

**UNIVERSITY OF THE WESTERN CAPE
DEPARTMENT OF COMPUTER SCIENCE
Notes to Students – CSC311 - 2016**

CSC311 is a 3rd year half-course in Computer Science designed for students that intend majoring in Computer Science. The prerequisite for this course is that the student has experience with C, C++, Java, or Python. During this course, a deliberate effort is made to focus the content on networking principles, thus avoiding using any advanced calculus, probability, or stochastic process concepts related to computer networking. Its content is suitable for undergraduate and useful for first-year graduate students. The course follows a top-down approach where networking is treated by beginning at the application layer and working its way down toward the physical layer. The main advantages of this approach includes:

- Placing and early emphasis on the application layer which is a “high growth area” in networking where many of the recent revolutions in computer networking are made: the Web, peer-to-peer file sharing, and media streaming—have taken place at the application layer.
- Teaching networking applications near the beginning of the course is a powerful motivational tool as students are thrilled to learn about how applications that they manipulate on a daily basis such as e-mail and the Web work.
- Higher potential for the students to better understand the network services required by the applications and examine the various ways in which such services might be provided and implemented in the lower layers.
- Motivation for the students to learn very early how easy it is to create their own network applications and application-level protocols by getting an early exposure to notions of of socket programming, service models, and protocols which are important concepts that resurface in all subsequent layers.

1. LECTURES

Lectures take place daily in different periods in the SUN Lab according to the appended timetable.

2. BOOKS

Prescribed:

- James F. Kurose & Keith W. Ross, *Computer Networking: A Top-Down Approach, Sixth Edition*. Pearson. ISBN 978-0-273-76896-8
- Other notes and slides will be available from the course Web pages.

3. SYLLABUS

Introduction	(5.0)
Application layer	(5.0)
Transport layer	(10)
Network layer	(10)
Link Layer	(5.0)
Computer networks security	(5.0)

4. DEVELOPMENT ENVIRONMENT

Part of the educational experience in honours in Computer Science is to ensure students can design computer systems and, using some of the available development tools, build these systems from scratch or through integration with existing software and hardware. Thus you will be required to undertake all your practical work using

1. Simulation/emulation tools provided for designing and testing communication networks (packettracer and wireshark),
2. Hardware platforms such as a) standard Desktop computers and b) embedded computers such Raspery Pi and potentially the Alix platform from PCEngines.

These simulation/emulation tools and hardware platforms are available for different operating systems including Linux.

5. LABORATORY

Students will have access to the network Laboratory of the Computer Science. While many of the practical works will be performed in groups of two students, each student is expected to spend the minimum number of hours required to complete his task. The equipment provided will always be adequate for students to perform the work of the course. Any additional facilities will be provided to enable each group to complete their tasks on time. The equipment provided for the practical is expensive and fragile. Should this equipment provided be abused, it can be withdrawn from any individual or the group as a whole without warning.

6. TUTORIAL LECTURES (Friday afternoons: from 5th period onwards)

On Fridays, the 5th period lecture will be dedicated to tutorials to assist students in understanding the course work while the following two periods will be devoted to the practical work. The tutorial and practical work period will be coordinated by the lecturer of the course in question and the teaching assistants and may include components like:

- A tutorial with in-class exercises and solutions based on the week's work,
- Demos regarding current projects related to class work
- Group exercises
- A discussion of the practical set for the following week (where appropriate)

7. INDIVIDUAL AND GROUP WORK

Most of the practical projects will be done in group, unless otherwise specified by the lecturer.

8. PRACTICAL WORK (Friday afternoon)

Practical work is one of the most important parts of the course. PLEASE NOTE: Extensions will only be granted on production of a Valid Medical Certificate signed by a qualified Medical Doctor or on compassionate grounds. Penalties for late assignments are 5% per day. Work more than 6 days late will NOT be accepted. To avoid plagiarism, do not submit material that is not your own work.

9. TESTS

As part of the assessment, two tests will be given to the students during the duration of the course: one in mid-course and another at the end of the course. The two tests are scheduled on

- Thursday 12th of August 2016 in SUN Lab.
- Thursday 8th of September 2016 in the SUN Lab.

All class tests will be held during the scheduled lecture time, i.e. first period on Thursday; students should arrive 10 minutes before the beginning of the test.

10. EXAMINATION REQUIREMENTS

All Practicals	40.0%
Class Tests	40.0 %
Quizzes	20.0%

Supplementary: 1 paper of 3 hours during the Re-assessment period.

11. MISSED CLASS TESTS

Any student who misses a class test for Medical or Compassionate reasons will be required to either rewrite the test or to do an oral. The procedure to follow is:

- 1) It is the student's responsibility to inform the Course Coordinator as soon as possible and no later than 3 days after the test.
- 2) A Medical certificate signed by a Medical doctor must be provided. In the case of Compassionate reasons please discuss this with the Course Coordinator.
- 3) The re-test must be done within 10 days of the test (or by the end of the week following the test) whichever date comes first. In the case of an extended Medical situation contact the Course Coordinator.

12. PLAGIARISM (COPYING)

All forms of Plagiarism (programs, essays, tutorials etc.) are illegal and will be punished according to the University's rules. These rules are severe and can lead to rustication. The Lecturer plans to check all program submissions to ensure that the work submitted has not been copied. Work by other authors must be acknowledged as such.

13. COURSE ADMINISTRATION

Questions related to the material being lectured or tutorial work should be addressed to the course coordinator. If you have administrative queries related to marks, tests and so on, please raise these with the course convenor.

Course Coordinators:

- Prof. BA Bagula, Room 1.28 e-mail: abagula@uwc.ac.za
- Mr Andre Henney (Senior IT officer)

Tutors: To be announced

14. PRACTICALS

The tutorials are handled by mr Andre Henney following a plan assigned by him.

15. COURSE LECTURE TIMETABLE

LECTURES

Week	Date	Monday	Tuesday	Wednesday	Thursday	Friday
1	25-Jul	9:40-10:40	10:50-11:50		8:30-9:30	09:40-10:40
	chapter 1					10:50-13:00
	chapter 1					14:00-15:00
	All Pracs					Hand-out
2	01-Aug	9:40-10:40	10:50-11:50		8:30-9:30	09:40-10:40
	chapter 2					10:50-13:00
	chapter 2					14:00-15:00
3	08-Aug	9:40-10:40	Public Holiday		8:30-9:30	09:40-10:40
	chapter 2					10:50-13:00
	chapter 3					14:00-15:00
	Prac 1					Hand-in
4	15-Aug	9:40-10:40	10:50-11:50		8:30-9:30	09:40-10:40
	chapter 3					10:50-13:00
	chapter 3					14:00-15:00
5	22-Aug	9:40-10:40	10:50-11:50		8:30-9:30	09:40-10:40
	chapter 4					10:50-13:00
	chapter 4					14:00-15:00
	Prac 2					Hand-in
6	29-Aug	September Vacation				
	Ressess					
	Ressess					
7	05-Sep	9:40-10:40	10:50-11:50		8:30-9:30	09:40-10:40
	chapter 4	10:50-11:50				10:50-13:00
	chapter 5					14:00-15:00
	Prac 3					Hand-in

Color	Meaning	Lecturer
	Theoretical CS	Reginal Doods
	Class test	Antoine Bagula
	Networks	Antoine Bagula
	Practicals	Andre Henney