

BIOL 415: Population Genetics (a.k.a. PopGen)

How (and why!) genetic variation changes in natural populations

TENTATIVE COURSE OUTLINE - Spring Quarter 2009

This course is designed for you to accomplish three things:

- to develop your knowledge and comprehension of the conceptual, theoretical and practical bases of contemporary PopGen
- to apply your knowledge and comprehension of PopGen principles to simulated and real-world examples
- to enjoy doing both of the above

~~~~~*If you have fears of math, I will help you to conquer them!*~~~~~

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**Office:** Science Complex (also known as "The New Building"), Room 392

**Office hours:** T/R 3 - 4 pm, or by appointment

**Lectures:** BS 247, T/R 8:25 - 9:40 am

**Laboratories:** BS 236, T 9:50 am - 12:20 pm

**Textbook:** Hartl, DL (2000) A Primer of Population Genetics, Third Ed. Sinauer Associates, Inc., Sunderland MA. Readings and problem sets will be supplemented from other sources (provided by Dr. T).

**Calculator:** with exponents (or laptop) required for each lecture

**WebCT:** Lecture handouts, lab assignments and other useful information

#### Evaluation:

Participation: lecture, lab, group, and independent work (mandatory!) 10 %

Lab assignments (5 assignments x 3%) 15 %

Mid-quarter examination, **Tuesday, 5 May, 8:25am** 25 %

Final examination, cumulative, **Tuesday, 9 June, 8-10:30am** 50 %

Academic Dishonesty will not be tolerated!!! See [www.calstatela.edu/academic/senate/handbook/ch5a.htm](http://www.calstatela.edu/academic/senate/handbook/ch5a.htm)

#### "Anticipated" topics and timeline (reality may deviate):

| Week | Date      | Lecture and Lab topics                        |
|------|-----------|-----------------------------------------------|
| 1    | 02 Apr    | Introduction to PopGen                        |
| 2    | 07-09 Apr | Genetic Variation, Hardy-Weinberg Equilibrium |
| 3    | 14-16 Apr | Inbreeding                                    |
| 4    | 21-23 Apr | Mutation                                      |
| 5    | 28-30 Apr | Genetic Drift and Effective Population Size   |
| 6    | 05-07 May | Selection                                     |
| 7    | 12-14 May | Gene Flow and Population Structure            |
| 8    | 19-21 May | Linkage Disequilibrium and Recombination      |
| 9    | 26-28 May | Neutrality and the Coalescent                 |
| 10   | 02-04 Jun | Applications, Synthesis and Evaluation        |

*"Nothing in evolution makes sense except in light of population genetics"-Michael Lynch*