

Philadelphia University	 PHILADELPHIA UNIVERSITY THE WAY TO THE FUTURE	Approval date:
Faculty: Science		Issue:
Department: Biotechnology and Genetic Engineering		Credit hours: 1
Academic year 2023-2024		Course Syllabus

Course information

Course#	Course title	Prerequisite
0240336	Cytogenetic practical	240234
Course type		Class time
<input type="checkbox"/> University Requirement <input type="checkbox"/> Faculty Requirement <input checked="" type="checkbox"/> Major Requirement <input type="checkbox"/> Elective <input checked="" type="checkbox"/> Compulsory		14:00-16:00 pm S
		Room #
		2910

Instructor Information

Name	Office No.	Phone No.	Office Hours	E-mail
Prof. Dr. Raida Khalil	914	ext. 2250	MW: 10:35-11:15 am	R_khalil@philadelphia.edu.jo

Course Delivery Method

Course Delivery Method			
<input checked="" type="checkbox"/> Physical	<input type="checkbox"/> Online	<input type="checkbox"/> Blended	
Learning Model			
Percentage	Synchronous	Asynchronous	Physical
			100%

Course 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 and nomenclature of chromosomal abnormalities

Course Learning Outcomes

Number	Outcomes	Corresponding Program outcomes
Knowledge		
K1	Explain the organization and complexity of human genome at the Cytogenetic Level	K_P1
K2	Explain the nature of chromosomal abnormalities in clinical syndromes associated with cytogenetic disorders	K_P4
Skills		

S3	Knowledge of basic cytogenetic laboratory techniques necessary to prepare tissue samples or cytogenetic diagnosis.	Sp2
Competencies		
C2	Understand the importance of genetics in personalized medicine	Cp2

Learning Resources

Course textbook	<p><i>Laboratory sheets prepared by Dr. Raida W. Khalil and other supplements material</i></p> <p>An International System for Human Cytogenetic Nomenclature (1978) (ISCN) Report of the Standing Committee on Human Cytogenetic Nomenclature Hiisselby Castle, Stockholm. Sweden September 4—9th, 1977 Sponsored by</p> <p>Title: The Principles of Cytogenetics (2013&2005) Author(s): S.Gersen et al. Publishers: Totowa, New Jersey: Humana Press ISBN: 978-1441916877 & 1-58829-300-9</p> <p>Title: The AGT cytogenetic laboratory manual Author(s): Marilyn S. Arsham, Margaret J. Barch, Helen J. Lawce Publisher: Wiley-Blackwell, Year: 2017 ISBN: 1119061229; 978-1119061229</p>
Supporting References	<u>Recent literature(suggested readings and web sites required for assignments through Philadelphia library resources,</u>
Supporting websites	Free software available and applicable for students as an support for learning of chromosomal analysis
Teaching Environment	<input checked="" type="checkbox"/> Classroom <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> Learning platform <input type="checkbox"/> Other

Meetings and subjects timetable

Week	Topic	Learning Methods	Tasks	Learning Material
1	Safety manual and introduction to course content Cytogenetic Analysis of human Peripheral Blood	Lecture and practical work	Demonstrating the blood culture and	Handouts

			exposing to safety tools	
2	Cytogenetic Analysis of human Peripheral Blood, Harvesting blood culture	Lecture and practical work	Harvesting blood samples in stepwise manner	Handouts
3	Cytogenetic Analysis of Human Peripheral Blood; Slide preparation	Lecture and practical work	Follow slide preparation utilizing the cells sample prepared past week	Handouts
4	Cytogenetic Analysis of Peripheral Blood; G-Banding (Using trypsin)	Lecture and practical work	Stain the 1past : week slides Giemsa trypsin banding and preliminary analysis Report 1 # 1	Handouts
5	The standard karyotype Chromosome number and-chromosomal analysis	Lecture and practical work-dry lab	Conducting print of ideogram and metaphase sheet	Handouts
6	Continue week 5	Lecture and practical work-dry lab	Conducting print of ideogram and metaphase sheet Quiz # 1	Handouts
7	The standard karyotype Chromosome number and banding patterns Idiograms using light Microscope	Lecture and practical work	Analysis using light microscope	
8	Midterm		Midterm assessment	Print
9	The standard karyotype Chromosome number and banding patterns Idiograms using light Microscope	Lecture and practical work	Analysis using light microscope	
10	Nomenclature, Using ISCN system, chromosomal abnormalities	Lecture and practical work-dry lab	Identified the different types of structural and numerical abnormalities-	Handouts
11	Nomenclature, Using ISCN system; chromosomal abnormalities	Lectures+ Lecture and practical work-dry lab	Identified the different types of structural and numerical abnormalities-	Handouts
12	Molecular Cytogenetic –FISH and other Techniques –Demo	Lectures	Demo Videos	Handouts

13	Final Exam		Practical + theory	Light microscope + print
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* includes: Lecture, flipped Class, project- based learning, problem solving based learning, collaborative learning

Course Contributing to Learner Skill Development

Using Technology
Educated videos, Links related to topics ; Learning Analysis Journals ; presentations prepared by students
Communication skills
Discussion assigned case reports by collaborative learning
Application of concepts learnt
Students will be familiar with consequences of chromosomal aberrations onto the genes and phenotype by referring to different database

Assessment Methods and Grade Distribution

Assessment Methods	Grade Weight	Assessment Time (Week No.)	Link to Course Outcomes
Mid Term Exam	% 30	Week 8	K1 and C1
Various Assessments *	% 30	Each week	All
Final Exam	% 40	Week 13	All
Total	%100		

* includes: quiz, in class and out of class assignment, presentations , reports, videotaped assignment, group or individual projects.

Alignment of Course Outcomes with Learning and Assessment Methods

Number	Learning Outcomes	Learning Method*	Assessment Method**
Knowledge			
K1	Explain the organization and complexity of human genome at the Cytogenetic Level	- Lecture - Practical work	- Exam - Report - Quiz
K2	Explain the nature of chromosomal abnormalities in clinical syndromes associated with cytogenetic disorders	- Lecture - Practical work	- Exam Observation - Report - Quiz
Skills			
S3	Knowledge of basic cytogenetic laboratory techniques necessary to prepare tissue samples or cytogenetic diagnosis.	- Lecture - Practical work	- Exam Observation - Report - Quiz
Competencies			
C2	Understand the importance of genetics in personalized medicine	- Lecture - Practical work	- Exam Observation - Quiz

* includes: Lecture, flipped Class, project- based learning , problem solving based learning, collaborative learning

** includes: quiz, in class and out of class assignment , presentations , reports, videotaped assignment, group or individual projects.

Course Polices

Policy	Policy Requirements
Passing Grade	The minimum passing grade for the course is (50%) and the minimum final mark recorded on transcript is (35%).
Missing Exams	Missing an exam without a valid excuse will result in a zero grade to be assigned to the exam or assessment. A Student who misses an exam or scheduled assessment, for a legitimate reason, must submit an official written excuse within a week from the an exam or assessment due date. A student who has an excuse for missing a final exam should submit the excuse to the dean within three days of the missed exam date.
Attendance	The student is not allowed to be absent more than (15%) of the total hours prescribed for the course, which equates to six lectures days (M, W) and seven lectures (S,T,R). If the student misses more than (15%) of the total hours prescribed for the course without a satisfactory excuse accepted by the dean of the faculty, s/he will be prohibited from taking the final exam and the grade in that course is considered (zero), but if the absence is due to illness or a compulsive excuse accepted by the dean of the college, then withdrawal grade will be recorded.
Academic Honesty	Philadelphia University pays special attention to the issue of academic integrity, and the penalties stipulated in the university's instructions are applied to those who are proven to have committed an act that violates academic integrity, such as: cheating, plagiarism (academic theft), collusion, and violating intellectual property rights.

Program Learning Outcomes to be Assessed in this Course

Number	Learning Outcome	Course Title	Assessment Method	Target Performance level
Kp1	Understand and recognize the biochemical, molecular and cellular structure of organisms and biological systems.	Cytogenetics practical	Comprehensive exam and practical	students %100 will achieve 68% and more based on assessment rubric

Assessment Rubric of the Program Learning Outcome

Chromosomes identifications by both conducting light microscopes and print metaphase
