CONCEPT MSc Course: Methods in Biodiversity Analysis 2018

27 November -- 22 December

Naturalis Biodiversity Center

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| Place: Sylvius Building  Room 1.4.01/06  **Except**:  Dec. 14-16 Room 1.4.11/16  21-22/12 Free to prepare for examination  23/12 Evaluation: room 1.4.11/16  Examination: room 1.4.11/16 | Course times: 9.00 – 12.30 h.  13.30 – 17.00 h.  Lecture times: I: 9.00 - 9.45 h.  II: 10.00 - 10.45 h.  III: 11.15 – 12.00 h.  IV: afternoon, no fixed time  Breaks: 9.45 – 10.00 h.  10.45 - 11.15 h.  12.30 - 13.30 h. |
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Lecturers:

Pim Arntzen Isolde van Riemsdijk

Steve Donovan Martin Rücklin

Lars van den Hoek Ostende Peter van Welzen

Peter Hovenkamp (coordinator) Niels Raes

Jozsef Geml

**PROGRAM**

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| **Date** | **Theme** | **Lect.** | **Topics** | | **Lecturers** | **Practical** |
| 27-11 | Tools of the trade: methods for phylogeny  reconstruct-ion | I  II-IV | Introduction to the course  Introduction to phylogenetic analysis,  workflow for a phylogenetic analysis  Clevering Oratie: tussen 15.00-18.00 onderwijs vrij | | all teachers  Hovenkamp/Van Riemsdijk | Character handling with Mesquite  Basic alignment  Basic phylogenetic analysis |
| 28-11 | I-II  III | Maximum likelihood:  Theory and practice  Tree evaluation | | Hovenkamp/Van Riemsdijk | Models and model testing  Phylogenetic analysis using likelihood criterion |
| 29-11 | I  II | Bayesian methods | | Hovenkamp/Van Riemsdijk | Bayesian analysis |
| 30-11 | I-II  III | Molecular dating  Character evolution | | Hovenkamp/Van Riemsdijk | Analysis with BEAST  Character reconstructions |
| 1-12 |  | No lectures | |  | Preparation of report.  Presentations |
| 4-12 | Phylogeo-graphy | I | Phylogeography: isolation and gene flow | | Arntzen/Van Riemsdijk | Simulation experiments on isolation and gene flow |
| 5-12 | I-II | Phylogeography | | Geml/Van Riemsdijk | Phylogeographic analysis of haplotype data |
| 6-12 | Paleontology | I-II | Mass extinctions | | Donovan/??? | Fossils, rocks and taphonomy illustrated in Leiden buildings |
| 7-12 |  | I-II | Phylogeny and the fossil record | | Rücklin/Hovenkamp | Phylogeny and the fossil record |
| 8-12 |  | I  II | Phylogeny and the fossil record | | Rücklin/Hovenkamp | Phylogeny and the fossil record |
| 11-12 |  | I  II | Biodiversity major patterns in time | | Hoek Ostende/Rücklin | Large scale patterns in time |
| 12-12 |  | I  II | Processes in Biodiversity | | Hoek Ostende/Rücklin | Large scale patterns in time |
| 13-12 | Biogeography | I  II | Introduction  Georeferencing | | Van Welzen/Raes | Creating maps |
| 14-12 | Ecological biogeography | I  II | Distribution modelling | | Raes/Van Welzen | Distribution modelling |
| 15-12 | I  II | Distribution modelling in past  Distribution modelling in future | | Raes/Van Welzen | Distribution modelling |
| 18-12 | Historical biogeography | I  II | Historical Biogeography | | Van Welzen/Van Riemsdijk | Historical Biogeography |
| 19-12 | I  II | Comparing phylogenies  Co-evolution | | Van Welzen/Van Riemsdijk | Historical Biogeography  Co-evolution |
| 20-12 | Question time | I | | Opportunity for evaluation and questions about the examination.  Otherwise free to prepare for the examination | | |
| 21-12 | No lectures |  | | Free to prepare for examination | | |
| 22-12 | Examination |  | | **11.00 to 13.00** | | |