UCLouvain

lclim2280

2022

Operational meteorology

8.00 credits		Q2

Language :	English
Place of the course	Louvain-la-Neuve
Prerequisites	1) Previous knowledge : This course starts from a basic knowledge of meteorological processes. The following chapters of the text book ' Meteorology Today' - C.D. Ahrens are useful study material : • Chapter 1 : The earth and its atmosphere • Chapter 2 : Energy • Chapter 5 : Atmospheric moisture • Chapter 6 : Condensation • Chapter 7 : Stability and cloud development • Chapter 8 : Precipitation • Chapter 9 : The atmosphere in motion • Chapter 11 : Wind • Chapter 13 : Midlatitude cyclones 2) Language :The course is given in English, so a good level in listening English as a satisfactory level in written and spoken English is required.
Main themes	•
Learning outcomes	**At the end of this learning unit, the student is able to :** Firstly, this module is dedicated to the interpretation and the analysis of surface and upper meteorological maps. Secondly, the goal of this module is to acquire several valuable techniques and working methods for the forecasting of the main parameters and/or weather phenomena like wind and temperature, the formation of fog and the forecasting of clouds and precipitation. 1 • At the end of the module, the students should be able to :Identify and explain the different elements found on a surface map • Perform an analysis of the atmosphere on the main standard levels ; recognize the main atmospheric patterns and follow their developments • Understand and apply correctly the forecasting techniques in exercises and case studies : choose and apply the appropriate methods for forecasting temperature (Tmin,Tmax , Tgrass,'), wind (speed, direction, gusts,'), clouds and precipitation (type, amount,') and the formation and formation/dissipation of fog
Evaluation methods	A presentation of a case study (weight is **40%** of the total score). A written exam (weight is **60%** of the total score) will consist of two parts : - theory (30%) - practice ' open book (30%)
Content	**a. <u>Revision basic meteorology</u>** · Wind, jet stream, thermodynamics, clouds, air masses, frontal systems, pressure centres, **b. <u>Analysis meteorological maps</u>** · Analysis of surface maps, upper maps (500 hPa, 700 hPa, 850 hPa, 925 hPa, ') and additional maps (temperature, humidity, thetaw, ') **c. <u>Wind & temperature forecasting</u>** · Wind forecasting (direction, speed, gusts, ') · Heating and cooling in the atmosphere · Temperature forecasting (maximum temperature, minimum temperature, ') · Exercises **d. <u>Clouds & precipitation forecasting</u>** · Profile of clouds · Stratiform clouds · Convective clouds · Exercise

	e. **Fog forecasting** · Fog identification and forecasting techniques · Fog identification on satellite images · Exercises **f. Practice** · Meteorological briefings · Case studies
Other infos	The cours is given in English during 3 full weeks at the "Wing Meteo" based at the Beauvechain military camp. Free accommodation and cheap catering are available at the base. The instructors are members of the pemanent staff of the Wing Meteo. The cours generally takes place in April or May, according to a schedule communicated by the UCLouvain spokeperson early in the course of the first quadrimester.
Faculty or entity in charge	GEOG

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Geography : Climatology	CLIM2M	8		