



Course Syllabus: Advanced Marine Ecological Genomics - MarS 330

Division	Biological and Environmental Sciences & Engineering Division
Course Number	MarS 330
Course Title	Advanced Marine Ecological Genomics
Academic Semester	Spring
Academic Year	2016/2017
Semester Start Date	01/22/2017
Semester End Date	05/18/2017
Class Schedule (Days & Time)	08:00 AM - 04:00 PM Sun Mon Tue Wed Thu

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Christian Robert Voolstra	christian.voolstra@kaust.edu.sa	+966128082377	2226, 2, Ibn Al-Haytham (bldg. 2)	
Manuel Ignacio Aranda Lastra	manuel.aranda@kaust.edu.sa	+966128082979 8082979		Bldg. 2 2216 Sun.-Wed. 10am-11am and 3pm-4pm

Teaching Assistant(s)	
Name	Email
Nils Raedecker Claudia Pogoreutz	nils.raedecker@kaust.edu.sa c.pogoreutz@gmail.com

Course Information	
Comprehensive Course Description	This block course aims to provide students with a holistic introduction to the field of Ecological Genomics. During the course we will focus on a specific ecological question and how to interrogate it using molecular biology and genomics techniques. Students will then plan, design and perform an experiment, and collect the relevant data. As part of the course students will gain practical experience in various molecular biology techniques, data analysis, and interpretation of research results. At the end of the course students will produce a collaborative research paper describing the essential findings of the study.
Course Description from Program Guide	Ecological genomics describes the application of genomic tools (high throughput sequencing, microarrays, quantitative PCR etc.) to solve questions of ecology. Its purpose is to increase understanding of the responses and interactions of organisms to the environment and to one another by analyzing genomic sequences, gene expressions and genome evolution. This course will give an overview over the methods utilized and the questions asked by ecological genomics with a particular emphasis on marine ecological genomics. As a PhD level course, assessment of students and participation expectations will be commensurate with the level of student experience.
Goals and Objectives	The goal of the course is to teach students how to design and perform adequate experiments to address specific ecological questions using molecular biology and genomics tools. Students learn appropriate molecular biology and genomics techniques to analyze these experiments in regard to the scientific question at hand and how to interpret and communicate their results.
Required Knowledge	No specific courses are required but students are expected to a good understanding of Molecular Biology, Ecology, and/or Genomics.
Reference Texts	Ecological Genomics 3rd Edition (Gibson&Muse) Relevant publications will be assigned by the instructors

Method of evaluation	33.33% - Written report 33.33% - Course Project(s) 33.33% - Attendance and Participation
Nature of the assignments	The course encompasses an entire research project from experimental design, execution, analysis and writing of a research paper. The large practical component of this course makes attendance absolutely mandatory. Students are expected to be present at any time during the block period. Any anticipated absence should be cleared with the instructor by written (email) notification as early as possible and before the actual day of absence. Students with approved absences are responsible for coordinating their absence with their group members in advance.
Course Policies	The course may require fieldwork for the collection of samples and/or experiments. Communication should be via email whenever possible but a phone number will be provided for urgent issues.
Additional Information	

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic
1	Sun 02/19/2017 Mon 02/20/2017 Tue 02/21/2017 Wed 02/22/2017 Thu 02/23/2017	Introduction to the topic and assignment of reading material. Based on the research question we will design and prepare the experiment.
2	Sun 02/26/2017 Mon 02/27/2017 Tue 02/28/2017 Wed 03/01/2017 Thu 03/02/2017	Field collection of specimens and experiment. Collection and preliminary analysis of data to confirm integrity.
3	Sun 03/05/2017 Mon 03/06/2017 Tue 03/07/2017 Wed 03/08/2017 Thu 03/09/2017	Data analysis and discussion of results in the context of the research question.
4	Sun 03/12/2017 Mon 03/13/2017 Tue 03/14/2017 Wed 03/15/2017 Thu 03/16/2017	Collaborative writing of a research manuscript describing the essential findings of the study.
5		NA
6		NA
7		NA
8		NA
9		NA
10		NA
11		NA
12		NA
13		NA
14		NA
15		NA
16		NA
17		NA
18		NA

Note

The instructor reserves the right to make changes to this syllabus as necessary.