



Tutorial Letter 101/3/2017

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 AR Mudau
B-Block Room 240B
Florida/Science Campus
E-mail: mudauar@unisa.ac.za
Tel. (011) 471-3921 (RSA)
+27 11 471 3921 (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: 776872

Assignment 2

Unique number: 652261

SEMESTER 2:

Assignment 1

Unique number: 742496

Assignment 2

Unique number: 771539

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	17 March 2017
Assignment 02	07 April 2017

and for **SEMESTER 2** students are:

Assignment 01	01 September 2017
Assignment 02	15 September 2017

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: 776872****Due Date: 17 March 2017****Answer this assignment on your mark reading sheet with a HB pencil****Choose the correct answer for each of the following:****Question 1**

The gram stain is a procedure that microbiologists use to

1. determine if a bacterial stain is a pathogen.
2. determine if a bacterial sample can break down oil.
3. infer the structure of a bacterial wall and bacterial response to antibiotics.
4. count bacteria in medical or environmental samples.
5. All of the above.

Question 2

Which of the following features is common to prokaryotic cells?

1. A nucleus, featuring a nuclear envelope with pores.
2. Mitochondria.
3. Plasma membranes.
4. Mitotic spindle.
5. None of the above.

Question 3

Compared to Eukaryotes, Bacteria and Archaea have _____ surface-to-volume ratios, causing _____ nutrient exchange and growth rates.

1. higher / lower
2. lower / higher
3. lower / lower
4. higher / higher
5. None of the above.

Question 4

The process by which two cells arise from one is known as_____.

1. meiosis
2. conjugation
3. binary fission
4. mitosis
5. meiosis

Question 5

Which of these best describes the gametophyte in the alternation of generations life cycle?

1. The diploid generation
2. Generation that produces the gametes
3. Generation that produces the spores
4. Generation that has vascular tissue
5. Uses meiosis within structures called sporangia

Question 6

Which of the following is NOT a function of the digestive system?

1. Ingest food.
2. Digest food to small molecules.
3. Absorb nutrient molecules.
4. Eliminate non-digestible wastes.
5. Transport nutrients to other organs.

Question 7

Strictly speaking, _____ refers to the breakdown of food by enzymatic action.

1. ingestion
2. digestion
3. excretion
4. metabolism
5. mastication

Question 8

The moist membranes of the respiratory tract are protected by

1. a dry epidermal surface.
2. cartilage rings.
3. mucus and cilia.
4. roving macrophages from the lymphatic system.
5. acidic glands.

Question 9

Carbonic acid dissociates into _____.

1. carbon dioxide and water
2. bicarbonate and hydrogen ions
3. carbon and acid
4. sodium and bicarbonate salts

Question 10

Which of the following characteristics of plants is absent in the closest relatives, the charophytes?

1. Chlorophyll b.
2. Cellulose in cell walls.
3. Formation of cell plate during cytokinesis.
4. Sexual reproduction.
5. Alternation of generations.

Question 11

The correct sequence from the most to the least comprehensive, of the taxonomic levels listed here is

1. family, phylum, class, kingdom, order, species, genus.
2. kingdom, phylum, class, order, family, genus, species.
3. kingdom, phylum, order, class, species, family, genus.
4. phylum, kingdom, order, class, species, family, genus.
5. phylum, family, class, order, kingdom, genus, species.

Question 12

Land plants no longer required water as a medium for reproduction with the evolution of

1. fruits and roots.
2. flowers and leaves.
3. cell walls and rhizoids.
4. lignified stems.
5. seeds and pollen.

Question 13

To leave the digestive tract, a substance must cross a cell membrane. During which stage of food processing does this take place?

1. Digestion
2. Elimination
3. Hydrolysis
4. Absorption
5. Ingestion

Question 14

The nonvascular plants are the

1. algae and blue-green algae.
2. fungi and slime and water molds.
3. hornworts, liverworts and mosses.
4. gymnosperms.
5. flowering plants.

Question 15

The life cycle of animals

1. demonstrates alternation of generation, where the zygote is haploid and the adult is diploid.
2. does not demonstrate alternation of generation both the zygote and the adult are haploid.
3. demonstrates alternation of generation where the zygote is diploid and the adult is haploid.
4. does not demonstrate alternation of generation since only the spores are haploid.
5. does not demonstrate alternation of generation; gametes are haploid and the organism is diploid.

Question 16

The inner lining of the uterus is called the _____.

1. endometrium
2. vagina
3. oviduct
4. cervix
5. fimbriae

Question 17

Infection of the bladder is called _____.

1. pyelonephritis
2. urethritis
3. cystitis
4. hemodialysis
5. None of the above.

Question 18

In humans, the liver

1. removes carbon dioxide from the body.
2. stores creatine phosphate.
3. converts ammonia to urea.
4. regulates the body temperature.
5. All of the above are liver functions.

Question 19

The organ(s) of excretion is/are _____.

1. skin
2. lungs
3. liver
4. kidneys
5. All of the above

Question 20

Carbonic acid dissociates into

1. carbon dioxide and water.
2. bicarbonate and hydrogen ions.
3. carbon and acid.
4. sodium and bicarbonate salts.
5. oxygen and carbon dioxide.

END OF ASSIGNMENT 01 (SEMESTER 1)

TOTAL: 20 Marks

Assignment 2**Unique number: 652261****Due Date: 07 April 2017**

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 An organism that is capable of both heterotrophy and photosynthesis
- 1.2 The innermost layer of the cortex in plant roots, a cylinder one cell thick that forms the boundary between the cortex and the vascular cylinder
- 1.3 The use of living organisms to detoxify and restore polluted and degraded ecosystems
- 1.4 The ovule-producing reproductive organ of a flower, consisting of the stigma, style and ovary
- 1.5 A group of plant-like protists that is most closely related to plants

[5]**Question 2**

- 2.1 Describe the binomial system of classification. (6)
- 2.2 Name the different hierarchical classification groupings. (6)
- 2.3 Name the five characteristics that define land plants. (5)

[17]**Question 3**

Name and describe the four classes of essential nutrients. **[16]**

Question 4

Describe what an apicomplexan is and using an annotated drawing, explain the two-host life history of Plasmodium which causes malaria. **[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. Dermal tissues
- b. Vascular tissues
- c. Ground tissues

[15]

Question 7

- 7.1 Distinguish between regulators and conformers in terms of homeostasis. (6)
- 7.2 Distinguish between antigens and antibodies. (5)
- 7.3 Give two major functions of nervous systems. (2)
- [13]**

Question 8

Distinguish between open and closed circulatory systems and give an example of an organism in which each occurs. Also name the three basic components common to both systems. **[9]**

TOTAL: 100 Marks

END OF ASSIGNMENT 02 (SEMESTER 1)

SEMESTER 2**Assignment 1****Unique Number: 742496****Due Date: 01 September 2017****Answer all questions****Question 1**In *Chlamydomonas*

1. the adult is haploid.
2. the zygospore survives times of stress.
3. sexual reproduction occurs.
4. asexual reproduction occurs.
5. All of the above are correct.

Question 2

The bacterial phylum that produces oxygen gas as the result of photosynthesis is

1. the proteobacteria.
2. the cyanobacteria.
3. the Gram-positive bacteria.
4. all of the above.
5. None of the above.

Question 3

The process whereby microorganisms are used to help clean up pollution created by human activities is known as _____ .

1. bioengineering
2. biodegradation
3. bioaugmentation
4. bioremediation
5. non-biodegradation

Question 4

Which of the following statements about plants is FALSE?

1. Plants are not motile.
2. Plants are heterotrophic.
3. Plants have an alternation of generations life cycle.
4. Plants are multicellular eukaryotes.
5. Plants protect the embryo from drying out.

Question 5

Plants have a/an _____ life cycle.

1. asexual-only
2. sexual-only
3. alternation of generations
4. diplontic
5. haplontic

Question 6

"Digestion" of food refers to

1. allowing the liver to produce bile for digestion.
2. allowing the pancreas to release digestive enzymes.
3. allowing small molecules to cross cell membranes and be absorbed by the tract lining.
4. allowing large molecules to cross cell membranes and be absorbed by the tract lining.
5. allowing the meat that is eaten to nourish our body.

Question 7

Which of the following statements is NOT correct?

1. Digestion only takes place within the digestive tract.
2. The digestive tract begins with the mouth and ends with the anus.
3. Digestion of food in humans is a process that occurs inside of cells.
4. Digestive enzymes are secreted into the tract by glands located either in the tract or nearby.
5. Food is never found within accessory glands, only within the tract itself.

Question 8

During expiration, _____ pressure in the thoracic cavity causes air to leave the lungs.

1. increased
2. decreased
3. vacuum
4. hydraulic
5. All of the above.

Question 9

Air passing along the respiratory tract is

1. filtered.
2. warmed.
3. moistened with water.
4. All of the above.
5. None of the above.

Question 10

Excretion rids the body of

1. excess food.
2. cellular metabolic wastes.
3. nondigestible ingested material.
4. All of the above.
5. None of the above.

Question 11

The testes lie within the _____.

1. urinary bladder
2. erectile tissue
3. scrotum
4. prostate gland
5. ejaculatory duct

Question 12

Fertilization normally occurs in the _____.

1. uterus
2. vagina
3. ovary follicle
4. cervix
5. oviduct

Question 13

In the moss life cycle, the sporophyte

1. consists of leafy green shoots.
2. is the heart-shaped prothallus.
3. consists of a foot, stalk and a capsule.
4. is the dominant generation.
5. All of the above are correct.

Question 14

An example of a connective tissue is the

1. nerves.
2. cuboidal epithelium.
3. skin.
4. blood.
5. smooth muscles.

Question 15

Regeneration, the regrowth of lost body parts, normally follows

1. fragmentation.
2. all types of asexual reproduction.
3. all types of sexual reproduction.
4. fission.
5. parthenogenesis.

Question 16

A cloaca is an anatomical structure found in many non-mammalian vertebrates, which function as

1. a source of nutrients for developing sperm in the testes.
2. a specialized sperm-transfer device produced by males.
3. a gland that secretes mucus to lubricate the vaginal opening.
4. a common exit for the digestive, excretory, and reproductive systems.
5. a region bordered by the labia minora and clitoris in females.

Question 17

If the kidneys fail to function,

1. other organs can carry on all the excretion functions for some time.
2. renal failure becomes a life-threatening event.
3. they rapidly regenerate their nephrons.
4. cells store their own metabolic wastes until the kidneys function again.
5. All of the above.

Question 18

The scientific discipline concerned with naming of organisms is called

1. taxonomy.
2. cladistics.
3. phylogeny tree.
4. systematics.
5. phylocode.

Question 19

The _____ is a capillary knot inside the glomerular capsule.

1. proximal convoluted tubule
2. peritubular capillary
3. loop of the nephron
4. glomerulus
5. distal convoluted tubule

Question 20

The nasal cavities empty into the _____.

1. larynx
2. glottis
3. trachea
4. nasopharynx
5. epiglottis

TOTAL: 20 Marks

END OF ASSIGNMENT 01 (SEMESTER 2)

Assignment 2**Unique number: 771539****Due Date: 15 September 2017****QUESTION 1**

- 1.1 Compare the cell structure of a prokaryotic cell with a eukaryotic cell. (5)
- 1.2 Name the similarities between plants and green alga. (5)
- [10]**

QUESTION 2

- 2.1 Compare parenchyma and collenchyma with regards to: (10)
- a) Structure and composition of the cell wall.
- b) Functions
- c) Positions in plants
- 2.2 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)
- [20]**

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. (10)
- [16]**

QUESTION 4

- 4.1 Distinguish between radial and bilateral symmetry. (4)
- 4.2 Name the three enzymes involved in the digestive process and where they are found. (6)
- [10]**

QUESTION 5

- 5.1 Distinguish between open and closed circulatory systems and give an example of animal in which each occurs. Also name the three basic components common to both systems. (7)
- 5.2 Describe the format of a scientific name and state why biologists use scientific names. (5)
- [12]**

QUESTION 6

Describe the life cycle of the pine, clearly distinguishing between the gametophyte and sporophyte generations. **[15]**

QUESTION 7

- 7.1 Discuss the process of homeostasis. (7)
- 7.2 Describe and compare the process of conduction, convection, radiation and evaporation. (10)
- [17]**

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