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Advanced population ecology (3BL2312)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Master en biologie	Cours: 28 pg	Voir ci-dessous	3

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

Période d'enseignement:

- Semestre Printemps

Equipe enseignante

Ellen C. Martin

Contenu

This course introduces students to the theory and practice of population dynamics. It focuses on the key concepts, methods, and mathematical models used by fisheries, plant, and wildlife biologists to measure and predict changes in populations. In this course, we cover five advanced concepts in Population Ecology:

1. Introduction, Review of basic concepts, Core Theory & Dynamics
2. Demographic Models & Matrix Population Modelling
3. Spatial Population Ecology & Movement Dynamics
4. Species interactions
5. Prediction, Retrospection, and Real-World Applications

Forme de l'évaluation

The assessment is an internal evaluation and is composed of three parts:

1. Student-led scientific paper discussion (20% - pass/fail)
2. Individual student project report (50% - graded). Every 24 hour period the report submission is late, students are penalized 5%.
3. Individual student project presentation (30% - graded)

Modalités de rattrapage

Retakes will be considered on a case by case situation with the course instructor.

Documentation

Course PDFs and course readings / scientific literature will be available on Moodle. Course recordings of theoretical lectures will be available. Student led discussions, student presentations, and computer lab sessions will not be recorded.

Pré-requis

Basic biology, basic ecology, basic statistics, R software

Forme de l'enseignement

1. Theoretical lectures, 2. Student-led scientific paper discussions, 3. In class computer labs

Objectifs d'apprentissage

Au terme de la formation l'étudiant-e doit être capable de :

- Expliquer core theories of animal population ecology, including density dependence, stochasticity, and life-history strategies, and their relevance to conservation.
- Appliquer theoretical and empirical knowledge to produce coherent interpretations of population dynamics.
- Analyser a scientific article to identify the experimental design, analysis and conclusion. On a more advanced level, to be able to evaluate the quality of these aspects.
- Communiquer scientific ideas clearly, accurately, and effectively in oral, written, and visual formats.
- Interpréter population-level ecological processes using mathematical and graphical methods.
- Développer clear, testable hypotheses with predicted demographic outcomes.

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- Formuler biologically meaningful research questions in population ecology, grounded in ecological theory and empirical literature.
- Identifier relevant scientific questions in population ecology.

Compétences transférables

- Utiliser quantitative data interpretation
- Pratiquer information literacy and evidence evaluation
- Développer critical analysis and scientific reasoning