

Tutorial letter 101/2/2016

First Year Chemistry Practical CHE1503

Semesters 2

Department of Chemistry

IMPORTANT INFORMATION:

This tutorial letter contains important information
about your module.

BAR CODE

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1 INTRODUCTION

Dear Student

Welcome to module CHE1503 which is a first year Chemistry Practical module. We trust and hope that you will find this module both interesting and rewarding. Good management of your study time is the key to your success therefore I encourage you to start studying early in the semester and resolve to do your assignments properly and submit on time. Learning is a process and cannot be left to chance and last minutes.

2 PURPOSE OF AND OUTCOMES FOR THE MODULE

2.1 Purpose

This composite practical module is aimed at equipping students with basic-hands-on laboratory skills and techniques associated with some of the theoretical concepts covered in General Chemistry. Students accredited with this module will be able to demonstrate the theoretical concepts of General Chemistry practically. They will learn to think critically and apply basic chemical techniques when solving problems.

2.2 Outcomes

Specific outcome 1:

Apply ethical and health and safety principles in the laboratory.

Assessment criteria 1:

- 1.1 Common hazards symbols are identified and interpreted.
- 1.2 Safety clothing such as laboratory coats, goggles and closed shoes are worn at all times in the laboratory.
- 1.3 Safety precautions on labels are followed.
- 1.4 Adverse physical, chemical, biological and psychological effects of common hazards to human life in the laboratory and the general environment are identified.
- 1.5 Waste is disposed off in appropriate and designated containers.
- 1.6 Ethical principles are observed and adhered to in experimental work and reporting.

Specific outcome 2:

Apply practical titrimetric methods in quantitative analysis to demonstrate analytical chemistry concepts.

Assessment criteria 2:

- 2.1 Appropriate volumetric glassware for titrimetric methods is identified, selected and used for a specific experiment.
- 2.2 Experimental data is collected, systematically recorded in a laboratory notebook and interpreted.
- 2.3 Laboratory technique is demonstrated by correctly following procedures in a prescribed experiment.
- 2.4 Quantitative transfer of liquids and measurement of mass are demonstrated.
- 2.5 Standard solutions are prepared and the concentration of unknown samples is determined.
- 2.6 Stoichiometric ratios, dilution factors and molecular masses are applied in quantitative calculations.
- 2.7 A comprehensive laboratory report demonstrating an understanding of the practical work is compiled.

Specific outcome 3:

Classify chemical reactions and investigate precipitation reactions using experimental work.

Assessment criteria 3:

- 3.1 Laboratory technique is demonstrated by correctly following procedures in a prescribed experiment.
- 3.2 Experimental data is collected, systematically recorded in a laboratory notebook and interpreted.
- 3.3 Various classes of chemical reactions are differentiated.
- 3.4 Balanced equations for different types of chemical reactions are presented
- 3.5 Observation of the reactants and products before, during and after the reaction is reported.
- 3.6 Precipitates of some insoluble salts are prepared.
- 3.7 From the characteristic colours of certain aqueous ions, unknown inorganic ions in solution are identified.
- 3.8 A comprehensive laboratory report demonstrating an understanding of the practical work is compiled.

Specific outcome 4

Apply basic principles of physical chemistry in solving laboratory practical problems.

Assessment criteria 4:

- 4.1 The laboratory manual is correctly interpreted and experiments are planned and set up.
- 4.2 Laboratory technique is demonstrated by correctly following procedures in a prescribed experiment.
- 4.3 Experimental data is collected, systematically recorded in a laboratory notebook and interpreted.
- 4.4 Enthalpy of fusion of water is determined.
- 4.5 Changes occurring in chemical equilibria are observed, interpreted and applied in answering questions.
- 4.6 A comprehensive laboratory report demonstrating an understanding of the practical work is compiled.

Specific outcome 5

Perform prescribed experiments in organic chemistry and report results

Assessment criteria 5:

- 5.1 Laboratory technique is demonstrated by correctly following procedures in a prescribed experiment.
- 5.2 Experimental data is collected, systematically recorded in a laboratory notebook and interpreted.
- 5.3 Fractional distillation experiments are carried out.
- 5.4 Basic hands on experiments are carried out in order to distinguish between functional groups.
- 5.5 Selected synthetic reactions are carried out.
- 5.6 Melting points of products are determined.
- 5.7 A comprehensive laboratory report demonstrating an understanding of the practical work is compiled.

3 LECTURER(S) AND CONTACT DETAILS

3.1 Lecturer(s)

General enquiries with regard to this course may be directed Professor S Dube, the module coordinator and her contact details are given below:

Lecturer's name: Professor S Dube

Building and office number: Eureka – KM 033, Florida Science Campus

E-mail address: dubes@unisa.ac.za

Telephone number: (011) 670 9308

3.2 Department

In the absence of your lecturer enquiries relating to academic studies might also be directed to the departmental secretary, Mrs M Mokiri on (011) 670 9318 or Ms B Gini on (011) 670 9327.

Enquiries in connection with practical work and applications for exemption from practical work should be directed to:

The Head of Department

Department of Chemistry

Private Bag X 6

Unisa

Florida Campus

1710

If you want to contact us via e-mail, please make sure that you give us the module code and your student number. Lecturers work on a number of modules each and it is therefore important to be very specific.

All queries that are not of a purely administrative nature but are about the content of this module should be directed to the lecturer.

3.3 University

Communication with the University

If you need to contact the University about matters not related to the content of this module, please consult the publication *myStudies @ Unisa* that you received with your study material. This booklet contains information on how to contact the University (e.g. to whom you can write for different queries, important telephone and fax numbers, addresses and details of the times certain facilities are open).

Always have your student number at hand when you contact the University.

Please note that all administrative enquiries should be directed to the following contact details:

- Fax number (RSA): 012 429 4150
- Fax number (international): +27 12 429 4150
- E-mail: study-info@unisa.ac.za
- Online address: <http://my.unisa.ac.za>

4 MODULE-RELATED RESOURCES

4.1 Prescribed books

The only prescribed textbook for this module is; *VIRTUAL CHEMLAB- General Chemistry Laboratories version 2.5*, Brian F. Woodfield, Matthew C. Asplund and Steven Haderlie, Pearson Prentice Hall

This textbook is a manual which comes together with a Virtual ChemLab CD.

Please note that any newer versions than 2.5 will also be acceptable.

The prescribed textbook can be purchased at the following bookshops:

Van Schaiks, Protea, Juta, Armstrong, On-line via kalahari.net or other University's official booksellers. If you have difficulty in locating your book at these booksellers, please contact the Prescribed Book Section at Tel: 012 429-4152 or email vospresc@unisa.ac.za.

The University **does not** provide copies of this book. Students are expected to obtain their own copies. As most of the study material for this module is included in this book, it is essential to have access to a copy. Arrangements must therefore be made immediately to obtain a copy.

4.2 Recommended books

Please note that the textbooks used for CHE1501 and CHE1502 or any General Chemistry textbooks are recommended for theoretical concepts covered in this module.

4.3 Electronic Reserves (e-Reserves)

There are no e-Reserves for this module.

5 STUDENT SUPPORT SERVICES FOR THE MODULE

For information on the various student support systems and services available at Unisa (e.g. student counselling, tutorial classes, language support), please consult the publication *myStudies @Unisa*, which you received with your study material.

Contact with fellow students

Study groups: It is advisable to have contact with fellow students. One way to do this is to form study groups. The addresses of students in your area may be obtained from the following department:

Directorate: Student Administration and Registration

P O Box 392

UNISA

0003

myUnisa

If you have access to a computer that is linked to the internet, you can quickly access resources and information at the University. The *myUnisa* system is Unisa's online campus that will help you communicate with other students, your lecturers and the administrative departments of the University.

To go to the *myUnisa* website, start at the main Unisa website, <http://www.unisa.ac.za> and then click on the 'Login to *myUnisa*' link on the right-hand side of the screen. This should take you to the *myUnisa* website. You can also go there directly by typing in <http://my.unisa.ac.za>. Please consult the publication *myStudies @ Unisa* which you received with you study material for more information on *myUnisa*.

Video Conference classes

If a video conference class is arranged for this module, you will be informed via *myUnisa* announcements as well as via a sms.

6 MODULE-SPECIFIC STUDY PLAN

Second semester

Assignment	Due date	Remarks
1	6 August	Compulsory. Must be in by 6 August in order for you to have sufficient preparation for the practical. It also contributes to the year mark. Students who complete and pass this assignment usually excel in the practical work.
2	5 September	Compulsory. Must be in by September and contributes to year mark
3	30 September	Compulsory. This is the practical portfolio made up of your practical reports. Failure to submit will mean that you fail the module. Please note that students will be expected to have submitted on the final day of the practical.

Plagiarism

An assignment is designed to be a product of your own study and your own thought. It is not intended to be a piece of work which merely reproduces details, information or ideas from a study guide, from books or articles, or from the Internet.

If you do this, you commit plagiarism. Plagiarism is the act of copying word for word *with or without acknowledgment* from study sources (e.g. books, articles, the Internet). In other words, you must submit your own ideas in your own words, sometimes interspersing relevant short quotations that are properly referenced.

Yes, simply copying a few pages from the prescribed book is plagiarism. Pasting paragraphs from Wikipedia into your assignment is plagiarism. And it does not stop being plagiarism if you mention the source.

Skilled scientific writers can use direct block quotations to make a specific point. They know what they are doing. You still need to develop your own voice, your own style of arguing the point. Do not plagiarise.

Note that you also commit plagiarism if you copy the assignment of another student. We do encourage you to work together and form study groups, but you are expected to prepare and submit your own assignments.

When we receive two or more identical assignments, we are not able to work out who copied from whom. We will therefore penalize both students.

If you commit plagiarism you will be penalized and given no marks for your assignment. This will have a serious effect on your chances to succeed in your studies because you will have no semester mark.

Furthermore, you may be penalised or subjected to disciplinary proceedings by the University. Plagiarism is also an offence in terms of the law.

7 MODULE PRACTICAL WORK AND WORK-INTEGRATED LEARNING

7.1 Admission to the Practical

Admission to the practical is reserved **ONLY** to those students who would have registered for the CHE1503 module and have completed and submitted assignment 01. Please note that submitting blank pages for the assignment will not be accepted. It is very important for you to attempt all the questions. In addition to this, you must have already passed CHE1501 to be admitted to the practical. If you have not completed CHE1502 you are at least expected to have registered for it concurrently with CHE1503.

7.2 Practical Work at UNISA

Students are required to attend a compulsory practical course for **two weeks** in the Department of Chemistry at the UNISA Florida Science Campus. Since Chemistry is an experiential discipline it is **not possible to complete it without doing any practical**. Students are therefore urged to make time and attend this practical.

7.3 Dates for Practical Work and Duration

CHE1503 is a semester 2 module and it will be offered in two sessions: session 1 which takes place from 15 – 26 August 2016 and session 2 which is from 19-30 September 2016. This gives you a choice to do your practical either in August or in September thus minimizing clashes with other examinations or practical work. Note that you are only allowed to be in one session and not both. A session runs for two weeks and it is important that you arrange for leave in advance if you are employed. Also note that reserving a place for the practical is not a guarantee for admission. During this time, about 12 experiments will be covered which are compulsory for your examination mark. Failure to complete all experiments will result in you failing the module. Please note that you will be attending daily for the entire period (weekends excluded) hence take this into consideration as you apply for your leave. Please refer to the Table below for a detailed schedule:

SLOT 1						
AUGUST 2016						
Week 1	Mon 15	Tue 16	Wed 17	Thu 18	Fri 19	
CHE1503	Group A-	Titration				
	Group B-	Specials				
Week 2	Mon 22	Tue 23	Wed 24	Thu 25	Fri 26	
CHE1503	Group B-	Titration				
	Group A-	Specials				
SLOT 2						
SEPTEMBER 2016						
Week 1	Mon 19	Tue 20	Wed 21	Thu 22	Fri 23	
CHE1503	Group A-	Titration				
	Group B-	Specials				
Week 2	Mon 26	Tue 27	Wed 28	Thu 29	Fri 30	
CHE1503	Group B-	Titration				
	Group A-	Specials				

Booking for a practical slot on myUnisa

You will be expected to book for a slot on myUnisa using the Sign Up tool. Login to myUnisa and click on the Sign Up tool and the follow the instructions. Please note that we will inform you when the slots are available for booking on myUnisa.

7.4 Practical Work at Other Universities

Students who are unable to attend the practical at the scheduled time may do the practical work at another university nearer to them. Such students have to request permission from the Head of Department of Chemistry at UNISA to ascertain whether a particular practical course offered by the other institution will be accredited by UNISA. However, gaining access to a specific institution is solely the responsibility of the student. If a student chooses this option it is their responsibility to identify a lecturer from the other institution who will assist them with the practical and also be available to assess the work. Please note that you are still expected to complete both assignments even if you opt to take your practical work at another institution.

7.5 Exemption from Practical Work and Practical Examination

Under certain circumstances, students may be granted exemption from the practical work and practical examination. All applications for exemption must be made in writing to the Head of the Department of Chemistry.

8 ASSESSMENT

8.1 Assessment plan

Year Mark

Both assignment 01 and 02 contribute to your semester mark. Assignment 01 carries 60% of the year mark while assignment 02 carries 40%. The semester mark (assignment 01 and assignment 02) will contribute 20 percent of the final mark for the practical examination. Please note that it is important for you to do both assignments and submit them on time.

Practical Mark

It is important to note that whatever practical mark is accumulated during the practical sessions will be taken as the practical mark. The practical session consist of several experiments (about 12) which you should carry out successfully in order to pass. You are expected to attempt and complete all the scheduled experiments and submit the practical reports during the laboratory session. Note that these practical reports constitute the practical mark which is assignment 03 on the assessment plan. Your practical mark is therefore a contribution of all the experiments that you would have successfully completed and is worth 80% of the final mark.

Final Mark

Year Mark (20%) + Practical Mark (80%) = Final Mark (100%)

8.2 General assignment numbers

Please refer to *my Studies @ Unisa* for the general assignment information and rules.

Assignments should be addressed to:

The Registrar

PO Box 392

UNISA

0003

8.2.1 Unique assignment numbers

In addition to the general assignment number (e.g. 01), assignments completed as written assignments must also have their **own unique assignment number**. Please make sure that you use to correct unique number and complete the information as required. The unique assignment numbers for module CHE1503 are provided below.

SECOND SEMESTER	
Assignment	Unique Assignment Number
01	732718
02	784265
03	880855

8.2.2 Due dates for assignments

SECOND SEMESTER	
Assignment	Due date
1	5 August 2016
2	09 September 2016
3	30 September 2016

8.3 Submission of assignments

Students may submit written assignments and assignments completed on mark-reading sheets either by post or electronically on *myUnisa*. Assignments may **not** be submitted by fax or e-mail. Note that the practical reports or portfolio (assignment 03) will be submitted during the practical sessions. No reports should be submitted at a date later than that indicated on the schedule above.

For detailed information and requirements as far as assignments are concerned, see the brochure *my Studies @ Unisa* that you received with your study material.

To submit an assignment **via *myUnisa***:

- Go to *myUnisa*.
- Log in with your student number and password.
- Select the module.
- Click on assignments in the menu on the left-hand side of the screen.
- Click on the assignment number you wish to submit.
- Follow the instructions.

8.4 Assignments

Assignment 1

Due date: 5 August 2016

Unique no: 732718

Answer all the four questions in this assignment

Question 1 and 2 can be answered from your general chemistry knowledge (i.e. CHE1501). Please feel free to refer to your notes and textbook for CHE1501 to answer the questions. Question 3 and 4 are derived from the Virtual ChemLab CD. Use the **Virtual ChemLab "General Chemistry Laboratories v 2.5"** [BF Woodfield, MC Asplund and S Haderlie] to answer Questions 3 and 4.

QUESTION 1

- a) Define the term "meniscus" and explain how you use it for marking volumetric measurements. [2]
- b) Define the following:
- I. standard solution [2]
 - II. standardization [2]
 - III. titration [2]
 - IV. equivalence point [2]
 - V. end point [2]

QUESTION 2

- (a) Calculate the mass of potassium hydrogen phthalate (KHP) needed to prepare a 0.1 M solution in a 250.0 ml volumetric flask given that the molar mass of potassium hydrogen phthalate is 204.23 g/mol. [4]
- (b) A 25.00 mL aliquot of KHP prepared in (a) required 23.85 mL of NaOH solution to reach the end point during titration
- (i) Write a balanced equation of the reaction [2]
 - (ii) What is the exact concentration in moles/Liter of your NaOH solution? [4]
 - (iii) Which one between KHP and NaOH is the primary standard and why? [3]
 - (iv) Which indicator is suitable for a weak-acid strong-base titration and why? [3]

- (c) Suppose we titrate 20 mL of 0.100M HCHO₂ with 0.100M NaOH. Calculate the pH:
- I. Before any base is added.
 - II. When half of the HCHO₂ has been neutralized.
 - III. After a total of 15.0mL of base has been added. [15]

Hint: Read Brown and Lemay (Topic: acid and base equilibrium)

The dissociation constant for formic acid is, $K_a = 1.8 \times 10^{-4}$

QUESTION 3

This question is based on 2-2: *Writing Balanced Precipitation Reactions* of the Virtual ChemLab CD. Refer to page 41 of the *Virtual ChemLab "General Chemistry Laboratories v 2.5"* [BF Woodfield, MC Asplund and S Haderlie] for the procedure. Carefully read through the procedure and carry out the experiment according to the instructions and then answer the following questions:

- a. After addition of Na₂CO₃ to a solution of Ag⁺:
 - (i) What colour is the precipitate? [2]
 - (ii) Write a correct balanced net ionic equation for the reaction [2]

- b. After addition of NaCl into the Pb²⁺ solution:
 - (i) What colour is the precipitate? [2]
 - (ii) Write a correct balanced net ionic equation for this reaction [2]

- c. After addition of Na₂S into a solution containing Sb³⁺
 - (i) What is the colour of the precipitate? [2]
 - (ii) Write a correct balanced net ionic equation for the reaction [2]

QUESTION 4

Titration provides a method of quantitatively measuring the concentration of an unknown solution. In an acid-base titration, this is done by delivering a titrant of known concentration into an analyte of known volume. Refer to page 141 of the *Virtual ChemLab "General Chemistry Laboratories v 2.5"* [BF Woodfield, MC Asplund and S Haderlie] for the procedure of this experiment. Complete the experiment and answer the following questions.

- a) Record your unique unknown sample number? [1]
- b) What volume of 0.2564 M NaOH was required by the titration to reach the equivalence point? [4]
- c) Calculate the molarity of the HCl using 25.00 mL of HCl solution and the volume of the 0.2564 M NaOH from your titration. [5]

QUESTION 5

Carry out experiment 2-4: Precipitation Reactions, from Virtual ChemLab CD. Please make sure that you carefully read instructions on page 45 of the **Virtual ChemLab "General Chemistry Laboratories v 2.5"** [BF Woodfield, MC Asplund and S Haderlie] for the procedure prior to attempting the experiment.

i) Complete the data table on page 45 **[15]**

ii) Write balanced net ionic equations for all precipitation reactions you have observed

a.

b.

c.

e.

f.

g.

i.

j.

k.

m.

[20]

Total marks: [100]

Assignment 2

Due date: 09 SEPTEMBER 2016

Unique no: 784265

Some questions in assignment 02 are based on the VIRTUAL CHEMLAB CD. PRACTICE THE EXPERIMENTS LISTED IN THE CD BEFORE ANSWERING THE QUESTIONS LINKED TO THE CD

QUESTION 1

Match each of the instructions given below with the correct reason e.g. A5, B2, etc. (Note: these are examples, not correct answers)

	INSTRUCTION		REASON
A	Place a clean, dry weighing bottle.....	1	You do not want to weigh anything other than your sample. If you also weigh water or impurities the correct mass of the sample will not be known
B	... onto the top loader balance (which weighs accurately to 0.01g). Press the "Zero button"on the balance	2	You need this mass to subtract it from the first mass you recorded in order to give you the actual mass of sample transferred from the weighing bottle into the volumetric flask.
C	Add approximately the required amount of sample into the weighing bottle on the top loader balance.	3	You need this mass before weighing the emptied bottle in order to calculate the total mass which has been transferred to the volumetric flask.
D	Transfer the weighing bottle + sample to the analytical balance (which weighs accurately to 0.1 mg) and record the mass in your notebook	4	Only the approximate amount of solute is required for preparing a standard solution
E	Tip as much sample as possible of the sample from the weighing bottle into the volumetric flask.	5	It is easier and faster to measure off an approximate amount on a top loader balance before weighing it more

			accurately
F	Prevent spillage of sample and...	6	Some of the sample may stick to it - and this is not allowed for by the weighing by difference method you are using
G	...do not use a spatula to transfer the sample into the volumetric flask	7	Any amount of sample that is lost in the transfer will not reflect in the calculation of the mass in the volumetric flask
H	Accurately weigh the weighing bottle with its remaining contents and record the mass.	8	It is not necessary to know the mass of the weighing bottle

[16]

Question 2 is based on *the VIRTUAL CHEMLAB CD*. Refer to page 153 of Virtual ChemLab textbook for procedure on how to do this experiment.

QUESTION 2

Acid-Base Standardization

a. Record your unknown NaOH sample number # _____

[1]

b. Data Table:

NB: Please repeat the procedure five times (and not twice as indicated in the book) and enter your data in the Table below.

Trial	Mass KHP (g)	Volume NaOH (ml)	Molarity NaOH (mol/L)
1			
2			
3			
4			
5			

[15]

- c. Write a balance chemical equation for the reaction of KHP and NaOH [2]
- d. What is the average molarity of the unknown NaOH for your closest three titrations? [2]

PHYSICAL CHEMISTRY QUESTIONS

Question 3 is based on the VIRTUAL CHEMLAB CD. Refer to page 67 of Virtual ChemLab textbook for procedure on how to do this experiment.

QUESTION 3

Endothermic vs. Exothermic

In various chemical processes such as reactions and the dissolving of salts, heat is either absorbed or given off. We call these events either an endothermic (heat in) or exothermic (heat out) process. It is usual to detect these heat events by measuring the temperature change associated with the process. In this problem, you will dissolve several salts in water, measure the resulting temperature change, and then make deductions about the nature of the process.

- a. Record your results in the Table below.

Data Table

Mixture	T ₁	T ₂	$\Delta T(T_2 - T_1)$
NaCl (s) + H ₂ O (l)			
NaNO ₃ (s) + H ₂ O (l)			
NaCH ₃ COO (s) + H ₂ O (l)			

[6]

Use your experimental data to answer the following questions.

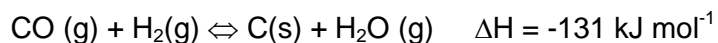
- I. Calculate $\Delta T(T_2 - T_1)$ for each mixture and record them in the data Table. [3]
- II. An exothermic process gives off heat (warms up). An endothermic process absorbs heat (cools off). Which solutions are endothermic and which are exothermic? What is the sign of the change in enthalpy (ΔH) in each case? [5]
- III. Which solution(s) had little or no change in temperature? [2]

QUESTION 4

(a) Write the solubility equilibrium expression for $\text{Ca}(\text{OH})_2$ [2]

(b) Briefly state Le Chatelier's principle [2]

(c) Consider the following reaction:



Explain what would happen to the following equilibrium position and the concentration of H_2 if:

i. More C is added? [2]

ii. The concentration of CO is increased? [2]

iii. The concentration of H_2O is increased? [2]

iv. The temperature is reduces? [2]

(d) Aqueous chromate ion, CrO_4^{2-} , exists in equilibrium with aqueous dichromate ion, $\text{Cr}_2\text{O}_7^{2-}$ in acidic solution. What effect will (i) increasing the dichromate ion, and (ii) adding HCl have on the equilibrium?

[3x2]

ORGANIC CHEMISTRY QUESTIONS

**TO ATTEMPT THE NEXT SET OF QUESTIONS YOU MUST REFER TO YOUR
CHE1502 TEXTBOOK OR ANY OTHER GENERAL ORGANIC CHEMISTRY TEXTBOOK**

QUESTION 5

- a) Define the following terms:
- (i) Nucleophile [2]
 - (ii) Electrophile [2]
- (b) Why boiling stones should be used when boiling liquids? [3]
- (c) Sometimes after obtaining a crude product we recrystallise it. What is meant by recrystallization and what is its purpose on the crude product? [4]
- (d) What is esterification?? [2]
- (e) Aspirin is synthesised on an industrial scale by combining the following reactants:
- i. salicylic acid
 - ii. acetic anhydride
- Draw the structures of (i) and (ii) above [4]
- (f) 1.22 g of acetylsalicylic acid was obtained from 2.00 g of salicylic acid by reaction with excess acetic anhydride. Calculate the percentage yield of acetylsalicylic acid. [3]

TOTAL: [90]

9 OTHER ASSESSMENT METHODS

There are no other assessment methods for this module.

10 EXAMINATION

There is no examination for this module. The experiments completed together with the practical reports will contribute to the module mark.

11 FREQUENTLY ASKED QUESTIONS

The *my Studies @ Unisa* brochure contains an A-Z guide most relevant study information.

12 SOURCES CONSULTED

None

13 CONCLUSION

None

14 ADDENDUM

None