

SIO 127: Marine Molecular Ecology Spring 2015

Lectures: TTh 9:30=10:50 Spiess 330
Discussion: Th 11:00 Spiess 330

Instructor: Ron Burton
Office: 2140 Hubbs Hall
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Office hours - by arrangement - please email to set up a time

Course mechanics

Text: Molecular Ecology (2nd edition, 2011) Freeland, Kirk and Petersen.
Available electronically from the UCSD Library

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, I anticipate a 2-3 brief assignments (30-60 min), a one page paper and a 4-5 page paper.

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| - Homework | 30 pts |
| - 1 page paper | 10 pts |
| - 4 page paper | 60 pts |
| - Midterm | 100pts |
| - Final | 100pts |

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Discussion sections (optional) - after class Thurs

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

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Lecture and Exam Schedule

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| Mar 31 | Lecture 1 | Introduction to Molecular Ecology |
| April 2 | Lecture 2 | DNA Barcoding – promise and pitfalls |
| April 7 | Lecture 3 | Population genetics 1: drift and effective population size |
| April 9 | Lecture 4 | Population genetics 2: migration and natural selection |
| April 14 | Lecture 5 | Genetic markers – allozymes, mtDNA, microsatellites |
| April 16 | Lecture 6 | Genetic markers – next-gen seq, SNPs, RAD-seq, RNA-seq |
| April 21 | Lecture 7 | Functional ecology: molecular adaptations at single loci |
| April 23 | Lecture 8 | Functional ecology: transcriptomics and regulatory variation |
| April 28 | Lecture 9 | Microbial ecology and metagenomics |
| April 30 | | Midterm |
| May 5 | Lecture 10 | Population structure |
| May 7 | Lecture 11 | Cetacean population genetics (Guest Lecture: Phil Morin) |
| May 12 | Lecture 12 | Phylogeography |
| May 14 | Lecture 13 | Hybrid breakdown |
| May 19 | Lecture 14 | Speciation |
| May 21 | Lecture 15 | Natural Selection |
| May 26 | Lecture 16 | Mating systems (Guest Lecture: Felipe Barreto) |
| May 28 | Lecture 17 | Fisheries genetics |
| June 2 | Lecture 18 | Conservation genetics |
| June 4 | Lecture 19 | Discussion |
| June 10 | | Final (8:00-11:00 AM) |