://libguides.unisa.ac.za/ask
- Services to students living with disabilities:
  http://libguides.unisa.ac.za/disability

Important contact information:

- https://libguides.unisa.ac.za/ask - ask a Librarian
- Lib-help@unisa.ac.za - technical problems accessing library online services
- Library-enquiries@unisa.ac.za - general library related queries
- Library-fines@unisa.ac.za - for queries related to library fines and payments

6 STUDENT SUPPORT SERVICES

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

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

7 HOW TO STUDY ONLINE

7.1 What does it mean to study fully online?

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

- All your study material and learning activities for online modules are designed to be delivered online via myUnisa.
- All your assignments must be submitted **ONLINE.** This means that you will complete all your activities and submit all your assignments via 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. Your lecturers will communicate with you via email and SMS, and by using the Announcements and Questions and Answers tools. You can also use all of these ways to ask questions and contact your lecturers.

8 ASSESSMENT

8.1 Assessment plan

Because this is an online module, the assignments are not provided in this tutorial letter. Instead, they will be posted **online roughly a month before they are due** (and as indicated in the table below), you will see them when you go online under announcements and additional resources.

Please ensure that you use the correct unique assignment number for every assignment

You have to submit at least one of your assignments to obtain exam entrance

Often date changes are enforced by the University, you will receive such communication via the announcement tool on MyUnisa - so keep your eye on the module site on MyUnisa often! You have to adhere to the due dates, by submitting on or before the due date. Late submissions will not be accepted as the MyUnisa online submission system will automatically block

any late submission.

Although students may collaborate when preparing assignments, each student must write and submit his/her own individual prepared assignment. In other words, you must submit your own ideas in your own words, sometimes interspersing relevant short quotations that are properly references. It is unacceptable for students to submit identical assignments on the basis that they worked together. That is copying (a form of plagiarism) and none of these assignments will be marked. Furthermore, you may be penalized or subjected to disciplinary proceedings by the University.

8.2 Year and Final Mark

8.2.1 Year mark

Your year mark for this module is calculated as follows:

Year mark = Assign1 x 0.5 + Assign2 x 0.5

8.2.2 Final mark

The final mark for this module is calculated as follows:

Final mark = Year mark x 0.4 + Exam mark x 0.6

You will pass this module if your Final mark is 50% or more AND the mark that you have obtained for the Exam is 40% or more. [Thus if the mark for the Exam is below 40% you will fail. If the final mark is below 50% you will also fail this module.]

9 ACADEMIC DISHONESTY

9.1 Plagiarism

Plagiarism is the act of taking the words, ideas and thoughts of others and presenting them as your own. It is a form of theft which involves several dishonest academic activities, such as the following:

- Cutting and pasting from any source without acknowledging the source.
- Not including or using incorrect references.
- Paraphrasing without acknowledging the original source of the information.

It must be noted that a detailed document will be provided later in the year to provide clear direction on this matter and clearly elaborate on issues pertaining to plagiarism. When this document becomes available, it it your responsibility to scrutinize the contents.

More information about plagiarism can be downloaded on the link below:
https://www.unisa.ac.za/sites/myunisa/default/Study-@-Unisa/Student-values-and-rules

9.2 Cheating

Cheating includes, but is not limited to, the following:

- Completing assessments on behalf of another student, copying from another student during an assessment or allowing a student to copy from you.
- Using social media (eg WhatsApp, Telegram) or other platforms to disseminate assessment information. Submitting corrupt or irrelevant files.
- Buying completed answers from ”tutors” or internet sites (contract cheating).

10 STUDENT WITH DISABILITY

The Advocacy and Resource Centre for Student with Disability ARCSWiD) provides an opportunity for staff to interact with new and returning students with disabilities.
If you are a student with a disability and would like additional support or need additional time for assessments, you are invited to contact ARCSWiD@unisa.ac.za so that you can be assisted

11 CONCLUSION

Do not hesitate to contact us via email 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!

Prof B.L. Tait (IRM4721)
taitbl@unisa.ac.za
DEPARTMENT OF COMPUTER SCIENCE