

*This syllabus is a general representation of the course as previously offered and is subject to change.*

## **BIOL/APBI 324 – Introduction to Seed Plant Taxonomy**

General Course Syllabus (as of September 2019)

### **About the Course:**

**Course Description:** An introduction to seed plant taxonomy emphasizing descriptive morphology and identification. Each student will be required to submit a plant collection.

Correct understanding of the actual relationships between plants, rather than superficial resemblance, is the basis of comparative biology required to analyze the diversity of plant forms. The species diversity of plants is considerable, and this course will pay particular attention to very diverse and important groups such as the grasses and the orchids, focusing on reasons for their evolutionary success. Identification skills will be inculcated by the lectures working in tandem with the laboratory sessions. This course aims to give students a good working knowledge of plant taxonomy as a preparation for work in any biological discipline.

**Course Format:** Lecture and Laboratory

**Credits:** 3

**Pre-requisites:** BIOL 121

### **Course Learning Objectives:**

By the end of this course, students will be able to:

- Achieve a good working knowledge of concepts, principles, and recent discoveries in plant taxonomy.
- Gain an overview of seed plant diversity, including the most species-rich plant families and so be able to place any botanical information in the overall context of plant diversity.
- Learn ways in which their knowledge can be applied to ecology and evolutionary biology.
- Gain an appreciation of how current research in the field is being done by reading recent research papers.

### **Textbooks and Additional Resources:**

**Laboratory fee:** \$25; please bring to first lab.

**Laboratory text:** Required is Hitchcock, C. L. and A. Cronquist. 2018. Flora of the Pacific Northwest, 2<sup>nd</sup> Edition. Seattle: U. of Washington Press. (Note: the first edition is not suitable, it is 50 years out of date.)

**Laboratory Manual:** Will be distributed in the first lab.

**Lecture text:** NONE REQUIRED. For reference, the only modern text is:

- Judd, W. S., C. S. Campbell, E. A. Kellogg and P. F. Stevens. 2007 (3<sup>rd</sup> ed.). *Plant Systematics, a Phylogenetic Approach*. Sunderland, MA: Sinauer Associates, Inc.

Students may also find the following books helpful:

*General:*

- *Plant Systematics: A Phylogenetic Approach* by Walter S. Judd et al.
- *Phylogeny and Evolution of the Angiosperms: Revised and Updated Edition* by Douglas Soltis et al.

*Plant Glossaries* (N.B. an online glossary is provided on the course website)

- *The Kew Plant Glossary: An Illustrated Dictionary of Plant Terms -Second Edition* by Henk Beentje

*Specialist*

- *Botanical Latin: History, Grammar, Syntax, Terminology and Vocabulary* by William T. Stearn
- *Plant-Pollinator Interactions: From Specialization to Generalization* by Nickolas M. Waser

Reading assignments will be literature review articles from scientific journals and primary research papers. They will be available on the course website.

**Detailed Lecture Notes:** Available on the course website from [canvas.ubc.ca](http://canvas.ubc.ca).

## Evaluation:

<u>Assessment</u>	<u>Weight</u>
<hr/> LECTURE (65%):	
• Midterm exam	15%
• Final exam (comprehensive)	35%
• Reading Assignments	15%
<hr/> LAB (35%):	
• Laboratory Quizzes	15%
• Plant Collection Report	5%
• Collection Project	15%
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**Lab quizzes** begin week 3, and then students can expect them at the beginning of all labs, including the last scheduled (conifer) lab. Don't be late!!!

Students **must** complete all non-optional course components to pass the course. This includes students that are auditing or taking it for Cr/D/F

## Schedule of Topics:

Below is a sample schedule of lab and lecture topics from 2018W (subject to change):

### LABORATORY SCHEDULE:

Week	FAMILIES
1	No Labs
2	<b>Field trip to UBC Botanical Garden</b>
3	Flower parts, Basal Angiosperms and Magnoliids Eudicots: Ranunculaceae
4	Core Eudicots: Caryophyllaceae, Polygonaceae Rosids: Onagraceae
5	Eurosids I: Fabaceae, Rosaceae <b>Bring sample plant collection and label to lab</b>
6	Eurosids II: Brassicaceae, Malvaceae Basal Asterids: Ericaceae
7	Euasterids I: Lamiaceae, Plantaginaceae, Scrophulariaceae
8	Euasterids I: Boraginaceae, Solanaceae Euasterids II: Apiaceae
9	Euasterids II: Asteraceae
10	Monocots: Iridaceae, Liliaceae, Alliaceae, Orchidaceae
11	Commelinid Monocots: Poaceae, Cyperaceae, Juncaceae
12	Gymnosperms
13	Open Lab; <b>Plant Collections and Collection Report due</b>

### LECTURE SCHEDULE:

Week	Topic
1	1. Introduction and basic floral parts
2	2. Major groups of seed plants 3. Primitive flowers
3	4. Beetle pollination 5. Stamen evolution
4	6. Perianth evolution 7. Carpel and fruit evolution
5	8. Fabaceae 9. Pollination Syndromes
6	10. Bee and butterfly pollination 11. Bird and mammal pollination

7	12. Inflorescence evolution and pseudanthium 13. Specialized inflorescences and their pollination
8	<b>MID TERM EXAM</b> 14. Variation, evolution, biosystematics I
9	15. Asteraceae 16. Variation, evolution, biosystematics II
10	17. Orchidaceae 18. Hybridization and Polyploidy
11	19. Poaceae 20. Genomics, chromosomes and massive parallel sequencing
12	21. Conifers 22. Typification and nomenclature
13	23. Species delimitation: morphology, molecules and coalescence theory 24. Flowering plant classification and conclusions

### **Course Policies:**

- Exams will be written only on the scheduled dates.
- Please come to class promptly at the scheduled time.
- Please ask lots of interesting questions.

### ***University Policies:***

*UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.*

*UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.*

*UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.*

*UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.*

*Details of the policies and how to access support are available on [the UBC Senate website](#).*