MOLECULAR EPIDEMIOLOGY

201376 – BIOL 439 - A01
January 6 – April 3, 2020

COURSE OUTLINE

LECTURER: JOHN S. TAYLOR

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

Lectures: Room: Cornett B143 TWF: 9:30 am - 10:20 am

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: (45 pts)
    a) Reading assignment: Pre-implantation genetic diagnosis (5)
    b) Reading assignment: Genetic polymorphisms and breast cancer (5)
    c) HapMap assignment: Selecting tagging SNPs (10)
    d) Research Report (15) and Presentation (10)

2. MID-TERM EXAM: (30 pts)

3. FINAL EXAM: (25 pts)

Grading scheme: A+ (90%-100%), A (85-89.9%), A- (80-84.9%), B+ (77-79.9), B (73-76.9%), B- (70-72.9%), C+ (65-69.9%), C (60-64.9%), D (50-59.9%), F (<50%), N (Failure to complete one or more of the following: Research Report, Mid-term exam, Final exam).

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

Lecture schedule*

1	**JAN. 7**	Exposure, Spot Maps and Odds Ratio	
2	**8**	Cystic Fibrosis (CF), Kissing Cousins, LOD Score	Start Assignment 1
3	**10**	CF, RFLPs	
4	**14**	F508del	
5	**15**	Pre-implantation Genetics Diagnosis	Assignment 1 due
6	**17**	Gene Therapy	
7	**21**	Personalized Medicine and CF	
	22	Groups meet in class	
8	**24**	Linkage, Pedigrees and DNA Pooling	
9	**28**	Cancer	
10	**29**	Odds Ratio, Relative Risk, and *BRCA1*& *BRCA2*	Start Assignment 2
11	**31**	SNPs and the Hazard Ratio	
12	**FEB. 4**	Tumor Transcription, Cancer Evolution	
13	**5**	Over-diagnosis	
	7	**Midterm**	Assignment 2 due
14	**11**	HIV-AIDS 1	
15	**12**	HIV-AIDS 2	
16	**14**	The Hap Map	
	18	Groups meet in class	
	19	*Reading Break*	Start Assignment 3
	21	*Reading Break*	
17	**25**	Macular Degeneration	
18	**26**	GWAS (Genome-Wide Association Studies) 1	
19	**28**	GWAS (Genome-Wide Association Studies) 2	
20	**MAR. 3**	Exome sequencing	
21	**4**	CRISPR Cas-9/Genome editing	Assignment 3 due
	6	Group Presentations begin	

* Revisions may be made during the semester.