Description: Plant Physiology

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
<th>Campus</th>
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<tr>
<td>BIO</td>
<td>2202</td>
<td>62223</td>
<td>1, 2007</td>
<td>ONC</td>
<td>1.00</td>
<td>Toowoomba</td>
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Academic group: FOSCI
Academic org: FOS002
Student contribution band: 2
ASCED code: 010903

STAFFING
Examiner: Mark Sutherland
Moderator: John Dearnaley

REQUISITES
Pre-requisite: BIO1101

OTHER REQUISITES
Recommended pre-requisite: BIO2103

RATIONALE
The aims of this course are to relate the structure of whole plants and their tissues to their known functions and to explore a selection of the major physiological processes which occur during plant growth and development and their interaction with the external environment.

SYNOPSIS
The course is designed to inform a broad spectrum of students in plant science, wine science, biotechnology, ecology and education. The course examines essential processes in the life of plants: water uptake and transpiration; the nutrient requirements of plants; the effects of nutrient deficiencies; the transport of salts, sugars and other biomolecules within the plant; cell growth and development; the roles of plant hormones and the strategies adopted by plants to withstand environmental stresses.

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

1. demonstrate an understanding of how the different tissues and organs enable the plant to function as an integrated system, responsive to the interaction of internal and environmental processes (Mid-Semester Test, Exam);
2. demonstrate an understanding of the basic principles governing plant cell growth and the role of individual cell growth and development within the organism (Mid-Semester Test, Exam);
3. demonstrate an understanding of the effects of major environmental stresses on normal plant functioning and the anatomical and physiological adaptations plants have evolved to tolerate these external factors (Mid-Semester Test, Exam);
4. show skills in experimentation with plants in the laboratory and glasshouse (Report);
5. show improved skills in the written communication of scientific knowledge (Assignment).

**TOPICS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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</thead>
<tbody>
<tr>
<td>1. Plant water relationships: water potential and its components, the path of water through the plant, transpiration and water potential.</td>
<td>20.00</td>
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<tr>
<td>2. Plant Nutrition: essential minerals and their function in the plant, mineral deficiencies and availability, solute transport across cell membranes, membrane transport proteins.</td>
<td>25.00</td>
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<td>3. Sugar transport: the products of photosynthesis, carbohydrate sources and sinks, the movement of phloem.</td>
<td>10.00</td>
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<tr>
<td>4. Plant Growth and Development: plant cell growth and differentiation, growth and development of vegetative tissues, plant hormones and their action.</td>
<td>25.00</td>
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<tr>
<td>5. Stress and Plant Ecophysiology: leaf surfaces and the role of stomates, adaptations to water stress and water logging, salinity and extremes of temperature.</td>
<td>20.00</td>
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</tbody>
</table>

**TEXT and MATERIALS required to be PURCHASED or ACCESSED**

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at http://bookshop.usq.edu.au click 'Semester', then enter your 'Course Code' (no spaces).

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>
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<tbody>
<tr>
<td>Examinations</td>
<td>3.00</td>
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<tr>
<td>Laboratory or Practical</td>
<td>27.00</td>
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<tr>
<td>Classes</td>
<td>24.00</td>
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<tr>
<td>Lectures</td>
<td>60.00</td>
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<tr>
<td>Private Study</td>
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ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks out of</th>
<th>Wtg(%)</th>
<th>Due date</th>
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<tbody>
<tr>
<td>1.5HR RESTRICTED TEST</td>
<td>50.00</td>
<td>30.00</td>
<td>06 Mar 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(see note 1)</td>
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<tr>
<td>WRITTEN ASSIGNMENT</td>
<td>20.00</td>
<td>20.00</td>
<td>06 Mar 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(see note 2)</td>
</tr>
<tr>
<td>REPORTS ON PRACTICALS</td>
<td>20.00</td>
<td>20.00</td>
<td>06 Mar 2007</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>(see note 3)</td>
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<tr>
<td>1.5HR RESTRICTED EXAM</td>
<td>90.00</td>
<td>30.00</td>
<td>END S1</td>
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<td></td>
<td></td>
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<td>(see note 4)</td>
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</tbody>
</table>

NOTES

1. Examiner to advise details of the date of the Restricted 1.5hr test which will be held after Week 7. Topics 1 and 2 to be tested.
2. Examiner to advise due date for written assignment.
3. Examiner will advise due dates for practical reports.
4. Examination dates will be available during the Semester. Please refer to the examination timetable when published. (Topics 3 & 4).

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 the assignment satisfactorily, students must obtain at least 50% of the marks available for the assignment. To complete the examination and test satisfactorily, students must obtain at least 50% of the marks available for the examination and test. To complete the practical component satisfactorily, students must submit all practical reports and obtain at least 50% of the marks available.

3 Penalties for late submission of required work:
If students submit assignments after the due date without prior approval then a penalty of 5% 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 receiving a passing grade a student must achieve at least 50% of the total available weighted marks for the 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 Restricted Examination, candidates are allowed access to specific materials during the examination. The only materials that candidates may use in the restricted examination for this course are: writing materials (non-electronic and free from material which could give the student an unfair advantage in the examination); calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination; English translation dictionaries (but not technical dictionaries); Translation dictionary. With the Examiner's approval, candidates may, take an appropriate non-electronic translation dictionary into the examination. This will be subject to perusal and, if it is found to contain annotations or markings that could give the candidate an unfair advantage, it may be removed from the candidate's possession until the appropriate disciplinary action is completed.

7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held in the fourth week of the semester following this course offering and the examiner will advise students involved in writing of the date time and location of any examination.

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/corporateservices/calendar/part5.htm or in the current USQ Handbook.

ASSESSMENT NOTES

9 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner. Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the Examiner.

10 Students who obtain an overall passing mark, but who did not perform satisfactorily in an examination, may, at the discretion of the examiner, be granted a supplementary examination. Students will be granted a deferred examination only if they perform satisfactorily in all other assessment items.

11 In order to attend laboratory classes, students must provide and wear appropriate personal protective equipment. This shall include a laboratory coat, closed in shoes, and safety glasses. Such equipment must be approved by supervising staff. Failure to provide and wear the appropriate safety equipment will result in students being excluded from classes.