



## Summer Session 2018 MCB Professional Science Master's Courses

We are offering 1 and 2 credit modules during May term and summer session 2018. Modules span 2 or more days and are either lecture, computational, or laboratory. The laboratory modules combine hands-on experience with lectures on theoretical background. Any number and combination of modules may be taken and the credits applied toward undergraduate or graduate degrees. **Graduate tuition rates apply.** The modules are listed below. Please contact [elaine.mirkin@uconn.edu](mailto:elaine.mirkin@uconn.edu) for permission numbers. Seats are limited. Information on graduate tuition and fees for summer session can be found on the [Summer Session website](#) under Dates and Fees. Please note all payment and refund deadlines.

### **INTRODUCTORY LEVEL (Appropriate for any student, including those with little or no research experience.)**

The module **Bacterial DNA & RNA Isolation and Quality Control** is only offered once every two years. This module provides students with in-depth understanding of working with DNA and RNA. In this module students compare three different techniques for isolating DNA and RNA. The quality of the different approaches will be assessed using different techniques including spectrophotometric and fluorometric techniques.

#### **MCB 5670-02 Theory and Practice of Laboratory Techniques in Microbiology – Bacterial DNA & RNA Isolation and Quality Control**

Dates May 7 and May 8, 2018, 9:00 AM - 5:00 PM; May 9, 2018, 9:00 AM to 12:00 PM

1 credit

Enrollment Limit 6

Instructors [Joerg Graf](#) and Meredith Mistretta

Room BCH 204 and 205

Instructor Consent Required

Contact [elaine.mirkin@uconn.edu](mailto:elaine.mirkin@uconn.edu) for permission number. Students use different methodologies for DNA/RNA isolation and quality control and compare the different techniques. Students will isolate DNA and RNA using classical techniques and kits. If interested, students can bring their own samples. Quantification and quality assessment will be done using a Nanodrop, Qubit (fluorometer), Bioanalyzer 2100, and QIAxcel.

#### **MCB 5672-01 Applied Bioinformatics**

Dates May 17 from 12:00 PM to 5:00 PM; May 18 from 9:00 AM-5:00 PM; May 21 from 9:00 AM-5:00 PM

1 credit

Enrollment Limit 6

Instructor Jonathan Klassen and Kevin Lee

Room BCH 202 and BCH 205

Instructor Consent Required

Contact [elaine.mirkin@uconn.edu](mailto:elaine.mirkin@uconn.edu) for permission number. In this class students will be trained in using bioinformatics to analyze next generation sequencing data. Students will learn how to navigate the UNIX environment, execute program on servers, prepare next generation sequencing data for analysis, and assemble sequences using microbial genomes as an example.

### **INTERMEDIATE LEVEL (Requires prior research experience, completion of MCB 5427 Introduction to Molecular Biology Techniques, or permission of instructor.)**

#### **MCB 5427-50 Laboratory Techniques in Functional Genomics – Introduction to Cell Culture Techniques**

Dates July 11, July 12, July 13, 2018, 9:00 AM - 5:00 PM

1 credit

Enrollment Limit 4

Instructor Charles Giardina and Michelle Rosado

Room BPB 323

Instructor Consent Required

Contact [elaine.mirkin@uconn.edu](mailto:elaine.mirkin@uconn.edu) for permission number. Prerequisite is MCB 5427 Introduction to Molecular Biology Techniques, relevant research lab experience, or permission of instructor. Participants learn the fundamentals of cell culture. Main topics covered include cell culture media formulation and filtration sterilization, aseptic approaches to cell dissociation and passaging, handling biosafety 2 level cell lines, cell freezing and stock retrieval, monolayer cell transfection methods, cell staining, and cell viability tests on 96 well plates.

**ADVANCED LEVEL (Please see prerequisite requirements for the individual course listed below.)**

**MCB 5671-02 Advanced Theory and Practice of Laboratory Techniques in Microbiology – Characterization of Microbial Communities by 16S rRNA Gene Sequencing**

Dates: May 10-11, May 14-16, 2018, 9:00 AM to 5:00 PM

2 credits

Enrollment limit 6

Instructors [Joerg Graf](#), Jacquelynn (Jacqui) Benjamino and Andrea Suria

BCH 202, BCH 204, and BCH 205

Instructor Consent Required

Contact [elaine.mirkin@uconn.edu](mailto:elaine.mirkin@uconn.edu) for permission number. Prerequisite is MCB 5427 or permission from the instructor. In this module, students will learn the principles of NextGeneration Sequencing using an Illumina MiSeq and microbiome analyses. Each student will sequence the 16S rRNA genes of a microbial community. Students will learn how to prepare the libraries for running on the MiSeq and analyze the data after the run is completed. The data analysis involves a QIIME pipeline specifically modified for using the larger Illumina data sets.