

**Course Subject, Number and Title**

BIOCHEM 919, "Synthetic Biology"

**Credits**

1

**Canvas Course URL**

[TBD]

**Course Designations and Attributes**

Graduate level research seminar course

**Meeting Time and Location**

Fall & Spring semester; 3:30pm – 4:45pm Fridays, 175 HF DeLuca Biochemistry Labs

**Instructional Mode**

Face-to-face

**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 instructors before the class to discuss the paper and plan their presentation.

**Instructors**

Dr. Vatsan Raman, Assistant Professor of Biochemistry, [sraman4@wisc.edu](mailto:sraman4@wisc.edu)

Dr. Ophelia Venturelli, Assistant Professor Biochemistry, [venturelli@wisc.edu](mailto:venturelli@wisc.edu)

Dr. Phil Romero, Assistant Professor of Biochemistry, [promero2@wisc.edu](mailto:promero2@wisc.edu)

**Instructor Availability**

By appointment

**Course Description**

Synthetic biology is a burgeoning field encompassing understanding and designing biological systems spanning from biomolecules to ecosystems. It builds on advances in molecular and cellular technologies to revolutionize biological engineering in the same way that organic synthesis transformed chemistry and integrated circuit design transformed computing. Synthetic biology has the potential to address many of society's grand challenges including: understanding human disease, sustainable biomanufacturing, medical diagnostics and therapeutics, programming mammalian cell behaviors, engineering living materials, information storage, carbon

sequestration, and energy generation. This seminar course will review latest advances in the field by covering literature including but not limited to biomolecular design, sequence-structure-function relationship, regulatory and signaling networks, metabolic engineering, interactions in microbial communities, cell-based therapeutics and genome design.

### **Requisites**

None

### **Course Learning Outcomes**

The students are expected to learn recent advances in synthetic biology. They 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 the student presentation and their participation to the discussion during the entire semester. Grades are not curved.

### **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/>