GHENT UNIVERSITY

Course Specifications

From the academic year 2020-2021 up to and including the academic year

Sustainable Bioprospecting of Natural Products (C004251)

Due to Covid 19, the education and assessment 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 6.0 **Study time 168 h** **Contact hrs** 55.0h

Course offerings in academic year 2021-2022

A (semester 1) English Gent

Lecturers in academic year 2021-2022

Romano, Anabela FAR001 lecturer-in-charge

Offered in the following programmes in 2021-2022	crdts	offering
International Master of Science in Marine Biological Resources	6	A

Teaching languages

English

Keywords

Biological activity; Biological diversity; Conservation; Natural resources; Over-exploitation; sustainability.

Position of the course

Contents

- Biological diversity, structural diversity and biological activity of natural products from marine, plant and animal life;
- Main classes of natural products and main biosynthetic pathways;
- Prospecting bioactive compounds from natural resources;
- Evaluation of biological activity in vitro and in vivo;
- Toxicity;
- Use of natural products in medicine, veterinary, agriculture, food industry, environment and cosmetics;
- Examples of processes for the production of biologically active natural products by biotechnological methods;
- Examples of new pharmaceutical products derived from natural products at various stages of clinical development and commercialization;
- Examples from naturally derived compounds for potential bioactivity will be studied, namely compounds with anti-inflammatory, antioxidant, antimicrobial, antiviral, antifungal and/or anti-tumour activity, anti-thrombotic, and anti-obesity activities, as well as drugs for cardiovascular system and central nervous system.
- Over-exploitation of natural resources and the role of biotechnology in the sustainability of their exploitation;
- Regulation and biosafety.

Initial competences

No pre-requisites

Final competences

1 Recognize the importance of natural products in the current scenery.
2 Recognize the importance that the discovery of new natural products can have in areas such as medicine, veterinary, agriculture, food industry, environment and cosmetics.

3 Know the main research methodologies used in bioprospecting natural products.
4 To know examples of production processes of biologically active natural products by biotechnological methods.
5 Develop skills of application, analysis and synthesis of knowledge.
6 To develop student competencies such as deep mastery of challenging content, critical thinking, complex problem-solving, effective communication and collaboration, and self-direction.

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

Excursion, Lecture

Extra information on the teaching methods

Theoretical classes, theoretical-practical and field trips, provide the tools that allow students to understand the objectives and strategies of the curricular unit. The contents of the program are exposed at lectures using the projection of slides and films, and illustrative examples of application of the fundamental concepts will be presented. In the theoretical-practical classes several case studies and scientific papers will be analyzed and discussed. In the field trips, visits to laboratories and companies will be made.

Learning materials and price

Resources are made available free of charge via the tutorial platform.
Students are encouraged to use the Web of Knowledge to collect bibliography

References

The literature will be mostly based on leading scientific journal devoted to natural products and bioprospecting available via web of science.
The professor will recommend the most suitable papers for each topic of the program. Nevertheless, the students will be encouraged to develop their capacities to search updated and relevant scientific information in the area.

Some books recommended:
Roessner U., Dias D.A. (Eds.) (2013) Metabolomics Tools for Natural Product Discovery. Methods and Protocols, ISBN 978-1-62703-577-4, Springer Protocols
Dewick P.M. (2009). Medicinal Natural Products: A Biosynthetic Approach, 3rd Edition, Wiley & Sons
Bhat S.V., Nagasampagi B.A., Meenakshi S. (2005) Chemistry of Natural Products, ISBN: 3-540-40669-7, Springer, Berlin
Hans J.R. (2003) Natural Products: The Secondary Metabolites. ISBN: 978-0-85404-490-0, Ed. EW Abel, RS.C

Course content-related study coaching

Tutorials are provided as requested for coaching or problem resolution. 2h per week are set aside for resolution of problems students may have.

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Written examination with multiple choice questions, Written examination with open questions

Examination methods in case of periodic assessment during the second examination period

Written examination with multiple choice questions, Written examination with open questions

Examination methods in case of permanent assessment

Report, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

- Written examination with open questions and multiple-choice questions;
- the assessment of a written work about a topic of the syllabus, its oral presentation and discussion.

Calculation of the examination mark

The examination mark will be calculated as follows:

- Written examination with open questions and multiple choice questions (60%);
- the assessment of a written work about a topic of the syllabus, its oral presentation and discussion (40%).