


4.00 credits

22.5 h + 22.5 h

Q2

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| Teacher(s) | Alonso Alice (compensates Vanclooster Marnik) ;Javaux Mathieu (coordinator) ;Vanclooster Marnik ; |
| Language : | French |
| Place of the course | Louvain-la-Neuve |
| Learning outcomes | |
| Evaluation methods | The students implement a mini-project related to their home watershed |
| Teaching methods | Theoretical course: lectures in the auditorium, supported by video clips. Exercise part: Exercises in the computer room, using open source software (Python, GEE, QGIS-SWAT, WEAP, AquaCrop ...) Due to the limited capacity of the auditoriums (COVID-19 crisis), some courses can be given at a distance |
| Content | <p>Part 1: Principles of environmental modeling.</p> <ul style="list-style-type: none"> - What is a model: definition and modeling of a system, the definition of a model, scientific modeling stage. - Environmental models: typology of models, characteristics associated with models (spatial and temporal resolution, etc). - Calibration and validation of models, sensitivity analysis, uncertainties. - Ex-ante and ex-post simulation. - Optimisation. <p>Part 2: Application of modeling to water management and food production.</p> <ul style="list-style-type: none"> - Yield prediction model based on water availability (e.g. AquaCrop) - Water allocation model (e.g. WEAP) <p>For both types of models, the student will be required to:</p> <ul style="list-style-type: none"> - Understand the structure of the model and its limitations. - Parameterise the models using generic data (climate databases, remote sensing, etc.). - Use the model to carry out ex-ante simulations, applied to a context of southern countries, taking into account different possible evolution scenarios (climate, population, food demand). <p>Part 3: Decision-making in complex problems.</p> <ul style="list-style-type: none"> - Multi-criteria analysis methods. - Application to modelling results. |
| Inline resources | <ul style="list-style-type: none"> - Presentations on Moodle platform - Manual of reference software |
| Faculty or entity in charge | AGRO |

| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Learning outcomes |
| Advanced Master in Water-Energy-Food Nexus | NEEA2MC | 4 | |  |