



PHOTOSYNTHESIS

Spring 2017 BMB960 - Section 001

Credits: 3

Schedule: Tuesday and Thursday 1-2:20p (tentative)

Enrolment Limit: 12 students (Course coordinator approval required)

Location: TBA

Participating Faculty will include:

Prof. David M. Kramer (BMB, **Course Coordinator**, kramerd8@msu.edu) *Light reactions and photosynthetic measurements*

Prof. Warren Beck (Chemistry) *Antenna and reaction centers complexes*

Prof. Cheryl Kerfeld (BMB) *Structural biology of the carbon concentrating mechanisms and photoprotection*

Prof. Thomas Sharkey (BMB) *CO₂ assimilation, gas exchange, photorespiration, alternative photosynthetic products*

Prof. Christoph Benning (BMB) *Energy storage in lipids, fatty acids*

Prof. Daniel Ducat (BMB) *Synthetic biology of photosynthesis*

Prof. Yair Shachar-Hill (Plant Biology) *Modeling photosynthetic carbon metabolism*

COURSE DESCRIPTION

The course will focus on the mechanisms and measurements of photosynthetic energy capture, CO₂ fixation, production of energy-rich molecules, and the limitations and possible improvements to these processes for food and fuel. The course is designed to meet the needs of MSU graduate students with projects related to photosynthesis and will integrate knowledge across a range of disciplines, ranging from chemistry and biophysics of light capture, metabolisms, bioenergy and cell biology, through synthetic biology and gene discovery. Each set of lectures/discussions will start with background and move to higher-level discussion based on literature and applications (e.g. scientific measurements, data analyses etc.). Some sections will include hands-on interactions with scientific instruments, data analyses and interpretations. Course evaluation will be by research-related presentations and a final poster session that demonstrate the integration of new knowledge of photosynthesis in ongoing research projects.