**Module title: Molecular Mechanisms of Photosynthesis**

**Lecturer:** A. Einali (assistant prof.)

**Assessments:** 40% mid-term exam
50% final exam
10% Quiz

**References:**
**1. Plant Physiology, 2002**
Lincoln Taiz and Eduardo Zieger
**2. Photosynthesis: Molecular, Physiological and Environmental Processes, 1993**
David W. Lawlor
**3. Photosynthesis: Physiology and Metabolism, 2000**
Leegood, Richard C., Sharkey, Thomas D., von Caemmerer, Susanne

## Module subjects:

### 1. The Light Reactions

1st week: General concepts, Photophysiology
2nd week: Light harvesting and energy capture in photosynthesis
3rd week: Photosynthetic Pigments, Absorption and action spectrum
4th week: Architecture of the photosynthetic apparatus
5th week: Electron and proton transport in non-oxygenic photosynthetic organisms
6th week: Organization of light-absorbing antenna systems
7th week: Key experiments in understanding photosynthesis, molecular structure of photosystems
8th week: Electron and proton transport in oxygenic photosynthetic organisms, *mid-term exam*

### 2. Repair and regulation of the photosynthetic machinery

9th week: Non-photochemical quenching
10th week: Mehler reaction, Asada-Halliwell pathway

### 3. Photophosphorylation

11th week: Photophosphorylation, chemiosmotic mechanism

### 4. Carbon Reactions

12th week: The Calvin cycle
13th week: The regulation of Calvin cycle
14th week: The c2 oxidative photosynthetic carbon cycle (photorespiration)
15th week: The C4 carbon cycle and types
16th week: Crassulacean acid metabolism (CAM), *preparation for final exam*