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| 3.0 credits | 22.5 h + 7.5 h | 1q |
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| Teacher(s) :                 | Fichet Thierry (coordinator) ; Goosse Hugues ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Language :                   | Français                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Place of the course          | Louvain-la-Neuve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Inline resources:            | Notes and slides on icampus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Prerequisites :              | Physics courses in BAC1 and BAC2<br><i>The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Main themes :                | Concepts covered in class:<br>a / Exchanges of heat and mass in the lower layers of the atmosphere, inside the plant communities and in the upper soil layers: natural radiation, interaction of electromagnetic radiation with plants, conduction and convection, atmospheric humidity, rainfall, water flow in the soil-plant-atmosphere, potential and actual evapotranspiration. b / Climate dynamics: structure of the atmosphere, vertical profiles in the lower layers, lateral movements, atmospheric circulation, clouds and precipitation, greenhouse effect, impact of landscape characteristics, dynamic and thermal action of the topography and vegetation. c / Influence of human activities on climate and impacts of global climate change on agriculture.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Aims :                       | a. Contribution de l'activité au référentiel AA (AA du programme)<br>Cohérence des AA cours en regard de ceux du programme<br>B1.1., B1.3., B1.5., B1.6., B2.3., B3.5., B3.6., B3.7.<br><br>b. Formulation spécifique pour cette activité des AA du programme (maximum 10)<br>At the end of this activity, the student is able to:<br>' describe the key elements of the climate system and their interactions;<br>' justify the standard approximations used in climatology and solve simple problems using these approximations;<br>' Synthesize current theories regarding the mechanisms governing natural climate variability and the impact of human activities on climate<br>' to criticize forecasts and climate projections to determine their robust features and limitations;<br>' to estimate the impact of general climate and its variations in agronomy from the local to the global scale;<br>' to estimate in simple cases the impact of soil characteristics and vegetation cover on climate and its variations.<br><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i> |
| Evaluation methods :         | Written exam based on theoretical developments and solving of problems.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Teaching methods :           | Lectures and exercises.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Content :                    | 1. Introduction<br>2. Radiation<br>3. Exchanges of heat and mass by conduction and convection<br>4. Watercycle<br>5. Atmosphere and climate<br>6. Topoclimates and microclimates<br>7. Climatology and agroclimatology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Bibliography :               | Support(s) de cours obligatoires<br>Notes and slides on icampus<br>Supports de cours facultatifs<br>Guyot Gérard (1997) Climatologie de l'environnement. De la plante aux écosystèmes. Masson, Paris.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Faculty or entity in charge: | AGRO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Programmes / formations proposant cette unité d'enseignement (UE) |           |         |                          |                                                                                     |
|-------------------------------------------------------------------|-----------|---------|--------------------------|-------------------------------------------------------------------------------------|
| Intitulé du programme                                             | Sigle     | Credits | Prerequis                | Acquis d'apprentissage                                                              |
| Minor in Geography                                                | LGEOG100I | 4       | -                        |  |
| Master [120] in Biology of Organisms and Ecology                  | BOE2M     | 3       | -                        |  |
| Additionnal module in Geography                                   | LGEOG100P | 4       | -                        |  |
| Minor in Scientific Culture                                       | LCUSC100I | 3       | -                        |  |
| Master [120] in Environmental Science and Management              | ENVI2M    | 3       | -                        |  |
| Master [60] in Environmental Science and Management               | ENVI2M1   | 3       | -                        |  |
| Bachelor in Bioengineering                                        | BIR1BA    | 3       | <a href="#">LBIR1210</a> |  |