



Philadelphia University
Faculty of Science
Department of Biotechnology and Genetic Engineering
Second Semester (2008/2009)

Course Syllabus

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|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Course Title: Human Genetics and Cytogenetic practical | Course code: 240332/240336 |
| Course Level: 3 rd level | Course prerequisite (s) and/or corequisite (s): Human Genetics practical (240331)/Cytogenetics (240335) |
| Lecture Time: 14.10-16.00 pm Sunday and Tuesday | Credit hours: 1 |

Academic Staff

Specifics

| Name | Rank | Office Number and Location | Office Hours | E-mail Address |
|----------------------|---------------------|------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Raida W. Khalil, | Assistant Professor | S-906 Head of Department Office | 11-12.00 Sunday | r_khalil@philadelphia.edu.jo Biotechnology Students stdbio@philadelphia.edu.jo |

Course module description:

This module is a major (Mandatory) Departmental course for the Third Year and taught by Technology-based labs. This module deals mainly with human Chromosomal analysis- Karyotyping.

Course module objectives:

This module gives the students the opportunity to:

- See what Human chromosomes look like under the light microscope
- Distinguish chromosomes on the basis of reproducible banding patterns that are accentuated with the use of various staining protocols using a mild trypsin treatment followed by staining with the dye Giemsa and other techniques that allow for increased resolution of chromosome banding patterns.
- permitting differentiation of a greater number of Chromosomal abnormalities
- Chromosome nomenclature

Course/ module components

Laboratory guide manual prepared by Dr. Raida W. Khalil

Teaching methods:

Lab sessions. *The 48 hours in total will be mainly Particles sessions with few open lab sessions*

Learning outcomes:

- Communication skills (personal and academic).
-Module language: English
During each practical session the lecture will provide full assessment and instructions for the students.
Further assessments provided in the open lab sessions, which will be assigned by the lab demonstrator.
-the students have the option to submit their module activities either by email or submitting by hand
-the students are welcome to share open discussions through the net
- Practical and subject specific skills (Transferable Skills).
Ability to work with Human samples and the ability to obtain, record, observe and analyze information in the laboratory.

Assessment instruments

| Allocation of Marks | |
|----------------------------------|-------------|
| Assessment Instruments | Mark |
| Mid term exam | 30 |
| Final examination: 50 marks | 50 |
| Reports, Quizzes and Home works, | 20 |
| Total | 100 |

Course/module academic calendar

| Week | Basic and support material to be covered |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------|
| (1) | Safety manual Cytogenetic Analysis of human Peripheral Blood Regular procedure for culturing of human blood |
| (2) | Cytogenetic Analysis of human Peripheral Blood Harvesting of Blood culture |
| (3) | Cytogenetic Analysis of Human Peripheral Blood Slide preparation |
| (4) | Cytogenetic Analysis of Peripheral Blood G-Banding (Using trypsin) |
| (5) | The standard karyotype Chromosome number and banding patterns Idiograms |
| (6) | Cytogenetic Analysis of Peripheral Blood C-Banding constitutive Heterochromatin banding |
| (7) Mid term Exam | |
| (8) | Continue-- The standard karyotype Chromosome number and banding patterns Idiograms |
| (9) | Continue-- The standard karyotype Chromosome number, banding patterns and Nomenclature. |
| (10) | Continue-- The standard karyotype Chromosome number and banding patterns Nomenclature. |

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|------|---------------------------------------------------------------------------------------------------------------------|
| (11) | High Resolution Chromosome Analysis of Peripheral Blood) and Cytogenetic abnormalities Experimental applications |
| (12) | Molecular Cytogenetic Fluorescence In Situ Hybridization (FISH) |
| (13) | Final |

Expected workload:

On average students need to spend 2 hours of study and preparation for each 50-minute lecture/tutorial.

Attendance policy:

Absence from lectures and/or tutorials shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.

Module references

Books

Title: Cell Biology-A laboratory Handbook,2006.

Author(s)/Editor(s):Celis,Julio E. (ed.)

Publisher: Amsterdam: Elsevier Academic Press

ISBN: 0-12-164731-5

0-12-164732-3

0-12-164733-1

0-12-164734-X

Title: Analyzing Chromosomes(basics from background to bench),2000

Author(s)/Editor(s): B. Czepulkowski

Publisher: Springer

ISBN-13: 978-0387916095

0387916091

Title: Human Chromosomes(manual of basic techniques),1989

Author(s)/Editor(s): Ram S. Verma and Arvind Babu

Publisher: Pergamon press

ISBN: 0-08-035774-1

Websites

<http://www.protocol-online.org/>

<http://www.accessexcellence.org/RC/VL/GG/>

http://www.ornl.gov/sci/techresources/human_Genome/launchpad/

<http://learn.genetics.utah.edu/units/disorders/karyotype/karyotype.cfm>