Description: Biology 1

Subject               Cat-Nbr | Class | Term  | Mode | Units | Campus
BIO 1101             20338 | 1, 2003 | EXT   | 1.00  | TWMBA

Academic Group: FOSCI
Academic Org: FOS002
HECS Band: 2
ASCED Code: 010999

STAFFING
Examiner: John Dearnaley
Moderator: Kerry Withers

RATIONALE
This course aims at providing students with a basic grounding in the fundamental concepts of biology and the application of scientific method in solving problems. It provides a theoretical and practical foundation for science and non-science students.

SYNOPSIS
This course provides a brief history to life on earth, introduces the characteristics and diversity of organisms and provides a comprehensive foundation in cell structure and function, energy transformations (photosynthesis and respiration), the evolution and classification of plants, introduction to morphology and anatomy of flowering plants, principles of ecology and an introduction to the evolution of animals and the tissue and organ systems of animals. The scientific method is used to design, perform and interpret the results of experiments in biology. The residential school is a compulsory component of the external offering of this course.

OBJECTIVES
On completion of this course students will be able to demonstrate an ability to:

- outline the principles of biological classification and binomial nomenclature.
- understand the evolutionary history of life on earth.
- examine and describe the structure and function of cells and their organelles.
- describe the structure of cell membranes and outline the principles governing dialysis, osmosis and membrane transport systems.
- discuss the laws governing energy transformations and the role of enzymes in biological systems.
- outline the processes of photosynthesis, glycolysis, aerobic and anaerobic respiration.
- outline the evolution of plants and identify the basic characteristics of some major plant groups.
- become familiar with the basic anatomy and morphology of flowering plants.
- outline the evolution and diversity of animals
- differentiate between the main groups of vertebrates and invertebrates and classify organisms into these groups.
- describe basic animal structure in terms of tissues and organ systems.
- outline the ways in which animals acquire nutrients and describe the structure and function of organs associated with this process.
- gain an overview of ecological principles and processes at the ecosystem level.
- appreciate the impact of humans and their activities on the environment.
- plan and conduct simple scientific experiments safely with appropriate equipment.
- demonstrate skills in recording observations and data.
- analyse the results of scientific experiments and present them clearly and concisely using a format style common to scientific reports.

**TOPICS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Biodiversity and Classification: Unity and diversity of life: biological organization, basic life processes, origins and diversity of life; Classification and Naming Organisms: principles and problems of classification, taxonomic hierarchy, species concept, binomial nomenclature, 5 kingdom system of classification.</td>
<td>16.00</td>
</tr>
<tr>
<td>2. Cell Structure and Function: Cell Structure and Function - An Overview: cell theory, basic cell structure and function, procaryotic and eucaryotic cells, cell organelles; Membrane Structure and Function: basic models of membrane structure, diffusion, osmosis, dialysis, membrane transport: facilitated diffusion, active transport, endocytosis, exocytosis.</td>
<td>16.00</td>
</tr>
<tr>
<td>3. Energy Transformations: Metabolism: Ground Rules and Main Principles: laws governing energy transformations, metabolic reactions and pathways, enzymes, coupling and ATP; Energy - Acquiring Metabolism: photosynthesis and chemosynthesis; Energy - Releasing Metabolism: glycolysis, aerobic and anaerobic pathways, energy yields.</td>
<td>17.00</td>
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<tr>
<td>4. Plants I: The diversity of plants, plant evolution, lower plants, gymnosperms, angiosperms, angiosperm morphology, angiosperm anatomy.</td>
<td>17.00</td>
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</tbody>
</table>
TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at http://bookshop.usq.edu.au by entering the author or title of the text.

Laboratory Coat.
Dissection Kit.

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.


STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>30</td>
</tr>
<tr>
<td>Directed Study</td>
<td>40</td>
</tr>
<tr>
<td>Examinations</td>
<td>3</td>
</tr>
<tr>
<td>Private Study</td>
<td>70</td>
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<td>Residential Schools</td>
<td>24</td>
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</table>

ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRACTICAL REPORT 1</td>
<td>100.00</td>
<td>10.00</td>
<td>Y</td>
<td>28 Mar 2003</td>
</tr>
<tr>
<td>PART B OF 1HR CLOSED THEORY</td>
<td>10.00</td>
<td>10.00</td>
<td>Y</td>
<td>30 Apr 2003</td>
</tr>
<tr>
<td>1HR CLOSED THEORY M/CH TEST</td>
<td>40.00</td>
<td>10.00</td>
<td>Y</td>
<td>30 Apr 2003</td>
</tr>
<tr>
<td>PRACTICAL REPORT 2</td>
<td>100.00</td>
<td>15.00</td>
<td>Y</td>
<td>23 May 2003</td>
</tr>
<tr>
<td>PRACTICAL REPORT 3</td>
<td>100.00</td>
<td>15.00</td>
<td>Y</td>
<td>13 Jun 2003</td>
</tr>
<tr>
<td>2HR CLOSED THEORY EXAM</td>
<td>80.00</td>
<td>25.00</td>
<td>Y</td>
<td>END S1</td>
</tr>
<tr>
<td>PART B-2HR CLOSED THEORY EXAM</td>
<td>40.00</td>
<td>15.00</td>
<td>Y</td>
<td>END S1</td>
</tr>
</tbody>
</table>
NOTES:

. Examiner to advise room number for test
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. Examination dates will be available during the Semester. Please refer to the examination timetable when published.
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IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:
   It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration. To maximize their chances of satisfying the objectives of the practical component of the course, students should attend and actively participate in the laboratory sessions in the course.

2 Requirements for students to complete each assessment item satisfactorily:
   To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available for each assessment item.

3 Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of up to 10% of the total marks available for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
   To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by: (i) satisfactorily completing the examination and assignments; and (ii) obtaining at least 50% of the total weighted marks available for all summative assessment items.

5 Method used to combine assessment results to attain final grade:
   The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.

6 Examination information:
   In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.

7 Examination period when Deferred/Supplementary examinations will be held:
   Any Deferred or Supplementary examinations for this course will be held in the first week of Semester 2 of the current academic year.

8 University Regulations:
   Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL http://www.usq.edu.au/SECARIAT/calendar/Part5/ or in the printed version of the current USQ Handbook.