UCLouvain

lbio2340

2024

Didactics and Epistemology of Biology

4.00 credits	37.5 h	Q1 and Q2

This learning unit is not open to incoming exchange students!

Teacher(s)	De Kesel Myriam ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	• LSCI2320 must have been taken in Q1 (S1 to S4). • The knowledge of the discipline(s) to be taught, i.e., the knowledge of biology related to the 2nd and 3rd grades of secondary education in general sciences. • Clear and correct communication in the language of instruction both orally and in writing. • The interpersonal skills and professional postures normally expected of a teacher.
Main themes	1. Didactic specificities of a teaching sequence in biology at the 2nd level (D2) and the 3rd level (D3) 2. Experimentation, the scientific approach and the investigative approach in D2 and D3 3. Problematization and modeling in D2 and D3 4. The importance of epistemology; the major epistemological currents 5. Epistemological, critical, orienting, interdisciplinary and creative approaches 6. Assessment 7. Difficult concepts to teach in biology at D2 and D3
Learning outcomes	**At the end of this learning unit, the student is able to :** **Contribution of the teaching unit to the AA program reference framework** With regard to the competency framework of the Biology program, this teaching unit contributes to the development and acquisition of the following competencies AA1.1 / AA2.2 / AA2.3 / AA2.4 / AA2.6 / AA2.7 / AA2.8 / AA3.1 / AA3.2 / AA3.3 **Learning outcomes at the end of the course** 1 • Exploit the disciplinary didactics and epistemology that guide pedagogical action in D2 and D3 biology courses, • Transpose scholarly knowledge into academic knowledge in biology at D2 and D3, • Design and plan teaching-learning situations in biology according to the cognitive abilities of the students and the intentions pursued, • Identify difficult concepts to learn in biology and remove these barriers to learning, • Evaluate student learning in terms of knowledge and skills, • Demonstrate mastery of new disciplinary and interdisciplinary knowledge to be taught in D2 and D3, • Explore new disciplinary, interdisciplinary and technological pedagogical approaches and tools (epistemological, critical, orienting, interdisciplinary and creative approaches), • Design, conduct and evaluate an experimental sequence, an investigative approach, • Adopt a reflective attitude on one's teaching practices based on didactic and pedagogical principles as well as on educational research, • Encourage students to take a critical look at the construction of science (via, for example, the construction of models and problematization).

Evaluation methods	Students enrolled in the entire teaching unit (LBIO2340 C and LBIO2340 D) are assessed as follows: Activity 1: Written test (November) on basic concepts to be taught to D2 biology students: 10% of total grade Activity 2: Biology laboratory activities: 15% of total grade Activity 3: Individual written assessment (January) on concepts covered in didactics and epistemology of science and biology in D2: 25% of total grade Activity 4: Written test (February) on the basic concepts to be taught in biology in D3: 5% of total grade Activity 5: Group work on a theme to be taught in D3: 15% of final grade Activity 6: Individual or paired oral assessment (June) on the transfer of concepts in didactics and epistemology of science and biology: 30% of total grade Translated with DeepL.com (free version) Each of the 6 activities must be passed with a mark equal to or higher than 10/20 for this UE to be passed. The absorbent mark principle is applied to this UE. Attendance to this course is required. In accordance with article 72 of the General Regulations for Studies and Examinations, the course instructor may propose to the jury that a student who has not attended at least 80% of the courses during the January, June or September session be refused registration.
Teaching methods	The teaching activities are those recommended in secondary education: group work, lectures, flipped classes, laboratories... mainly in co-construction with the students.
Content	This teaching unit consists in "equipping" students to become future biology teachers at D2 and D3. The aim is not only to present the elements of didactics related to the teaching of biology but also to ensure the transfer and appropriation of these tools by future teachers.
Inline resources	on MoodleUCL, acronym LBIO2340. The site contains the documents presented and used during the courses and allows the deposit of the students' productions.
Bibliography	Des ouvrages en relation avec les disciplines enseignées et avec la didactique seront présentés lors des cours.
Other infos	LBIO2340 C + D is a required didactic course for students enrolled in the biology aggregation and an elective for students enrolled in the physics or chemistry aggregation. It can only be taken if LSCI2320 has been previously taken. The course LBIO2340 C is given in Q1 during S8 to 14 at a rate of 2 hours per week (15 hours equivalent to 2 credits). LBIO2340 D is given in Q2 for 2 hours per week (22.5 hours equivalent to 2 credits).
Faculty or entity in charge	CAFC

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Teacher Training Certificate (upper secondary education) - Physics	PHYS2A	4		
Master [120] in Biology of Organisms and Ecology	BOE2M	4		
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	4		
Teacher Training Certificate (upper secondary education) - Biology	BIOL2A	4		
Master [120] in Chemistry	CHIM2M	4		
Master [120] in Physics	PHYS2M	4		
Teacher Training Certificate (upper secondary education) - Chemistry	CHIM2A	4		