PALEOBRYOLOGY

Objectives:

- The course aims to provide a space for exchange among researchers, students, and anyone interested in the evolutionary history of bryophytes and, in particular, their fossil record.
- Additionally, the course seeks to provide conceptual and methodological tools that will enable:
    - Paleobotanists, palynologists, paleopalynologists, and geologists to incorporate bryophytes into their observations, descriptions, and ecological and paleoecological interpretations.
    - Bryologists to integrate information from the fossil record into phylogenetic studies.
    - Undergraduate and technical-level students to acquire general knowledge and practical tools in the fields of bryology and paleobryology.

Instructors: Drs. Adolfina Savoretti and Michael Ignatov

Academic Coordinator: Dr. Cynthia González

Collaborators: Juan Bernardo Larraín, Juan Carlos Villarreal, Bernard Goffinet, Mihail Tomescu, Candela Blanco-Moreno, Kathrin Feldberg, Catalina Juárez Martínez, Jorge Rafael Flores, Andrea Pereira Luizi-Ponzo, Milis Alix, Marcelo de Araujo Carvalho, Zane Walker, Bárbara Cariglino, Mercedes Di Pasquo, and Ya Li.

Dates: August 31 – September 7, 2026

- Five online sessions: August 31 – September 4
- One in-person session (optional): September 7

Workload: 32 hours

Language: Efforts are underway to ensure the course is multilingual via live subtitled translation. Alternatively, the course will be conducted in English.

Academic Accreditation: This graduate course is endorsed by the National University of Patagonia San Juan Bosco (Resolution CDFCNyCS No. 1076/2026).

Venue: In-person laboratory session at the Faculty of Natural Sciences and Health Sciences, National University of Patagonia San Juan Bosco, Trelew Campus (Chubut, Argentina).

Eligibility: Advanced undergraduate and technical-program students in the natural sciences, doctoral students, researchers, and university faculty members.

> *Note*: Registration to the 19th Argentine Symposium on Paleobotany and Palynology and the 58th Annual Meeting of AASP–The Palynological Society is not required to participate in this course.

Course Fees:

- Graduate students: ARS 30,000 (USD 20 for participants from foreign institutions)
- Undergraduate students: ARS 15,000 (USD 10 for participants from foreign institutions)

Registration deadline: August 15, 2026

Information and Registration: savoretti.m.a@gmail.com (Adolfina Savoretti)

Evaluation and Completion Requirements:

1. Minimum attendance of 80% of synchronous online classes.
2. Active participation in synchronous activities.
3. Successful completion of a comprehensive final assessment covering course content.
4. Laboratory practical activity (optional but strongly recommended).

> *Participants who only meet requirements 1 and 2 will receive a Certificate of Attendance.*

Syllabus:

Unit 1. Present Diversity, Evolution, and the Fossil Record

- Date: August 31, 2026
- Tentative Schedule: 10:00–15:00 (Argentina Time)
- Format: Online
- Course introduction (Adolfina Savoretti and Michael Ignatov)
- Topic 1: Extant bryophytes: mosses (Juan Bernardo Larraín)
- Topic 2: Extant bryophytes: liverworts and hornworts (Juan Carlos Villarreal)
- Topic 3: Patterns and processes of bryophyte evolution (Bernard Goffinet)
- Topic 4: How well does the known bryophyte fossil record reflect past bryophyte diversity? (Mihail Tomescu)

Unit 2. Fossil Liverworts and Hornworts

- Date: September 1, 2026
- Tentative Schedule: 10:00–15:00 (Argentina Time)
- Format: Online
- Topic 5: Paleozoic liverworts (Adolfina Savoretti and Jorge Flores)

- Case Study 1: Bryophytes from Fm Potrerillos (Triassic from Mendoza, Argentina) (Bárbara Cariglino)
- Topic 6: The scarcity of hornworts in the fossil record: a whole plant from the Miocene as an example (Candela Blanco-Moreno)
- Topic 7: The Diversity of Liverwort Fossils in Amber from the Mid-Cretaceous to the Paleogene (Kathrin Feldberg)
- Topic 8: Paleo-bryophytes in Miocene amber: diversity and occurrence in tropical regions (Catalina Juárez Martínez)

Unit 3. Fossil Mosses

- Date: September 2, 2026
- Tentative Schedule: 10:00–15:00 (Argentina Time)
- Format: Online
- Topic 9: Fossil mosses, Paleozoic and selected Mesozoic taxa diversity (Michael Ignatov)
- Case Study 2: Mosses from Chinese Jurassic Deposits and Cretaceous Burmese Amber (Ya Li)
- Topic 10: Anatomically preserved Mesozoic mosses (Adolfina Savoretti)
- Case Study 3: Antarctic Fossil Bryoflora Reveals Late Cretaceous Diversity of Mosses in Gondwana (Zane Walker)
- Topic 11: Mosses of Eocene amber from Europe (Michael Ignatov)

Unit 4. Palynology and Paleopalynology

- Date: September 3, 2026
- Tentative Schedule: 10:00–15:00 (Argentina Time)
- Format: Online
- Topic 12: Morphology of bryophyte spores: applications in taxonomic and ecological studies (Andrea Pereira Luizi-Ponzo)
- Topic 13: How to discover fine-scale past climates through spores (Milis Alix)
- Topic 14: Bryophyte spores in the Cretaceous palynological record: paleoecological and paleoclimatic implications (Marcelo de Araujo Carvalho)
- Case Study 4: First record of cryptospore *Pseudodyadospora petas* (Upper Odovician, USA): Biostratigraphic and paleobiogeographic implications (Mercedes Di Pasquo)

Unit 5. Phylogeny and Course Synthesis

- Date: September 4, 2026
- Tentative Schedule: 10:00–15:00 (Argentina Time)
- Format: Online
- Topic 15: Fossil bryophytes in phylogenetic studies: theoretical and practical aspects (Jorge Flores)
- Concluding session and synthesis of online course topics (Michael Ignatov and Adolfina Savoretti)

Unit 6. Laboratory Practical Session

- Date: September 7, 2026
- Schedule: 09:00–18:00 (Argentina Time)
- Format: In-person (optional)
- Practical 1: Extant bryophytes: observation and description of morphological and anatomical characters (Adolfina Savoretti)
- Practical 2: Fossil bryophytes: observation of morphological and anatomical characters; character coding for phylogenetic matrices (Jorge Flores and Adolfina Savoretti)