

## **Course Subject, Number and Title**

BIOCHEM 729.011, "Macromolecular and Cellular Electron Microscopy"

**Credits** 1

**Canvas Course URL** [TBD]

## **Course Designations and Attributes**

Graduate level research seminar course

## **Meeting Time and Location**

Fall and spring semesters; 1:00 pm – 2:00 pm Fridays, 2131 Biochemistry (420 Henry Mall)

## **Instructional Mode**

Face-to-face and/or virtual

## **Specify how Credit Hours are met by the Course**

The course involves 50 minutes of class time every week. Preparation for the class consists of critical reading of a research paper and related literature, which will take two or more hours on average per week. Each student in charge of presenting will also meet one-on-one with the instructor before the class to discuss the paper and plan their presentation.

## **Instructor**

Dr. Elizabeth R. Wright, Professor of Biochemistry, [erwright2@wisc.edu](mailto:erwright2@wisc.edu)

Dr. Robert N. Kirchdoerfer, Assistant Professor of Biochemistry, [rnkirchdoerf@wisc.edu](mailto:rnkirchdoerf@wisc.edu) (Spring)

Dr. Ci Ji (CJ) Lim, Assistant Professor of Biochemistry, [ciji.lim@wisc.edu](mailto:ciji.lim@wisc.edu) (Fall)

## **Instructor Availability**

By appointment

## **Course Description**

The field of cryo-electron microscopy (cryo-EM) continues to undergo major advances in sample preparation methods, instrumentation, software, and data analysis. These developments have led to the expansion of the field and its use in addressing structure-function questions across a broad range of specimen types and from macromolecular (nm) to atomic-level (Å) resolution. Participants will discuss recent literature in topics related to the use of cryo-EM technologies in biochemistry, cell biology, bacteriology, virology, and other sub-disciplines in the biosciences. This seminar course will review the latest advances in the field by covering topics associated with cryo-EM, cryo-ET, cryo-FIB-SEM, and micro-ED technologies; structural studies spanning from macromolecular complexes to intact cells; and correlation with other structural biology technologies. Each week, one student participant will lead the discussion on a recent publication in the field of cryo-EM. The discussion

leader will explain the background, materials and methodology, experimental results, and broader implications of the publication. The discussion leader will develop, with the course instructor, several questions for the class and pose questions during class to foster discussion.

## **Requisites**

None

## **Course Learning Outcomes**

The students are expected to learn about recent advances in cryo-EM technologies and the application of cryo-EM methods for structure determination from macromolecules to cells. Students are expected to learn how to critically analyze data and conclusions reported in research literature and present it with clarity and discuss it with peers.

## **Grading**

The class is graded with A-F scale. The grade is based on the quality of student presentations and their participation in discussions of the literature during the entire semester.

## **Exams, Quizzes, Papers & Other Major Graded Work**

The major work graded are the student presentations. The class does not have exams, quizzes or papers.

## **Homework & Other Assignments**

Students are assigned each week reading material consisting of one research paper and, frequently, additional background material (other related research papers or review articles).

## **Rules, Rights & Responsibilities**

- See the Guide's to [Rules, Rights and Responsibilities](#)

## **Academic Integrity**

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to [studentconduct.wiscweb.wisc.edu/academic-integrity/](http://studentconduct.wiscweb.wisc.edu/academic-integrity/).

## **Accommodations for Students with Disabilities**

**McBurney Disability Resource Center syllabus statement:** "The University of Wisconsin- Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty

Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.”

<http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php>

## **Diversity & Inclusion**

**Institutional statement on diversity:** “Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.” <https://diversity.wisc.edu/>