

4.0 credits

37.5 h + 15.0 h

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| Teacher(s) : | Bertin Pierre ; Draye Xavier (coordinator) ; |
| Language : | Français |
| Place of the course | Louvain-la-Neuve |
| Inline resources: | Icampus |
| Prerequisites : | Mandatory skills in plant biology, plant physiology and genetics acquired during the Bachelor of bioengineer or equivalent |
| Main themes : | General principles of ecophysiology of major crops Biomass production and resources capture Passage from the isolated plant to the plant population Plant growth and development, yield components Morphology, phenology, physiological factors, biotic and abiotic stresses Application to several temperate, tropical and ubiquitous crops |
| Aims : | <p>a. Contribution of the activity with regards to the referential of leaning outcomes</p> Control a pool of scientific knowledge in the field of plant production (M1.1, M1.2, M2.2) Control a pool of knowledge in the field of bioengineering through a quantitative approach, facing a complex problem of agronomy at the scales of the plant and the field (M2.4) Apply a rigorous, innovative and systematic scientific approach in order to deepen a research problem in the field of crop production (M3.3, M3.4) |
| Evaluation methods : | Written examination |
| Teaching methods : | Oral teaching with case studies Field visits In silicomodelling |
| Content : | 1. The plant in terms of supply and demand Generic scheme of a plant. Development, morpho-genetic sequences. Approach in terms of supply and demand. Principles of yield constitution 2. light interception, photosynthesis and allocation From the leaf to the canopy. Photosynthesis efficiency. Dry biomass distribution 3. Limiting factors and sustainable yields. Water-driven limitation. Nitrogen-driven limitations. Resources capture and yields 4. Modellingof biomass production Exercise on genotype-environment interactions 5. Temperate and ubiquitous major crops: maize, wheat, sugar beet, potato Morphology. Growth and development. Yield parameters 6. Tropical major crop: rice Morphology. Growth and development. Yield parameters. Ecology: soil, climate, abiotic stresses. Crop management |

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| <p>Bibliography :</p> | <p>Mandatory instruction material Powerpoint slides available on icampus</p> <p>Additional lectures Hay and Porter, 2006. The physiology of crop yield Hay RKM and Walker AJ, 1989. An introduction to the physiology of crop yield. Longman, Essex. 292 p. Smith DL and Hamel C, 1999. Crop yield. Physiology and processes. Springer, Heidelberg. 504 p.</p> |
| <p>Cycle and year of study :</p> | <p>> Master [120] in Agricultural Bioengineering > Master [120] in Environmental Bioengineering</p> |
| <p>Faculty or entity in charge:</p> | <p>AGRO</p> |