



Winter Session 2016 MCB Professional Science Master's Courses

We are offering 1 and 2 credit laboratory modules during the winter session 2016. Laboratory modules span three or more days and combine hands-on experiments with lectures on the 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 non-degree and BGS enrollment.

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

MCB 5670 **Introduction to Operations of the Illumina MiSeq** and MCB 5671 **Microbial Genome Sequencing, Assembly and Annotation** utilize the [Illumina MiSeq](#), an extremely useful and cost-effective Next Generation Sequencing instrument for a wide range of uses applicable to eukaryotic and prokaryotic genomics. Our advanced modules focus on microbiological applications including small genome sequencing, ultra-deep 16S rRNA gene sequencing, and transcriptomes. The chemistry, library preparation, and data analysis is identical to the Illumina HiSeq instrument. Please contact joerg.graf@uconn.edu for additional information on these courses.

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 the winter session can be found on [the Winter Session 2016 website](#) under Fees and Dates.

INTERMEDIATE LEVEL (requires prior research experience or completion of MCB 5427 Introduction to Molecular Biology Techniques)

MCB 5427-01 Laboratory Techniques in Functional Genomics Topic – Cell Culture Techniques

Dates: January 8, January 9, and January 10, 2016; 9 a.m. to 5 p.m.

1 credit

Enrollment Limit 6

Instructors: Charles Giardina and Michelle Rosado

Room TLS 201

January 8, 2016: 9 a.m. to 5 p.m.

January 9, 2016: 9 a.m. to 5 p.m.

January 10, 2016: 9 a.m. to 5 p.m.

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS 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, monolayer cell transfection methods, and cell viability tests on 96 well plates.



Winter Session 2016 MCB Professional Science Master's Courses

Operations of the Illumina MiSeq is the prerequisite for *Microbial Genome Sequencing, Assembly and Annotation* and preferential enrollment will be given to those students who enroll in both *Operations of the Illumina MiSe* and *Microbial Genome Sequencing, Assembly and Annotation*.

MCB 5670-01 Theory and Practice of Laboratory Techniques in Microbiology

Topic – Operations of the Illumina MiSeq

Dates: January 4, January 5, and January 6, 2016; 9 a.m. to 5 p.m.

1 credit

Enrollment limit 6

Instructors: Kendra Maas

Room BPB 401

January 4, 2016: 9 a.m. to 5 p.m.

January 5, 2016: 9 a.m. to 5 p.m.

January 6, 2016: 9 a.m. to 5 p.m.

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS 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 on 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.

MCB 5671-1 Advanced Theory and Practice of Laboratory Techniques in Microbiology

Topic – Advanced Liquid Handling and Sample Processing

Dates: January 13, January 14, and January 15, 2016; 9 a.m. to 5 p.m.

1 credit

Enrollment Limit 6

Instructors: Joerg Graf, Kendra Maas, and Susan Janton

Room BPB 401 (Class begins in BPB 401 and then moves to BPBG01)

January 13, 2016: 9 a.m. to 5 p.m.

January 14, 2016: 9 a.m. to 5 p.m.

January 15, 2016: 9 a.m. to 5 p.m.

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS enrollment. Prerequisite is MCB 5427 Introduction to Molecular Biology Techniques, relevant research lab experience, or permission of instructor. Participants will learn how to program and use Eppendorf's EpMotion5075 that is equipped with vacuum and a thermomixer and Qiagen's QIAgility for setting up dilution series and PCR reactions. In addition students will learn how to use an automated tube sorter with a bar code reader from BioMicroLab, XL200. For more information about this equipment, you can visit <http://www.biotech.uconn.edu/marsf/>.



Winter Session 2016 MCB Professional Science Master's Courses

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

MCB 5671-2 Advanced Theory and Practice of Laboratory Techniques in Microbiology

Topic – Microbial Genome Sequencing, Assembly and Annotation

Dates: January 7, January 8, January 11, and January 12, 2016; 9 a.m. to 5 p.m.

2 credits

Enrollment limit 6

Instructors: Joerg Graf, Michael Nelson, and Lidia Beka

Room TLS 277 (January 7 and January 8, 2016); BPB 401 (January 11 and January 12, 2016)

January 7, 2016: 9 a.m. to 5 p.m.

January 8, 2016: 9 a.m. to 5 p.m.

January 11, 2016: 9 a.m. to 5 p.m.

January 12, 2016: 9 a.m. to 5 p.m.

Contact elaine.mirkin@uconn.edu for permission number. This section is closed to non-degree and BGS enrollment. Prerequisite is MCB 5670 Introduction to Operations of the Illumina MiSeq or permission from the instructor. In this module, each student will sequence a bacterial genome. The sequencing will be done using the new Nextera library construction kit. We will sequence the genome using the MiSeq. The data analysis will include de novo and reference assembly as well as annotation. The data analysis will be done using MiSeq software and CLC genomes workbench.