

Biology 345/545: Agrostology

Fridays, 10:00 a.m.- 12:50 p.m., CBB 276 – 2 credits

Instructor: Dr. Stephanie Lyon ("Stephanie")

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Office hours: M/W 11:00 a.m. - 12:00 p.m.

LEARNING OUTCOMES:

- Recognize c. 50 genera of grasses (Poaceae) on sight.
- Describe the taxonomically, evolutionary, and ecologically important characteristics of major groups of grasses and grass-like plants (graminoids).
- Demonstrate utility with taxonomic keys for graminoids.
- Demonstrate techniques for collecting, documenting, processing, and identifying graminoid plant specimens.

SCHEDULE:

September 7. Lecture 1a: Introduction to grasses and grass-like plants: Grass, sedge, and rush differences. **Lab 1:** The grass spikelet and its variations.

September 14. Lecture 1b: Grass morphology & terms. **Lab 2:** Possible field trip to Mead Park and Freckmann property.

September 21. Lecture 2: Grass classification: Hitchcock & Chase. **Lab 3:** Using grass keys.

September 28. Lecture 3: Origin of grasses; Ehrhartoideae & Bambusoideae. **Assignment of unknown grasses to key out. You will be doing this during most labs until the end of the semester; identifications are due on December 14.**

October 5. Lecture 4: Pooideae.

October 12. Lecture 5: Arundinoideae & Aristoideae

October 19. Lecture 6: Chloridoideae. **Assignment of mid-term take-home exam.**

October 26. Lecture 7: Panicoideae part 1.

November 2. Lecture 8: Panicoideae part 2.

November 9. Lecture 9: Danthonoideae & Centothecoideae. **Take-home exam due.**

November 16. Lecture 10: Cyperaceae (Sedge family) apart from *Carex*.

November 30. Lecture 11: *Carex* and Juncaceae (Rush family)

December 7: Review of grass genera to learn.

December 14: **Final lab exam covering “grass genera to know on sight” (see details below). List of keying-out unknown grasses due by 6:00 p.m.**

Final lecture exam: Monday, December 17, 8-10 AM in CBB 276.

BOOKS AND MATERIALS:**From UWSP text rental:**

Manual of the Grasses of the United States. 1951. Hitchcock & Chase. (Dover reprint in two volumes).

Field Guide to Wisconsin Grasses. 2014. Judziewicz, E.J., R.W. Freckmann, L.G. Clark. & M.R. Black. Univ. of Wisconsin Press.

Other supplies:

- **Dissecting kit** and **plant press**, to be checked out from the herbarium on the first day of lab. *I strongly recommend leaving the dissecting kit in the teaching lab.*
- A hand lens, 10-15X, is useful but not required. Available for sale at the Museum of Natural History.

Other useful books (these will be available in the lab):

Manual of North American Grasses. 2007. Edited by Mary E. Barkworth, Laurel K Atherton, Kathleen M. Capels, Sandy Long, and Michael B. Piep. 640 pages. (<http://www.usu.edu/usupress/books/index.cfm?isbn=6868>)

Manual of Vascular Plants of Northeastern United States and Adjacent Canada, Second Edition. 1992. Gleason, H.A. and A. Cronquist. Also the *Illustrated Companion to Gleason & Cronquist's Manual*. 1998. N. Holmgren, P.K. Holmgren, H.A. Gleason. New York Botanical Garden.

Flora of North America series:

Poaceae parts 1 (2007) & 2 (2003). Barkworth, M.E. *et al.*, eds. Flora North America Vol. 24-25. Oxford University Press.

Volume 1 includes the subfamilies Pharoideae, Bambusoideae, Ehrhartoideae, and Pooideae.

Volume 2 includes the subfamilies Panicoideae, Arundinoideae, Chloridoideae, Centothecoideae, Aristidoideae, and Danthonioideae.

Cyperaceae. 2002. Flora of North America Editorial Committee, eds. Flora of North America Vol. 23. Oxford University Press.

Juncaceae. 2002. Flora of North America Editorial Committee, eds. Flora of North America North of Mexico Vol. 22, pg. 211-267. Oxford University Press.

For further information:

Clark, Lynn G. & Richard W. Pohl. *Agnes Chase's First Book of Grasses.* (Smithsonian Institution Press, 1996).

Thomson, O., *Fassett's Spring Flora of Wisconsin, Fourth Edition* (for its coverage of *Carex*). 1976.

Fassett, N.C., *Grasses of Wisconsin.* (Actually written by L. Shinnors; old (1951) but still useful).

Gleason and Cronquist. *Illustrated Companion to the Manual of Vascular Plants of the Northeastern United States and Adjacent Canada, Second Edition*. 1991. Revised printing, 2004. All grasses illustrated, but drawings sometimes not very good.

Judziewicz, Clark, Londoño, & Stern. *American Bamboos*. (Smithsonian Institution Press, 1999). North, Central, and South American woody and herbaceous bamboos; basal grasses.

Pohl, *How to Know the Grasses*. (Golden Guide series). **Excellent line drawings** of common Midwestern species.

Smith, *Key to the Genera of Grasses of the Conterminous United States*.

Voss, E.G. and A.A. Reznicek. 2012. *Field Manual of Michigan Flora*. University of Michigan Press

Web Resources:

Online Virtual Flora of Wisconsin: <http://wisflora.herbarium.wisc.edu/>: Centralized data source on the Wisconsin flora, including records from all major Wisconsin herbaria and up-to-date taxonomy, images, maps, and some descriptions.

USDA Plants Database (<http://plants.usda.gov/>): Searchable information on 20,000 U.S. plant species, many with images; links to state websites.

Online databases of plant photos (by family, all of these link to Poaceae):

Texas A&M University: (<http://www.csdl.tamu.edu/FLORA/imaxxpoa.htm>)

SIU Phytoimages: <http://phytoimages.siu.edu/index.html>?

Cornell Plant Systematics: <http://www.plantsystematics.org/>

Grasses of Iowa (<http://www.eeob.iastate.edu/research/iowagrasses/>). Outstanding photos of and interactive keys to Iowa grasses – and nearly all of these also occur in Wisconsin.

Flora of North America Vol. 23 – Cyperaceae

(http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=10246)

Cybersedge [Texas A & M University] (<http://www.csdl.tamu.edu/FLORA/carex/carexout.htm>):

Excellent line drawings of sedge's from Mackenzie's monumental "North American Cariceae".

Flora of North America Vol. 22 – Juncaceae

(http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=10462)

GRADING:

Course grades will be based on five elements, listed below:

1. (20% - 20 points) A collection of 10 plants. You may choose the 10 from among any grass, sedge, or rush. The collection is due on Monday, December 2.
2. (20% - 20 points) Answers for the **keying-out unknowns**, assigned on Sept. 28 and due at 6:00 P.M. on Friday, December 14.
3. (20% - 20 points) **A take-home midterm exam**, assigned Oct. 19, due on Nov. 9.
4. (20% - 20 points) A **lab exam** on the genera of grasses on your “grasses-to-know-on-sight” list, given during lab on Friday, Dec. 14, 11 AM- 1:50 P.M. in CBB 276. This exam is “open-book”; you may use any books and notes you like for this exam (but no electronic aids); **the answers will be penalty-graded (i.e., the number of wrong answers will be subtracted from the number of correct answers).**
5. (20% - 20 points) A **final (closed-book) lecture exam** given during the final exam period on Monday, Dec. 17, 8-10 AM.

Grading scale:

93% and above = A

90-92% = A-

88-89% = B+

83-87% = B

80-82% = B-

78-79% = C+

73-77% = C

70-72% = C-

68-69% = D+

60-67% = D

below 59.5% = F

**Grass genera to know on sight for the lab final exam (some deletions and additions
may be made but list will not be longer than this one)**

Agrostis
Alopecurus
Andropogon
Aristida
Arundinaria
Avena
Bouteloua
Brachyelytrum
Bromus
Calamagrostis
Cenchrus
Chasmanthium
Cinna
Cynodon
Dactylis
Danthonia
Dichanthelium
Digitaria
Echinochloa
Elymus
Eragrostis
Festuca
Glyceria
Heterostipa
Hordeum
Koeleria

Leersia
Lolium
Milium
Miscanthus
Muhlenbergia
Oryzopsis
Panicum
Paspalum
Phalaris
Phleum
Phragmites
Poa
Schizachne
Schizachyrium
Secale
Setaria
Sorghastrum
Sorghum
Spartina
Sphenopholis
Sporobolus
Triticum
Vulpia
Zea
Zizania