

UNIVERSITY OF GÄVLE

Faculty of Engineering and Sustainable Development

Syllabus

Invasive Alien Species in a European Perspective

Invasiva arter i ett europeiskt perspektiv

6.0 Credits

Finalized by: Akademin för teknik och miljö, 2024-02-27

Valid from: Spring semester 2024 (2024-01-15)

Code: BIA000

Level within study regulation: Second cycle

Main field of study with advanced study: BIAXX Biology - A1N Second cycle, has only first-cycle course/s as entry requirements

Subject group: BI1 Biology

Disciplinary NA Natural sciences 100%

domain:

Grading scale: FA Seven-grade scale

Objectives

After completion of the course the student should be able to

1. describe and connect the basic concepts of invasive species (IAS) ecology, causes of invasions, and their impact on ecosystem functions
2. appraise routes, vectors, and entry routes for invasions (pathways of introduction and spread)
3. compare and contrast invasion hypotheses and the dynamics of invasions
4. describe methods for risk assessment in IAS management in a European and global context
5. categorize and appraise methods for the detection and monitoring of IAS including novel and emerging techniques
6. classify and contrast different case studies for the control and management of IAS in terrestrial and aquatic environments
7. evaluate how IAS can be monitored by the use of smart tools by active engagement by the public through Citizen Science
8. interpret societal understanding of National and European legislation and its implementation on IAS
9. demonstrate how society can contribute to IAS management.

Content

General introduction to concepts in ecology, biodiversity and invasive alien species (IAS)

Causes, vectors and entry routes for invasions

Scientific hypotheses and dynamics of invasions
Impact of invasions on ecosystem function
Importance of IAS in the world
Case studies of organisms from different European countries and habitats
Management of IAS. Prevention, control and mitigation
Detection and monitoring of IAS using Earth observation and DNA-based data
Risk forecasting and assessment
The effect of climate change and society (e.g. public perception) on spread and establishment of IAS
Societal ramifications of IAS
Citizen science as part of a solution
Policies and legal framework governing invasions – both national and European
Connectivity among stakeholders
Development of communication strategies around IAS

Teaching

Lectures, laboratory sessions, exercises, seminars and excursions.

Attendance in laboratory sessions, excursions and seminars is compulsory.

Entry requirements

A first cycle degree comprising at least 180 ECTS credits in the main field of study Biology, Ecology, Environmental Sciences, Agriculture, Law, Engineering, Landscape Architecture, Forestry, Veterinary Sciences, Biotechnology, Biogeology, Communication Sciences or Geographical Information Systems or equivalent, and English language proficiency equivalent to the Swedish upper secondary school English course 6.

Examination formats

Written, practical and oral examinations

0010 Theoretical background to invasive alien species. Learning objectives 1-3, grades Fail, Pass, Pass with distinction

0020 Management of invasive alien species. Learning objectives 4-6, grades Fail, Pass, Pass with distinction

0030 Invasive alien species and society. Learning objectives 7-9, grades Fail, Pass, Pass with distinction

Sustainable environment

A The majority of the course content deals with sustainable development

Modules	Theoretical background to invasive alien species, 1.5 Credits 0010 UV Three-grade scale
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Management of invasive alien species, 2.5 Credits

0020

UV Three-grade scale

Invasive alien species and society, 2.0 Credits

0030

UV Three-grade scale