MOLECULAR EPIDEMIOLOGY

BIOL 439 - A01 (20431)
January 9 – April 6, 2023

COURSE OUTLINE

LECTURER: JOHN S. TAYLOR

Office: Petch 012   Tel: 250-472-5206   email: taylorjs@uvic.ca

Lectures: TWF 9:30 AM – 10:20 PM - MacLaurin Bldg D207

COURSE DESCRIPTION. This course provides an introduction to the basic principles and applications of molecular epidemiology. We focus on the identification of genes that play a role in disease in humans (e.g., using linkage and association studies, exome and genome sequencing) and the implications of such discoveries for diagnosis, screening, and treatment. Cystic fibrosis, cancer, HIV progression, and the human HapMap are among the subjects covered. A key component of the course is the completion and presentation of semester-long group projects.

EVALUATION

1. ASSIGNMENTS: (60 pts)
    a) OR assignment (5)
    b) Reading assignment: Pre-implantation genetic diagnosis (5)
    d) Boadicea breast cancer risk assignment (5)
    e) HapMap assignment: Selecting tagging SNPs (5)
    f) Group presentation (20)
    g) Research report (20)

2. MID-TERM EXAM: (20 pts)

3. FINAL EXAM: (20 pts)

Grading scheme: A+ (90%-100%), A (85-89%), A- (80-84%), B+ (77-79), B (73-76%), B- (70-72%), C+ (65-69%), C (60-64%), D (50-59%), F (<50%), N (max. 49%) = Failure to complete one or more of the following: Mid-term exam, Final exam, Research Report. N = F as far as you GPA is concerned.

UVic is committed to promoting, providing and protecting a supportive and safe learning and working environment for all its members.

Lecture schedule

1	**January 10**	Exposure, Spot Maps and Odds Ratio	Start Assignment 1
2	**11**	Cystic Fibrosis, Consanguineous marriage, LOD Score	
3	**13**	CF, RFLPs, Linkage	
4	**17**	F508del	Assignment 1 due
5	**18**	Pre-implantation Genetics Diagnosis	Start Assignment 2
6	**20**	Gene Therapy	
7	**24**	Personalized Medicine and CF	
	25	Groups meet in class	Assignment 2 due
8	**27**	Cancer Linkage Studies	
9	**31**	Odds Ratio, Relative Risk, and *BRCA1* & *BRCA2*	Start Assignment 3
10	**Feb. 1**	Interactions among loci	
11	**3**	Hazard Ratio	
12	**7**	Oncotyping/Tumor Transcription	Assignment 3 due
13	**8**	Over-diagnosis	
	10	**Midterm**	
14	**14**	HIV-AIDS	
15	**15**	The Hap Map, GWAS and Macular Degeneration	Start Assignment 4
16	**17**	Groups meet in class	
	21	*Reading Break*	
	22	*Reading Break*	
	24	*Reading Break*	
17	**28**	Transcriptome sequencing. ***Last day to drop class****	Assignment 4 due
18	**Mar. 1**	Exome sequencing	
19	**3**	Whole genomes	
20	**7**	Genetic Resilience	
21	**8**	Genome Prediction.	
	10	Group Presentations Begin	

* I cannot remove you from this class. You must do that yourself.
I have been asked to remind you to review the UVic Academic Integrity Policy