Course specification

University/Academy: Damanhour
Faculty/Institute: Science
Department: Botany

1. Course Data:

<table>
<thead>
<tr>
<th>Course code: <strong>Bot325</strong></th>
<th>Course title: <strong>Cytology</strong></th>
<th>Academic year/level: 2009/2010 3rd year student (first term)</th>
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<tbody>
<tr>
<td>Specialization: Chemistry/Botany</td>
<td>No. of instructional units: lecture 1 practical 4</td>
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2. Course Aim

The aim of the course is to define and outline a general cytology, cytogenetics and cytotaxonomy of different living systems with particular emphasis on molecular and cytological methodologies.

3. Intended learning outcome

a) Knowledge and understanding

By the end of the course student should be able to:
1. Describe the molecular organization and flow information in viruses, prokaryotes and eukaryotes.
2. List general cytological methodology to determine the suitable method to study each cell organelle.
4. Describe the different types of chromosomes.
5. Delineate mechanisms, genetic and physiology of cell division and growth.
6. Underline the role of cytogenetics and cytotaxonomy in speciation and evolution.

b) Intellectual skills

By the end of the course the student is expected to develop higher order skills that are reflected in the student ability to:
1. Modify the suitable method to study specific cells.
2. Analyze the factors affecting cell cycle.

c) Professional skills

By the end of the course the student expected to develop higher skills that are reflected in the ability to:
1. Use different types of microscopes.
2. Prepare and use specific stains to examine some living cell constituents.
3. Conduct a study of different karyotypes.
4. Practice the obtained information on chromosome aberration and its relation to plant speciation and evolution.
| d) General skills | D1: Exchange ideas, principles, theories and information by oral written and visual means.  
D2: Work effectively both in a team and independently. |
|-------------------|--------------------------------------------------------------------------------------------------|
| 4. course content | Organization of living systems  
- Basic cell chemistry and the flow of information through the cell  
- Cytological techniques (microscopy, cell separation and culture, Fractionation, Radio-autography, Nucleic acid hybridization, chromosome banding).  
- Origin, Structure and Function of Cytoplasmic membrane systems and Nucleic acid containing organelles  
- Ultra- and functional structures of Chromosomes and Genes in pro- and eukaryotes  
- Factors affecting cell cycle and division.  
- Genetic control of cell cycle and division  
- Quality control of cell cycle and division  
- Cytogenetics and cytotaxonomy  
- Chromosomal variations of related species  
Evolution of karyotype Evolution of the chromosome |
| 5. Teaching and learning methods | 4.1. Lectures, seminars, textbooks  
4.2. Problems  
4.3. Lab-work  
4.4. Course work, essay |
| 6. teaching and learning methods for students with special needs | N/A |
| 7. Student Assessment | 
| a) Procedures used: | 1- Written exam  
2- Practical exam  
3- Problems  
4- Assignments |
| b) Schedule: | Problems Week: 4-7  
Med term Week: 8  
Final practical Week: 14  
Final written Week: 16 |
| c) Weighing of Assessment: | Mid-Term Examination: 10  
Final-Term Examination: 50  
Practical Examination: 30  
Semester Work: 10  
Total: 100 |
|---------------------------|----------------------------------|

8. List of Textbooks and References:

<table>
<thead>
<tr>
<th>a) Course Notes</th>
<th>Lecture notes on cytology.</th>
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</table>
| c) Recommended Books | - When a Gene Makes You Smell Like a Fish: and Other Tales About the Genes in Your Body (Hardback)  
- International Review Of Cell and Molecular Biology, Volume 285 (International Review of Cytology) |
| d) Periodicals, websites, etc | Http://homepage.mac.com/enognog/checkpoint.htm  
Http://www.Leland.stanford.edu/group/urchin/mitosis.htm  
Http://biology.about.com/library/blmitosis.htm  
Http://www.envinoveritas.com/health/dng.htm  
Http://users.rcn.com/jkimball.ma.ultranet/biology_pages//cell_cycle.htm |

Course Instructor:  
Head of Department: Dr.  
Date: 17/8/2009