



Summer Session 2016 MCB Professional Science Master's Courses

We are offering 1 and 2 credit modules during May term and summer session 2016. 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.** These sections are **not** open to enrollment through continuing studies.

The modules are listed below. Please contact elaine.mirkin@uconn.edu for permission numbers. Seats are limited.

Please keep the following in mind. A request for a permission number and registration in any one of the courses is a commitment to complete the course. Please do not request a permission number until you are sure of your commitment. All of the courses are very popular and once a permission number is issued that spot is no longer available to another student.

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.)

MCB 5490-20 Industrial Insights

Topic - Principles of Quality Assurance in Pharmaceutical Drug Development and Manufacturing

Dates June 11, June 18, June 25, and July 9, 2016, 9:30 AM – 2:30 PM

1 credit

Enrollment Limit 6

Instructor Mark Longo

Room BPB 201

Instructor Consent Required

June 11, 2016: 9:30 AM – 2:30 PM

June 18, 2016: 9:30 AM – 2:30 PM

June 25, 2016: 9:30 AM – 2:30 PM.

July 9, 2016: 9:30 AM – 2:30 PM

Instructor Consent Required

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS enrollment. MCB PSM students have priority enrollment. Highly recommended for students interested in careers in biotechnology or pharmaceuticals, the course will focus on information relevant to biotechnology and pharmaceutical product development, testing and manufacturing. Students will have ample opportunity to meet and interact with experts from industry. The instructors are from Boehringer-Ingelheim. Lunch will be provided by the MCB PSM program.

“Bacterial DNA & RNA Isolation and Quality Control” is only offered once every two years. This module offers important insight into widely used molecular biology methods and provides participants with the knowledge required for quantifying DNA, RNA, and next-generation sequencing libraries.

MCB 5670-02 Theory and Practice of Laboratory Techniques in Microbiology

Topic – Bacterial DNA & RNA Isolation and Quality Control

Dates May 18 and May 19, 2016, 9:00 AM - 5:00 PM; May 20, 2016, 9:00 AM to 12:00 PM

1 credit

Enrollment Limit 6

Instructors [Joerg Graf](#) and Emily McClure

Room TLS 277

Instructor Consent Required

May 18, 2016: 9:00 AM to 5:00 PM

May 19, 2016: 9:00 AM to 5:00 PM

May 20 2016: 9:00 AM to 12:00 PM

Instructor Consent Required

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS enrollment. MCB PSM students have priority enrollment. 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 13 and May 16, 9:00 AM-5:00 PM; May 17, 12:00 PM to 5:00 PM

1 credit

Enrollment Limit 6

Instructor Jonathan Klassen

Room BPB 401

Instructor Consent Required

May 13, 2016: 9:00 AM-5:00 PM

May 16, 2016: 9:00 AM-5:00 PM

May 17, 2016: 12:00 PM to 5:00 PM

Instructor Consent Required

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS enrollment. MCB PSM students have priority enrollment. 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

Topic – Introduction to Cell Culture Techniques

Dates: July 11, July 12, and July 13, 2016, 9:00 AM - 5:00 PM

1 credit

Enrollment Limit 6

Instructor: Cassandra Tierney and Charles Giardina

Room TLS 201

July 11, 2016: 9:00 AM-5:00 PM

July 12, 2016: 9:00 AM-5:00 PM

July 13, 2016: 9:00 AM-5:00 PM

Instructor Consent Required

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS enrollment. MCB PSM students have priority enrollment. 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, mono-layer cell transfection methods, and cell viability tests on 96 well plates.

The module **Operations of the Illumina MiSeq** is the prerequisite for the module **Characterization of Microbial Communities by 16S rRNA Gene Sequencing**. Preferential enrollment in **Operations of the Illumina MiSeq** will be given to those students who enroll in both modules **Operations of the Illumina MiSeq** and **Characterization of Microbial Communities by 16S rRNA Gene Sequencing**.

MCB 5670-16 Theory and Practice of Laboratory Techniques in Microbiology

Topic – Operations of the Illumina MiSeq

Dates: May 10, May 11, and May 12, 2016, 9:00 AM - 5:00 PM

1 credit

Enrollment limit 6

Instructors: Kendra Maas

Room BPB 401

May 10, 2016: 9:00 AM - 5:00 PM

May 11, 2016: 9:00 AM - 5:00 PM

May 12, 2016: 9:00 AM - 5:00 PM

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS enrollment. MCB PSM students have priority enrollment. Prerequisite is MCB 5427 Introduction to Molecular Biology Techniques, relevant research lab experience, or permission of instructor. In this module students will receive training in how to operate an Illumina MiSeq, Agilent Bioanalyzer, and Qubit. Theory of sequencing by synthesis, quality assessment, and data analysis will be discussed. Participants will be given an overview of the different applications for the MiSeq that include small genome sequencing, microbial transcriptome sequencing, and ultra-deep 16S rRNA gene sequencing. The successful completion of this module is required for users to gain independent access to the MiSeq.

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

MCB 5671-02 Advanced Theory and Practice of Laboratory Techniques in Microbiology

Topic – Characterization of Microbial Communities by 16S rRNA gene sequencing

Dates: June 2, June 3, June 6, June 7, 2016, 9:00 AM to 5:00 PM, and June 8, 2016, 9 AM to 12:00 PM

2 credits

Enrollment limit 6

Instructors: [Joerg Graf](mailto:Joerg.Graf@uconn.edu), Jacqueline (Jacqui) Benjamino and Allison Kerwin

Rooms TLS 203 (June 2 and June 3, 2016) and BPB 401 (June 6, June 7, and June 8, 2016)

June 2, 2016: 9:00 AM - 5:00 PM

June 3, 2016: 9:00 AM - 5:00 PM

June 6, 2016: 9:00 AM - 5:00 PM

June 7 2016: 9:00 AM - 5:00 PM

June 8, 2016: 9:00 AM - 12:00 PM

Instructor Consent Required

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS enrollment. MCB PSM students have priority enrollment. Prerequisite is MCB 5670 Operations of the Illumina MiSeq or permission from the instructor. In this module, 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.