Tutorial letter 101/3/2016

Animal and Plant Diversity
BLG1502

Semesters 1 & 2

Department of Life and Consumer Sciences

IMPORTANT INFORMATION:
This tutorial letter contains important information about your module.
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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


4.2 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 semester mark will be the average percentage obtained for your two assignments.

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: 876624

Assignment 2
Unique number: 853165

SEMESTER 2:

Assignment 1
Unique number: 846338

Assignment 2
Unique number: 898374

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

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<th>Due Date</th>
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<tr>
<td>Assignment 01</td>
<td>24 March 2016</td>
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<tr>
<td>Assignment 02</td>
<td>15 April 2016</td>
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and for SEMESTER 2 students are:

<table>
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<tr>
<th>Assignment</th>
<th>Due Date</th>
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<tr>
<td>Assignment 01</td>
<td>19 August 2016</td>
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<tr>
<td>Assignment 02</td>
<td>16 September 2016</td>
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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:
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](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 CONCLUSION

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: 876624
Due Date: 24 March 2016
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 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 3
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 4
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 5
Which of these is found in seed plants?
1. Roots, stems and leaves
2. Complex vascular tissue
3. Pollen grains that are not flagellated
4. Retention of megasporophyte within the ovule
5. All of these are correct.
Question 6
The body is capable of catabolizing many substances as sources of energy. Which of the following would be used as an energy source only after the depletion of other sources?
1. Calcium phosphate in bone
2. Glycogen in muscle cells
3. Glucose in the blood
4. Protein in muscle cells
5. Fat in adipose tissue

Question 7
Animals require certain amino acids in their diet. An amino acid that is referred to as nonessential would be best described as one that
1. is less important than an essential amino acid.
2. can be made by the animal's body from other substances.
3. is not used by the animal in biosynthesis.
4. must be ingested in the diet.
5. is not found in many proteins.

Question 8
Folic acid supplements are important for pregnant women. Why?
1. Folic acid deprivation is a cause of heart abnormalities in a newborn.
2. Folic acid stored by pregnant women is removed from their circulation.
3. Folic acid supplies vitamins that pregnant women lose.
4. Folic acid deprivation is associated with neural tube abnormalities in a fetus.
5. The fetus makes high levels of folic acid.

Question 9
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 10
Which sequence of blood flow can be observed in either a reptile or a mammal?
1. Pulmonary vein → left atrium → ventricle → pulmonary circuit
2. Left ventricle → aorta → lungs → systemic circulation
3. Right atrium → pulmonary artery → right atrium ventricle
4. Vena cava → right atrium → ventricle → pulmonary circuit
5. Right ventricle → pulmonary vein → pulmocutaneous circulation

TOTAL: 20

END OF ASSIGNMENT 01 (SEMESTER 1)
Assignment 2  
Unique number: 853165  
Due Date: 15 April 2016

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

**Question 2**
2.1 Describe the binomial system of classification.
2.2 Name the different hierarchical classification groupings.
2.3 Name the five characteristics that define land plants.

**Question 3**
Name and describe the four classes of essential nutrients.

**Question 4**
Describe what an apicomplexan is and using an annotated drawing, explain the two-host life history of Plasmodium which causes malaria.

**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.

**Question 6**
Write explanatory notes on the structure and functions of the following:
   a. Dermal tissues
   b. Vascular tissues
   c. Ground tissues
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

END OF ASSIGNMENT 02 (SEMESTER 1)
Assignment 1
Unique Number: 846338
Due Date: 19 August 2016

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

Question 3
Which one of the following is an incorrect contrast between dicotyledons (stated first) and monocotyledons (stated last)?
   1. Two cotyledons – one cotyledon
   2. Leaves net veined – leaf veins parallel
   3. Stem vascular bundles scattered – stem vascular bundles in a ring
   4. Flower parts in fours or fives – flower parts in threes
   5. All of these are correct contrasts.

Question 4
An example of a connective tissue is the
   1. nerves.
   2. cuboidal epithelium.
   3. skin.
   4. blood.
   5. smooth muscles.

Question 5
Connective tissue has
   1. a supporting material such as chondroitin sulfate.
   2. many densely-packed cells without an extracellular matrix.
   3. the ability to transmit electrochemical impulses.
   4. relatively few cells and a large amount of extracellular matrix.
   5. an epithelial origin.
Question 6
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 7
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 8
Which feature(s) do ferns share with all other land plants?
1. Sporophyte and gametophyte life cycle stages
2. Gametophyte supported by a thallus
3. Dispersal of spores from a sorus
4. Asexual reproduction by way of gammae
5. Water uptake by means of rhizoids

Question 9
Which of the following flower parts develops into a fleshy fruit?
1. Stigma
2. Style
3. Ovule
4. Ovary
5. Micropyle

Question 10
The scientific discipline concerned with naming of organisms is called
1. taxonomy.
2. cladistics.
3. binomial nomenclature.
4. systematics.
5. phylocode.

TOTAL: 20

END OF ASSIGNMENT 01 (SEMESTER 2)
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

END OF ASSIGNMENT 02 (SEMESTER 2)