

# SIO 127: Marine Molecular Ecology Spring 2017

Lectures: TTh 9:30=10:50 Nierenberg Hall 101

Instructor: Ron Burton

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Office hours - by arrangement -please email to set up a time

## Course mechanics

**Text: Molecular Ecology (2<sup>nd</sup> edition, 2011) Freeland, Kirk and Petersen.**  
Available electronically from the UCSD Library (**FREE TEXTBOOK!**)

**Readings: Additional readings (research papers and review articles) will be assigned along the way.**

**Assignments - there will be a couple of homework assignments designed to get you engaged in the material and allow me to make sure we are all on the same page. In addition to readings, there will be two one page papers.**

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- Homework assignments 50 pts  
(including two 1 page papers)
- Midterm 100pts
- Final 100pts

**Discussion (occasional and optional): Th 11:00-11:50 Spiess 330**

**Yes, there is a TritonEd Course Website - readings and lecture notes will be posted.**

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### **Tentative Lecture and Exam Schedule**

|          |                                |   |
|----------|--------------------------------|---|
| April 4  | Lecture 1                      | Introduction to Molecular Ecology   |
| April 6  | Lecture 2                      | DNA Barcoding – promise and pitfalls  |
| April 11 | Lecture 3                      | Barcoding, Metabarcoding, Metagenomics  |
| April 13 | Lecture 4                      | Genetic markers – allozymes, mtDNA, microsatellites, next-gen seq, SNPs, RAD-seq, RNA-seq |
| April 18 | Lecture 5                      | Population genetics 1: drift and effective population size                                |
| April 20 | Lecture 6                      | Population genetics 2: migration and natural selection                                    |
| April 25 | Lecture 7                      | Functional ecology: molecular adaptations at single loci                                  |
| April 27 | Lecture 8                      | Functional ecology: transcriptomics and regulatory variation                              |
| May 2    | Lecture 9                      | Natural Selection   |
| May 4    | Lecture 10                     | Mating systems  |
| May 9    | <b>Midterm</b>                 |   |
| May 11   | Lecture 11                     | Population structure  |
| May 16   | Lecture 12                     | Phylogeography  |
| May 18   | Lecture 13                     | Hybrid breakdown  |
| May 23   | Lecture 14                     | Guest Lecture   |
| May 25   | Lecture 15                     | Guest Lecture   |
| May 30   | Lecture 16                     | Speciation  |
| June 1   | Lecture 17                     | Fisheries genetics  |
| June 6   | Lecture 18                     | Conservation genetics 1   |
| June 8   | Lecture 19                     | Conservation genetics 2   |
| June 13  | <b>Final (Tuesday, 8-11am)</b> |   |