

**Biochemistry & Molecular Biology (BMB) 829
Special Problems in Macromolecular Analysis and Synthesis
Fall Semester 2024**

**Module 1: Introduction to Methods in Biochemistry & Molecular Biology
Section 301
Course Syllabus, Policies, and Schedule**

Credit hours: 1
Course modality: In person
Course meeting days and time: Tue & Thu 1:00– 2:20 pm
Course location: BCH 402
First day of classes: Tuesday August 27, 2024
Last day of classes: Tuesday September 24, 2024

Instructors

Charles G. Hoogstraten; BMB 829 Course Coordinator

hoogstr3@msu.edu
302D Biochemistry Building
(517) 353-3978 (only checked occasionally)
Office hours: By appointment

Erich Grotewold; BMB829-301 Module 1 Lead Instructor

grotewol@msu.edu
310A Biochemistry Building
Office hours: By appointment

Outline of Module Topics

Module 1: Introduction to Methods in Biochemistry & Molecular Biology
Module 2: Recombinant DNA & Genome Editing
Module 3: Genetic and Biophysical Analysis of Molecular Interactions
Module 4: Separation and Analysis of Cells & Biomolecules
Module 5: Molecular Structure Determination and Analysis

Course Description and Objectives

BMB 829 is a modular course that seeks to introduce students to modern molecular and structural/analytical techniques of interest in the biochemistry and molecular biology laboratories. Students may enroll in each of sections 301, 302, 303, 304, and 305 (corresponding to modules 1 through 5) once for a total of up to five credits; however, *Module 1 must be completed before any of the remaining modules can be taken.*

Required Textbook & Course Materials:

No required textbooks; required reading material will be provided by instructors on D2L.

Format:

This course will be taught in-person, with any exceptions announced by the instructor both in class and on D2L.

Required Technologies:

This course will make extensive use of the D2L platform at Michigan State (d2l.msu.edu) to communicate course materials of various sorts. An internet connection and device capable of downloading documents, displaying Microsoft Word and PowerPoint and Adobe PDF documents and displaying video are required. Students will have to prepare and make presentations for the class, hence ability to use and access to PowerPoint or equivalent is required.

Recommended Texts & Other Materials:

Additional recommended reading and viewing materials will be provided during the class or on D2L.

Learning Continuity Statement:

Should students be unable to attend class for an extended period of time, they should communicate this to the Course Coordinator (hoogstr3@msu.edu) and/or lead instructor for the module (grotewol@msu.edu) as soon possible once the situation becomes evident. Students should work with course instructors to develop a schedule for regular communication and reasonable timelines for completing assignments including exams.

Course Continuity Statement:

Should an instructor be required to be absent for an extended period of time, scheduling of different course modules may be adjusted accordingly. Students may communicate with either the Course Coordinator or any of the other course instructors regarding grading and assessment modifications.

Prerequisites:

Recommended background equivalent to BMB 462. For all modules except Module 1, prior completion of Module 1 is expected.

Late Work Policy:

Full credit for late submissions will only be considered if arranged with the instructor in advance of the due date. Otherwise, point penalties may be assigned or late work may not be accepted at the discretion of the individual instructor. Communication with the instructor about situations leading to late work as soon as possible is *strongly* advised.

Student Expectations:

All participants in this class are held to the standard set by MSU's Policy on Integrity of Scholarship and Grades. The policy can be read in full at the [MSU Ombudsperson's website](#).

On March 22, 2016, The Associated Students of Michigan State University (ASMSU) adopted the following Spartan Code of Honor:

“As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do.”

Disability Access:

Students must inform the instructor and course coordinator at the beginning of the semester, or as soon as reasonably possible after a situation arises during the semester, of any accommodations needed. Information related to disability access is available on the [Resource Center for Persons with Disabilities \(RCPD\) website](#). Students: to make an appointment with a specialist, call: (517) 353-9642 Or TTY: (517) 355-1293 or visit the [RCPD website](#).

Module Outline and Schedule

Assessments:

Grading for the module will be based on overall participation (25%), team assignments discussed in class (40%) and weekly homework assignments (35%) based on the topics already covered in the module and aimed at assessing basic concepts and understanding through problem-solving questions. Students are expected to attend all the lectures and site visits. Unless communicated in advance of the class by e-mail or in writing with a medical excuse, absences are not allowed and missing one or more classes without a valid justification will result in failing the course. Letter grades will be assigned at the end of the semester and will be curved based on the final distribution of student scores.

Course Schedule Outline:

The planned schedule of lecture presentations and visits to facilities is presented in the table below. Changes are possible since the course schedule depends on the availability of several facilities.

Class #	Date	Instructor	Topic
1	Tuesday, August 27	Erich Grotewold	Module introduction. Introduction to model organisms, macromolecules and their interactions, microscopy, and recombinant DNA methods.
2	Thursday, August 29	Erich Grotewold	Introduction to protein biochemistry Introduction to protein-protein, protein-nucleic acid and protein-small molecule interactions
3	Tuesday, September 3	Melinda Frame Tony Schillmiller	Visit to the Center for Advanced Microscopy Introduction to Mass Spectrometry – visit to the Mass Spectrometry Core
4	Thursday, September 5	Erich Grotewold	Team Assignment 1
5	Tuesday, September 10	Erich Grotewold	Team Assignment 2
6	Thursday, September 12	Kevin Childs Erika Lisabeth	Visit to the Genomics Core Visit to the Drug Discovery Core
7	Tuesday, September 17	Erich Grotewold	Team Assignment 3
8	Thursday, September 19	Erich Grotewold	Team Assignment 4
9	Tuesday, September 24	Ben Orlando Erich Grotewold	Introduction to protein structure analysis Course wrap-up