Course description:

Ongoing environmental change has profound impacts on plants in terrestrial ecosystems around the world, with important implications for ecosystem services such as food security, forest production, biodiversity, livelihood in low-income regions, and the regulation of biogeochemical cycles, hydrology and climate. This course deals with the responses of plants (mostly crops and forests) to global environmental change factors such as rising CO₂, warming, tropospheric ozone, and nitrogen deposition. Main emphasis is on ecophysiological plant responses and how they affect ecosystem processes such as productivity, carbon balance and water cycling. The representation of plants and vegetation in ecosystem and climate models will also be covered to some extent. The course content will suit Ph D students with emphasis on plant ecology/ecophysiology as well as those with a broader interest in land–atmosphere interactions and modelling.

Responsible department and other participation departments/organisations:
Dept of Biological and Environmental Sciences
ClimBEco research school (http://www.cec.lu.se/climbeco-graduate-research-school), in which the University of Gothenburg participate
Plant–Atmosphere Interactions in a Changing Climate, 3-4 hp  

Third cycle education

1. Confirmation  
Disciplinary domain: Science  
Department in charge: Department of Biological and Environmental Sciences

2. Position in the educational system  
Elective course; third-cycle education.

3. Entry requirements  
Admitted to third cycle education.

4. Course content  
The course provides state-of-the-art knowledge on responses of plants (crops, forests) to global environmental change factors such as rising CO2, tropospheric ozone, warming, and nitrogen deposition. Main emphasis is on ecophysiological plant responses and how they affect ecosystem processes such as primary production, carbon balance and water cycling. The representation of plants and vegetation in ecosystem and climate models will also be covered to some extent.

The course will consist of three parts: (i) preparatory literature studies (1 hp), (ii) lectures and discussion seminars during five days in Göteborg (2 hp), and (iii; optional) individual Ph. D. student projects, based on their own data and resulting in written reports (1 hp). The course gives 3 (part i + ii) or 4 (all parts) credits for Ph. D. students.

5. Outcomes  
After completion of the course the Ph.D. student will have ...

1. Knowledge and understanding  
   - knowledge on how organisms physiologically respond to different environmental factors  
   - understanding of how plant responses to key global change factors (e.g. temperature, carbon dioxide, tropospheric ozone) affect ecosystem processes such as primary production and hydrology
2. Skills and abilities
   - experience in using a simplified ecosystem model to explore vegetation response to changes in environmental conditions

3. Judgement and approach
   - experience in extracting the key content of scientific articles within the research field and discussing it with others

6. Required reading
A list of literature to read to prepare for the course will be provided well in advance (at least two months before the course)

7. Assessment
PhD students will be assessed by their participation in three group discussion in which teachers and participants closely interact. If they chose to do an individual project after the week with lectures and seminars (part iii under point 4 above)

8. Grading scale
The grading scale comprises Fail (U), Pass (G)

9. Course Evaluation
The course evaluation is carried out together with the Ph.D. students at the end of the course, and is followed by an individual, anonymous survey. The results and possible changes in the course will be shared with the students who participated in the evaluation and to those who are beginning the course.

10. Language of instruction
The language of instruction is English.