

Biology 3466b – Evolutionary Genetics - Syllabus – 2017

A basic overview of the genetics of evolutionary processes. The emphasis will be on the formulation of simple mathematical models used to predict inheritance and gene frequency changes in evolving populations.

Schedule:

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| Lectures | Monday | 12:30 | Biology & Geology 0153 |
| | Thursday | 11:30 | Biology & Geology 0153 |
| Laboratory | Tuesday | 13:30 | Somerville House 1310 |
| | Wednesday | 14:30 | Somerville House 1310 |

Format:

Lectures will follow a traditional style of presentation, with student participation expected. Laboratories will be computer-based with a printed one-page report for each exercise. Test/Final: multiple choice.

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| Evaluation: | Mid-term | 25% | Thursday February 16, 11:30, in class |
| | Final | 45% | Final exam period (TBA) |
| | Lab assignments* and pop quizzes | 30% | |

Course notes and laboratory assignments available from the UWO Bookstore at cost.

Optional text: Halliburton - Introduction to Population Genetics (2004) Pearson/Prentice Hall

Software: Microsoft Excel is provided in the computer lab

Instructor: MA Lachance, Professor of Biology, 2036 BGS, 661-3752 - lachance@uwo.ca

Lecture topics

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|-----------------------------|--------------------------|-------------------------------------|
| Introduction, course format | Selection | Wahlund effect |
| Historical aspects: | Fitness | Linkage disequilibrium |
| Pangensis, Darwinism, | Selection regimes | The Neutral Theory |
| Darwinians, Mendelians, | The levels of selection | Genetic basis for continuous traits |
| Lamarckians | Mutation | Polygenic inheritance |
| The synthetic theory | Molecular basis | Genetic variance |
| Genetic variation | Balance with selection | Heritability |
| What kinds? | Genetic load | Realized |
| How much? | Migration | Broad-sense |
| Maintenance of variation | Drift and sampling error | Narrow-sense |
| The Hardy-Weinberg model | Non-random mating | Variation in real metric traits |
| and deviations from it | Inbreeding | |
| | Wright's statistics | |

*Lab assignments are due at the end of each exercise. A final extension is granted till 12:30 pm the following Monday. A verbal explanation must be provided to be excused of missed lab assignments. For other assignments, please consult the policy statement at <https://studentservices.uwo.ca/secure/index.cfm> The use of portable electronic devices of any sort is prohibited during all course activities except by instructor approval. Scholastic offenses are taken seriously; students are directed to read the policy - see link on course website. Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation. The web site also has a link on the subject of mental health and the relevant services offered by the university.