



Tutorial Letter 101/3/2018

Animal and Plant Diversity BLG1502

Semesters 1 and 2

Department of Life and Consumer Sciences

This tutorial letter contains important information
about your module.

BARCODE

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1 INTRODUCTION

Dear Student

Welcome as a biology student to the Department of Life and Consumer Sciences. We trust that you will find this academic year stimulating, rewarding and enjoyable. You may initially find the tutorial matter for this course difficult because we will be dealing with many terms and concepts.

The terminology will, however, become part of your vocabulary as you study Biology. Your study of this module will be fruitful and enjoyable only if you give it your full attention from the very start.

The staff of the Life Sciences Section of the Department of Life and Consumer Sciences will gladly assist you, and you are welcome to contact us if any questions or problems arise during your study.

1.1 Tutorial matter

Some of this tutorial matter may not be available when you register. Tutorial matter that is not available when you register will be posted to you as soon as possible, but is also available on *myUnisa*.

2 PURPOSE OF AND OUTCOMES FOR THE MODULE

2.1 Purpose

The purpose of this module is to acquaint students with basic biological principles of plant and animal diversity. This will enhance the knowledge and understanding, gain more insight about **origin, structure, functions and uses of plant and animal diversity**.

2.2 Outcomes

The students should be able to:

- Describe the structure, composition and function of prokaryotic cell wall
- Make a flow diagram of the life cycles, indicating the gamete and sporophyte generation
- Identify and discuss the structure of the three basic organs of plant body, roots, stems and roots
- Describe the characteristics of three tissue systems that the organs are composed of namely, dermal, vascular and ground tissue
- Describe the two host life history of *apicomplexans*
- Define and name the classes of essential nutrients
- Understand the major functions of the organs that make up the mammalian digestive system

3 LECTURER(S) AND CONTACT DETAILS

3.1 Lecturer(s)

All queries that are not of a purely administrative nature but are about the content of this module should be directed to us. Please have your study material with you when you contact us.

Mr M H Mkhombo
B-Block Room 240B
Florida/Science Campus
E-mail: mkhommf@unisa.ac.za
Tel. (011) 471-2237 (RSA)
+27 11 471 2237 (International)

3.2 Department

Letters should be sent to:

Department of Life and Consumer Sciences:
Florida/Science Campus
Unisa
Private Bag X6
Florida
1710

3.3 University

Follow the procedures in my Studies @ unisa to register as a user on myUnisa. By selecting the "Course contact" option you will be able to contact the lecturer by e-mail. Please indicate your student number when you contact the lecturer.

4 MODULE-RELATED RESOURCES

4.1 Prescribed books

Biology: A Global approach. 10th Edition. 2015. Campbell, N.A., Reece, J.B., Urry, L.S., Cain, M.L., Wasserman, S.A., Minorsky, P.V. & Jackson, R.B. Pearson Benjamin Cummings (San Francisco). ISBN-10:1-292-00865-2. ISBN-13: 978-1-292-00865-3. If however you can NOT get hold of the 10th edition you can buy the 9th or 8th edition. The two editions are very close to the 10th edition.

4.2 Recommended books

No recommended books.

Recommended books listed in Tutorial Letter 101 may be requested from the Library and a waiting list is kept for books that are already out on loan.

You can request Library material electronically via the Library catalogue :

- on the web @ <http://encore.unisa.ac.za>
- or via your mobile device @ <http://m.oasis.unisa.ac.za>

Contact the Library via library-enquiries@unisa.ac.za if you have any questions or need assistance.

Prescribed books: students are expected to **purchase their own** copies of prescribed books. [List of official booksellers](#). Students who experience problems obtaining specific prescribed books from the [booksellers](#) must please contact: vospresc@unisa.ac.za

4.3 Electronic Reserves (e-Reserves)

None

5 STUDENT SUPPORT SERVICES FOR THE MODULE

Important information appears in your *my Studies @ Unisa* brochure.

6 MODULE-SPECIFIC STUDY PLAN

Use your *my Studies @ Unisa* brochure for general time management and planning skills.

7 MODULE PRACTICAL WORK AND WORK-INTEGRATED LEARNING

The module BLG1502 is concerned with theory only. However, certain aspects of this module will be mentioned again in the practical module BLG1603 (BLG114L). You are strongly advised to register for the practical module, BLG1603, because it will help you to understand subject matter that may not be clear in the theory. Those of you who have registered for the practical module should remember that you need to be thoroughly familiar with the theoretical work before you attend the practical classes. The practical classes are presented in September at the Potchefstroom Campus of the North-West University.

8 ASSESSMENT

8.1 Assessment plan

Formative assessment

For each semester, formative assessment will be constituted by Assignment 1 and Assignment 2. The assignment 1 and 2 will contribute 20% and 80% towards semester mark, respectively.

Summative assessment

This is the final examination which is written at the end of the semester. Your mark for the examination paper will be referred to as the examination mark.

The final mark

Your final mark will be calculated according to a prescribed 30:70 ratio of the semester mark to the examination mark.

8.2 General assignment numbers

For each semester there are two assignments, namely **Assignment 01** and **Assignment 02**. If you are registered for **Semester 1** you must only do assignments included for **Semester 1**. Similarly, if you are registered for **Semester 2** you must only do assignments included for **Semester 2**. You are **not** allowed to submit assignments for the semester which you are not registered for.

8.2.1 Unique assignment numbers

SEMESTER 1:

Assignment 1

Unique number: 726554

Assignment 2

Unique number: 880500

SEMESTER 2:

Assignment 1

Unique number: 792668

Assignment 2

Unique number: 886240

8.2.2 Due dates for assignments

The **due dates** for submission of the assignments for this module for **SEMESTER 1** students are:

Assignment 01	02 March 2018
Assignment 02	29 March 2018

and for **SEMESTER 2** students are:

Assignment 01	31 August 2018
Assignment 02	14 September 2018

8.3 Submission of assignments

You may submit written assignments and assignments done on mark-reading sheets either by post or electronically via *myUnisa*. Assignments may **not** be submitted by fax or e-mail. For detailed information and requirements as far as assignments are concerned, see the brochure *my Studies @ Unisa* that you have received with your study material.

Assessments submitted by post should be addressed to:

The Registrar
PO Box 392
UNISA
0003

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 left-hand menu.
- Click on the assignment number you want to submit.
- Follow the instructions on the screen.

How to receive fast online feedback and comment on your assignment


Unisa is implementing onscreen marking of assignments to help you receive quicker feedback on your assignments. This will not be the case for all your modules, however, most modules from the Department of Life and Consumer Sciences can be marked this way.

To allow us to mark your assignment onscreen, you need to do the following:

Convert your electronic assignment to PDF format.

How do I create a PDF document from any other document format (e.g. MS Word, MS Excel etc)?

By quickly downloading FREE software (namely PrimoPDF), you can create a PDF document from any type of document you can print. Follow these easy steps:

- i. Go to the Internet to the following website: <http://www.primopdf.com/index.aspx>
- ii. Download the PrimoPDF software by clicking on the DOWNLOAD FREE prompt. Follow the instructions for installing the software.
- iii. To create a PDF document from your assignment, go to your assignment on your PC and instead of printing your assignment to an actual printer, choose PrimoPDF as printer. To do this, click on the **Microsoft Office Button**  (or 'File' button for older versions of Microsoft), and then click **Print**. Then, choose from the drop-down list the printer which in this case should be **PrimoPDF**.
- iv. You will now receive a pop-up message. Click the "Create PDF" button. Indicate in the "Save as:" pop-up where you want to save the PDF assignment on your PC.
- v. The PDF version of your assignment will now appear for your viewing.

Submit the PDF document (your assignment) via myUnisa (online). For guidance on how to submit an assignment via *myUnisa*, see section 8.4 of this tutorial letter or the *my Studies @ Unisa* brochure.

8.4 Assignments

PLEASE NOTE: The objective of assignments is to guide you systematically through the contents of the module, and not to burden you with a mass of writing. The assignments should be written concisely, mentioning only the essentials and in seriatim (seriatim means point by point). Comprehensive essays will only waste your time and ours.

Your prescribed books and study guide cover all the answers to the questions in the assignments. Make use of the indexes in these books.

See Assignments from page 9 of this TUT101.

9 OTHER ASSESSMENT METHODS

Not applicable.

10 EXAMINATION

Use your *my Studies @ Unisa* brochure for general examination guidelines and examination preparation guidelines.

11 FREQUENTLY ASKED QUESTIONS

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

12 SOURCES CONSULTED

None

13 IN CLOSING

It is exciting to have you as student for the module BLG1502. You are expected to work hard and do all prescribed assignments. Please do not hesitate to contact the lecturer in case you encounter any problems concerning the module.

14 ADDENDUM

Assignments

ASSIGNMENTS**SEMESTER 1****Assignment 1****Unique Number: 726554****Due Date: 02 March 2018****Answer this assignment on your mark reading sheet with a HB pencil****Choose the correct answer for each of the following:****Question 1**

Arrange the following taxonomic categories in their hierarchical order from highest to lowest (left to right): Genus, Family, Class, Order, Phylum.

1. Phylum, Order, Class, Genus, Family.
2. Class, Phylum, Order, Family, Genus.
3. Order, Phylum, Class, Family, Genus.
4. Phylum, Class, Order, Family, Genus.

Question 2

All of the following are sources of genetic variation for evolution, except _____.

1. mutation
2. recombination
3. genetic drift
4. gene flow

Question 3

Fern gametophyte is nutritionally_____.

1. chemoautotroph
2. parasite
3. sporophyte
4. photoautotroph

Question 4

In moss stomata appears on

1. capsule.
2. leaves.
3. stem.
4. All of the above are correct.

Question 5

Compared with the gametophytes of the bryophytes the gametophytes of vascular plants tend to be

1. smaller and to have smaller sex organs.
2. smaller but to have larger sex organs.
3. larger but to have smaller sex organs.
4. larger and to have larger sex organs.

Question 6

The characteristics of the plant kingdom include

1. photosynthetic, no alternation of generations, unicellular.
2. heterotrophic, alternation of generations, chitin cell walls, multicellular.
3. photosynthetic, multicellular, alternation of generations, cellulose cell walls.
4. photosynthetic, no alternation of generations, cellulose cell walls, unicellular.

Question 7

Which structure is common to both gymnosperms and angiosperms.

1. Stigma.
2. Carpel.
3. Ovule.
4. Ovary.

Question 8

Among the characteristics unique to animals is

1. heterotrophic nutrition.
2. sperm.
3. sexual reproduction.
4. gastrulation.

Question 9

The distinction between sponges and other animal phyla is based mainly on the absence versus the presence of

1. true tissues.
2. mesoderm.
3. a body cavity.
4. a circulatory system.

Question 10

Which class of animal has skin with fur or hair, feeds their young milk and maintains a constant body temperature?

1. Fish.
2. Birds.
3. Reptiles.
4. Mammals.

Question 11

A fruit is most commonly_____.

1. a mature female gametophyte
2. a mature ovary
3. an enlarged ovule
4. a thickened style

Question 12

With respect to angiosperms, which of the following is incorrectly paired with its chromosome count?

1. Megaspore-2n.
2. Zygote-2n.
3. Sperm-n.
4. Microspore-n.

Question 13

Which of the following is not a characteristic that distinguishes gymnosperms and angiosperms from other plants?

1. Dependent gametophytes.
2. Integuments.
3. Ovules.
4. Alternation of generations.

Question 14

After fertilization the zygote of a seed plant becomes the_____.

1. fruit
2. embryo
3. seed
4. ovule

Question 15

Antheridia and archegonia are sex organs of_____.

1. moss
2. mucor
3. spirogyra
4. puccinia

Question 16

The fertilization of human egg by the sperms takes place in _____.

1. ovary
2. oviduct
3. vagina
4. uterus

Question 17

The tube that carries the sperms out of the testes is the _____.

1. vasa efferentia
2. vas deferens
3. oviduct
4. epididymis

Question 18

The male hormone testosterone is produced by _____.

1. Leydig cells
2. seminiferous tubules
3. epididymis
4. vas deferens

Question 19

Which of the following statements about circulatory systems is true?

1. Hormones are transported in the blood.
2. All invertebrates have an open circulatory system.
3. Capillaries have thicker walls than veins do.
4. All of the above are true.

Question 20

The liquid part of blood after the fibrinogen is removed is_____.

1. plasma
2. lymph
3. serum
4. pus

END OF ASSIGNMENT 01 (SEMESTER 1)

TOTAL: 20 Marks

Assignment 2**Unique number: 880500****Due Date: 29 March 2018**

Answer all questions.

Question 1

Give the correct scientific term for each of the descriptions below. Write only the number with the correct term next to it. Each number and its term should be on a separate line in your answer book.

- 1.1 A group of species that includes an ancestral species and all of its descendants.
- 1.2 An organism that is eukaryotic, multicellular, heterotrophic and lacks cell walls.
- 1.3 The general process that allow genetic recombination among prokaryotes.
- 1.4 Organisms that use light for their energy source and CO₂ for their source carbon.
- 1.5 A type of ecological relationship called in which one organism lives at the expense of another organism.
- 1.6 A group of organisms that includes photosynthetic unicellular organisms with flagella and contractile vacuoles?
- 1.7 Organisms that are capable of the production of “red tides”.
- 1.8 The name of the structure that protects the zygote from desiccation in charophytes.
- 1.9 The structure of a bryophyte sporophyte which is specialized for gradual spore discharge.
- 1.10 The gymnosperm phylum characterised by bearing large cones and have fern-like leaves and thrived during the Mesozoic era.

[10]**Question 2**

- 2.1 Explain what is meant by phylogeny. (3)
- 2.2 Distinguish between monophyletic and paraphyletic groups. (4)
- 2.3 Describe homology and homoplasy. (2)
- 2.4 Distinguish between orthologous and paralogous genes. (4)
- 2.5 What are the three major branches in the Tree of Life? (3)

[16]**Question 3**

Distinguish between abiotic and biotic agents and give examples each.

[10]**Question 4**

By means of a labeled diagram, describe the life cycle of a fern, clearly distinguishing the gametophyte and sporophyte generations. **[15]**

Question 5

Environmental adaptations may result in roots being modified for a variety of functions. Name at least 5 different types of modified roots and their functions. **[10]**

Question 6

Write explanatory notes on the structure and functions of the following:

- a) Stomata.
- b) Guard cells.
- c) Petiole.

[9]

Question 7

- 7.1 Name five differences between monocotyledonous and dicotyledonous plants. (6)
- 7.2 Discuss two groups of defence mechanisms the body has against harmful agents. (4)
- 7.3 Distinguish between cytokines and interferons. (4)
- 7.4 Give two major functions of the complement system. (2)

[16]

Question 8

Distinguish between chondrichthyes and osteichthyes.

[9]

Question 9

Name the hormones secreted by:

- a) Parathyroid gland.
- b) Pineal gland.
- c) Testes.

[5]

TOTAL: 100 Marks

END OF ASSIGNMENT 02 (SEMESTER 1)

SEMESTER 2

Assignment 1**Unique Number: 792668****Due Date: 31 August 2018****Answer all questions****Question 1**

Which of the following is the correct taxonomic name for the African forest elephant?

1. *Loxodonta cyclotis*
2. *loxodonta cyclotis*
3. *Loxodonta cyclotis*
4. *Loxodonta Cyclotis*

Question 2

In the absence of meiosis and sexual reproduction, what general process allows genetic recombination among prokaryotes?

1. Chemoautotrophy.
2. Evolution.
3. Mutation.
4. Horizontal gene transfer.

Question 3

Prokaryotes found inhabiting the Great Salt Lake would be _____.

1. cyanobacteria
2. chlamydias
3. extreme halophiles
4. extreme thermophiles

Question 4

Which example below is a clade of nonvascular plants?

1. Pterophytes.
2. Lycophytes.
3. Seed plants.
4. Bryophytes.

Question 5

In sporophyte ferns, the leaves are _____.

1. sporangia
2. blades
3. megaphylls
4. microphylls

Question 6

The eggs of seed plants are fertilized within ovules, and the ovules then develop into _____.

1. ovaries
2. spores
3. fruit
4. seeds

Question 7

After fertilization, the _____ develops into a seed and the _____ develops into a fruit.

1. ovule; ovary
2. egg; ovary
3. ovary; ovule
4. egg; ovule

Question 8

The cell walls of fungal cells are composed of _____.

1. peptidoglycan
2. chitin
3. pectin
4. cellulose

Question 9

Molecular evidence suggests that fungi _____.

1. evolved from plants
2. were once photosynthetic
3. and animals have a common ancestor
4. are a polyphyletic group

Question 10

A region of dividing cells in a plant is called a _____.

1. meristem
2. dermal tissue
3. periderm
4. ground tissue

Question 11

Which of the following is closest to the center of a woody stem?

1. Primary xylem.
2. Primary phloem.
3. Secondary xylem.
4. Vascular cambium.

Question 12

The Calvin cycle occurs in the _____.

1. thylakoid membrane
2. thylakoid lumen
3. stroma
4. stomata

Question 13

The energy used to produce ATP in the light reactions of photosynthesis comes from _____.

1. the oxidation of sugar molecules
2. splitting water
3. movement of H⁺ through a membrane
4. carbon fixation

Question 14

Immediately after ovulation into the coelom, an egg is collected into the _____.

1. uterus
2. oviduct
3. ovary
4. vagina

Question 15

Where do developing sperm cells undergo meiosis?

1. In the epididymis.
2. In the vas deferens.
3. In the seminal vesicle.
4. In the seminiferous tubules.

Question 16

Which of the following are considered essential nutrients:

(1) certain carbohydrates, (2) certain fatty acids, (3) certain amino acids, and/or (4) cholesterol?

1. (1), (2), (3), and (4)
2. (1), (2), and (3)
3. (2), (3), and (4)
4. (2) and (3)

Question 17

The fat-soluble vitamins include _____.

1. vitamins A, D, E, and K
2. vitamin A and the B group
3. the B vitamins and vitamin C
4. vitamins C, D, E, and K

Question 18

The blood vessels with the thinnest walls are the _____.

1. veins
2. capillaries
3. arteries
4. aorta

Question 19

Blood leaves the inferior vena cava and flows directly into the _____.

1. left atrium
2. lungs
3. pulmonary artery
4. right atrium

Question 20

All of the following processes occur in the nephron of the kidney EXCEPT _____.

1. tubular secretion
2. capsular filtration
3. blood cell formation
4. selective reabsorption

TOTAL: 20 Marks

END OF ASSIGNMENT 01 (SEMESTER 2)

Assignment 2**Unique number: 886240****Due Date: 14 September 2018****QUESTION 1**

- 1.1 The part of a flower which is a receptacle for pollen.
- 1.2 The hyphae in parasitic fungi modified to penetrate absorb nutrients from host tissue.
- 1.3 The stage in fungal reproduction where diploid cells are produced.
- 1.4 The phylum of organisms that does not exhibit bilateral symmetry.
- 1.5 The concentration of sense organs, nervous control, etc., at the anterior end of the body, forming a head and brain, both during evolution and in the course of an embryo's development.
- 1.6 A body cavity lined by tissue derived only from mesoderm.
- 1.7 The name given to the region where a leaf is attached to the stem.
- 1.8 The plant tissue system that is most analogous to our circulatory system.
- 1.9 The protective chambers from which flowers bear seeds.
- 1.10 The portion of an embryonic plant that consists of the shoot tip with a pair of miniature leaves.

[10]**QUESTION 2**

- 2.1 Distinguish between chitin and peptidoglycan. (3)
- 2.2 Compare photoautotrophy and chemoheterotrophy. (3)
- 2.3 Distinguish between gram-positive and gram-negative bacteria. (2)
- 2.4 Compare sclerenchyma and collenchyma with regards to:
 - a) Structure and composition of the cell wall.
 - b) Functions
 - c) Positions in plants. (8)
- 2.5 Distinguish between bryophytes and pteridophytes. (8)

[24]**QUESTION 3**

- 3.1 Distinguish between pollination and fertilisation. (6)
- 3.2 By means of a diagram explain the process of double fertilization flowering plants. (8)

[16]**QUESTION 4**

- 4.1 Distinguish between malnutrition and undernutrition. (4)
- 4.2 Name the three enzymes involved in the digestion of carbohydrates and where they are found. (6)

[10]

QUESTION 5

- 5.1 Differentiate between endocytosis and pinocytosis. (4)
5.2 Distinguish between diffusion and osmosis. (4)
5.3 Explain the process of osmoregulation. (3)

[11]**QUESTION 6**

Describe the life cycle of the pine, clearly distinguishing between the gametophyte and sporophyte generations.

[15]**QUESTION 7**

- 7.1 Define homeostasis and explain how animals maintain constant body temperature. (6)
7.2 Distinguish between the process of cellular respiration and fermentation. (4)
7.3 List the functions of the circulatory systems. (4)

[14]**TOTAL: 100 Marks****END OF ASSIGNMENT 02 (SEMESTER 2)**