New Course to be taught at Meeman Biological Station Second Summer Session 2018

1. **Course Title**: Special Topics – BIOL 4093/6093 Lichen Biology (3 credit hours)

2. **Catalog Description**: This field-based course will introduce students to the identification, basic life history, structure and function, and role in the environment of lichens. Students will also learn how to properly collect, preserve and catalog specimens. The course will be taught over a 9-day period during the second summer session. The course will have nine 2-hour lecture periods, eight field collection periods, eight collection/identification/cataloging lab periods and two examinations. Curated field collections will be due on the last day of class. No prerequisites are required. The course will be offered at the University of Memphis Biological Station (1236 Cuba-Millington Road, Millington, TN 38053). Overnight accommodations (may be double occupancy) in the dormitory (with kitchen privileges) will be offered free of charge Sunday-Friday and Sunday-Wednesday nights.

3. **Required Texts and Other Materials**: Textbook is required (*Keys to Lichens of North America, Revised and Expanded.* Yale University Press. Copyright 2016 by Irwin M. Brodo). Required lab supplies include small hammer, wood chisel, fixed blade buck knife, bag to carry collections and other materials (backpack or something similar), water bottle, bug spray (recommended), sunscreen (recommended), Technu (recommended for poison ivy exposure) and small hand lens (optional). If staying at the dormitory, bring all needed bedding, linens, personal accessories and food items.

4. **Course Objectives**: Students will know basic knowledge of lichen biology, the skills to identify lichens and will learn to create and catalog a biological collection.

5. **Nature of Students to be Served**: The course is open to undergraduate and graduate students and adult learners with an interest in the environment.

6. **Description of Course Methods**: Interactive lectures will include handouts, prepared PowerPoint presentations and use of material accessible by the internet. Laboratory instruction will include handouts, instruction on how to identify characteristics of lichens using visual and microscopic analysis, instruction on preparation of specimens for preservation and instruction on documentation of specimens for inclusion into a collection.

7. **Course Outline**:

Class Schedule

Monday-Friday and the following Monday-Wednesday

8:30 AM-12:00 PM (2 hours lecture + 1.5 hours field collection/lab, **required**);
1:00-5:30 PM (4.5 hours field collection, collection identification and cataloging/lab, **required**);
7:00-9:00 PM (2 hour lab to continue field collection identification and curation; **optional**)

Second Thursday 10:00 AM – 12:00 PM (2 hours lecture, **required**)

Total contact hours = 42 (2520 minutes)
Lecture hours = 18 (1080 minutes)
Lab hours = 24 (1440 minutes)

Lecture Topics

Monday  
What are lichens?  Lichen morphology and anatomy
Tuesday  
Reproduction and dispersal
Wednesday  
Physiology and nutrition
Thursday  
Ecology and succession, Lichen biogeography
Friday  
Exam #1; Lichen families of the Mid-South
Monday  
Lichen families of the Mid-South cont.; Biomonitoring
Tuesday  
Environmental role of lichens; Economic uses and applications
Wednesday  
Lichen diversity, Lichen Societies, publications and databases
Thursday  
Exam #2;  
turn in Lichen Collection (all);  
submit Lichens of Shelby Farms paper (graduate students)

Lab Topics

Monday  
Basic types of lichens
  • How to collect lichens, Explanation of field notebooks
  • Collecting at Meeman Biological Station
  • Processing of collected specimens
Tuesday  
Basic structures used for lichen identification
  • Using a dichotomous key to identify lichens
  • Chemical tests used for identifying lichens
  • The yellow and orange lichens
  • Field trip to Shelby Farms Park (6903 Great View Drive North, Memphis, TN 38120)
  • Processing of collected specimens
Wednesday  
Identification of lichens and making a collection
  • The Family Parmeliaceae
  • Field Trip to Wapanocca National Wildlife Refuge (178 Hammond Avenue, Turrell, AR 72384)
  • Processing of collected specimens
Thursday  
The Family Physciaceae
  • Identification of crustose lichens
- **Field Trip to Ghost River State Natural Area** (Mineral Slough Boardwalk, Beasley Drive, Moscow, TN 38057)
- Processing of collected specimens

**Friday**
- The script lichens
  - Field trip to Shelby Farms Park (if necessary to collect additional specimens)
  - Processing of collected lichens

**Monday**
- Local fruticose lichens
  - Identification of lichens continued

**Tuesday**
- Assorted genera of Crustose lichens
  - Identification of lichens continued

**Wednesday**
- Continue identification of lichens
  - Compile list of collected lichens

8. **Course Requirements:**

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<thead>
<tr>
<th>Assessment</th>
<th>Value (%)</th>
<th>undergraduate / graduate</th>
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</thead>
<tbody>
<tr>
<td>Examinations (two)</td>
<td>50 / 40</td>
<td></td>
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<tr>
<td>Lichen Collection (one)</td>
<td>50 / 40</td>
<td></td>
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<tr>
<td>Research Collection Report*</td>
<td>0 / 20</td>
<td>(graduate students only)</td>
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* The graduate student project will have the intent of developing a publishable manuscript from their research collection. The project will involve collecting lichens from a confined geographic area such as a large state park or protected natural area. The collections will be processed and identified to species to determine the diversity of lichens that are present in that area and a full manuscript (including abstract, introduction, materials/methods/procedures, tables/figures/photos, results/discussion/conclusions and references) will be written by the graduate students. All graduate students must participate, agree on the division of labor and determine order of authorship in collaboration with the instructor. The manuscript will be submitted for publication in Evansia, a journal that is specifically designed for lichen and bryology studies such as this.

9. **Grading and Other Policies:**

**Grades:** Typical grading scale

90-100% - A  
80-89% - B  
70-79% - C  
60-69% - D  
Below 60% - F
Attendance is required during the day Monday through Friday and Monday through Thursday. Attendance during night sessions (when additional help on identification and collection preparation will take place) is not mandatory, but highly recommended, for this very short and intense field course. Failure to attend any required session (without prior approval) will result in the final course grade being lowered one letter grade.

10. Instructor of Record: Lynda Miller

11. TBR Instructional Format: