

## Molecular Toolbox (C003817)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

**Course size** *(nominal values; actual values may depend on programme)*  
**Credits** 4.0      **Study time** 110 h      **Contact hrs** 45.0 h

### Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	English	Gent	lecture	25.0 h
			seminar: practical PC room classes	10.0 h
			practicum	10.0 h

### Lecturers in academic year 2020-2021

Kyndt, Tina	LA25	lecturer-in-charge
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### Offered in the following programmes in 2020-2021

<a href="#">International Master of Science in Agro- and Environmental Nematology</a>	<b>crdts</b>	<b>offering</b>
	4	A

### Teaching languages

English

### Keywords

DNA structure, gene expression, gel electrophoresis, PCR, cloning, restriction enzyme, hybridisation, DNA sequence, DNA polymorphisms, genetic engineering.

### Position of the course

Basic course in molecular biology as preparation to

- Nematode systematics and molecular phylogenetics
- Molecular aspects of plant-nematode interactions

The aim of this course is to give the student knowledge of and insight in gene structure, gene expression and the most widely used molecular techniques

### Contents

- 1 DNA and gene structure, gene expression
- 2 Basic molecular biology techniques: restriction enzymes, RFLP, cloning, hybridisation, RNA and protein analysis
- 3 DNA-sequence analysis and PCR
- 4 Different methods for the detection of DNA polymorphisms
- 5 Genetic engineering
- 6 RNAi
- 7 High throughput methods (micro-array, next-generation sequencing)

### Initial competences

Basic knowledge biology and biochemistry.

### Final competences

- 1 Have insight into the structure of DNA, RNA, and proteins and the central dogma of molecular biology.
- 2 Explain the technical steps executed in the basic techniques used for molecular analysis.
- 3 Describe the purpose and the (dis)advantages of the basic techniques used for molecular biology.
- 4 Choose and justify an appropriate molecular technique for a certain purpose (routine analysis, diagnostics, experiment, ...).

**Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

**Conditions for exam contract**

This course unit cannot be taken via an exam contract

**Teaching methods**

Lecture, practicum, seminar: practical PC room classes

**Extra information on the teaching methods**

Practical exercises:

2 lab sessions: DNA-extraction, PCR, restriction, agarose gel electrophoresis, polyacrylamide gel electrophoresis for protein analysis; evaluated by participation

2 computer sessions; evaluated by small report

COVID-19 Due to the corona crisis the following one off change(s) will apply in AY 2020-21: online lectures via Bongo

**Learning materials and price**

- Powerpoint presentation
  - Syllabus
- 10 euro

**References**

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**Course content-related study coaching**

by email or personally (after the class or on appointment)

**Evaluation methods**

end-of-term evaluation

**Examination methods in case of periodic evaluation during the first examination period**

Oral examination

**Examination methods in case of periodic evaluation during the second examination period**

Oral examination

**Examination methods in case of permanent evaluation**

Participation, report

**Possibilities of retake in case of permanent evaluation**

examination during the second examination period is not possible

**Extra information on the examination methods**

Oral examination with written preparation

**Calculation of the examination mark**

- 80% on examination
- 20% on participation and report of practical exercises.

Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.