

Plant Taxonomy—BSC-416/516 Spring 2018

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Course Description: Plant Taxonomy–BSC 416/516. 4 CR. A study of the diversity and evolution of land plants. Lectures emphasize the comparative study of selected plant families, their relationships and the methods and techniques used to enhance our understanding of plant evolution, as well as the modern practice of plant taxonomy as a scientific discipline. Labs emphasize hands-on aspects of plant systematics such as the use of identification keys, electronic resources, study of morphological and anatomical features, recognition of evolutionary trends, and basic phylogenetic analysis.

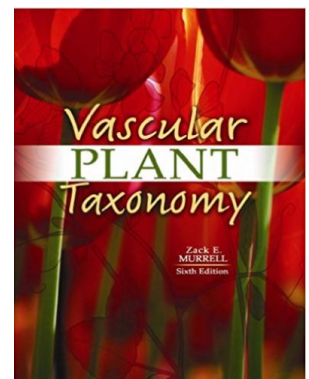
This course has a Service Learning component. Service Learning means that you will provide a service to a community as a way to enhance how you learn the concepts of this course. Our Service Learning Partner for Spring 2018 is the Marshall University Herbarium and the SouthEast Regional Network of Expertise and Collections (<http://sernec.appstate.edu/>). We will engage in a Citizen Science project for the SL part of this course.

Class Meetings: Mondays and Wednesdays 9 a.m. -11:50 a.m. We will meet in **S360** for both lecture and lab unless otherwise noted. We will generally treat the first hour as lecture and the second two hours as lab (both days), with a very short break in between.

Office Hours: **12 p.m. - 1 p.m. Mondays** and **11:00 a.m. - 12 p.m. Tuesdays**. These hours are firm unless you are in a scheduled class during both of these times—in which case, email me to set up an alternative time. If these hours prove inadequate for us, I will add more.

Required course materials:

1. ***Vascular Plant Taxonomy*** (Murrell), 6th ed.
2. On days we go outside, you will need a **notebook** appropriate for outdoor note-taking, **rain gear**, and **outdoor footwear**. We will have outdoor labs as scheduled unless the weather is absolutely intolerable or dangerous.
3. On days we work inside, a **laptop** or other device with wireless capability on which you can work *efficiently*.
4. You will be issued a **hand lens** for this course unless you own one. You should bring this hand lens to every meeting. If you lose your hand lens, you must replace it with an identical hand lens (requires approval). Failure to replace a lost hand lens will result in a letter grade penalty on your final course grade.



Grading:

- Daily/class work (50%)—Homework , announced or un-announced quizzes, peer-review/feedback, reflections or other short assignments. These will be some mixture of low-stakes and medium-stakes work designed to give you plenty of practice, self- and peer-evaluation. Lab work will fall into this category, as will your mid-term and final assessments. We may occasionally use a Google Drive folder to share information (rather than Blackboard). In that case, your class folder is here:
<https://drive.google.com/drive/folders/1FSYt0FrI63L5JHT0MFCGDMkpS8xEu-45?usp=sharing> .
- Service Learning efforts (15%)—You will contribute data transcription effort to an ongoing research project.
- Individual Project (20%)—You will carry out a taxonomically relevant individual project. The topic is largely open, but requires approval and student/professor agreement on scope and scale.
- WikiEducation (15%)—You will work through a series of guided assignments to generate (or significantly correct/update) an entry related to plant taxonomy in Wikipedia. Due dates for graded assignments are listed on Wikipedia and are duplicated on our Tentative Schedule. The link to our class Wiki is here:
[https://dashboard.wikiedu.org/courses/Marshall_University/BSC-416_\(Spring_2018\)?enroll=cizbhpga](https://dashboard.wikiedu.org/courses/Marshall_University/BSC-416_(Spring_2018)?enroll=cizbhpga)

Grading will be based on some combination of rubric-style grading and subjective-style grading, depending on the assignment. Peer-grading will be included where appropriate.

- A=truly excellent work; B=above average work; C=average work; D=unsatisfactory work; F=non-passable work.
- I do not curve grades. If you are diligent and attentive, you have every opportunity to earn a high grade in this course.
- Your grades for individual assignments will be posted in Blackboard at all times.

Attendance: You are expected to be in class every day for the duration of our meeting, unless you truly cannot be here.

- You are allowed to accumulate two unexcused absence without penalty to allow for a true emergency--make up work is at my discretion in that instance.
- If you incur three unexcused absences your final calculated course grade will be lowered by one letter grade.
- If you miss \geq 20% of our class meetings (five meetings) you will receive an F for the course regardless of your calculated grade.
- We will start on time and I reserve the right to count a tardy student as an absent student.
- I adhere strictly to the university's policy on excused absences and the processes of obtaining an excuse and provision for makeup work. You should familiarize yourself in advance with the official policy from the Office of Student Affairs here:
<http://www.marshall.edu/student-affairs/files/2011/08/Marshall-University-Class-Absence-Policy.pdf>

Learning outcomes

Understand and use classical tools, such as identification via diagnostic keys and microscopy, to identify plants.

Understand taxonomy as a dynamic field.

Understand and use modern tools, such as phylogenetic analyses and biodiversity informatics, to understand how plants have evolved.

Be familiar with common plant communities and how plants interact with other organisms.

Be familiar with the major groups of land plants and how they have evolved.

Be familiar with the philosophy of citizen science and contribute to it.

Demonstrate an understanding of major plant groups from the view of the general public.

Practice

We will practice skills hands-on whenever feasible, such as learning to use a diagnostic key or carrying out phylogenetic analyses.

We will visit the Huntington museum of Art plant conservatory and take field trips to see live plants and plant communities. The HMoA will also provide an opportunity to see how a living museum collection is presented to the public.

We will supplement live plants with the plant collection housed in the University Herbarium.

We will introduce theoretical topics via lecture, peer presentations, and discussion.

We will investigate how biodiversity data can be used by contributing to an ongoing NSF project in the University Herbarium.

Assessment

We will have regular quizzes to assess your ability to explain theoretical concepts, work through problems, use diagnostic keys, etc.

Homework will be assigned regularly to allow for low-risk exploration of various topics.

Your service learning project will be assessed for the 'use-ability' of the products you generate.

Peer-review will be a regular part of the course, in order to get feedback from multiple sources.

Service Learning Project:

Biological Collections are massive repositories of vouchered biological specimens and the data associated with them. The United States has many millions of specimens housed in various biological collections. These collections provide a window into the past and opportunities to estimate the future. The Marshall University Herbarium houses approximately 50,000 specimens of non-vascular and vascular plants, plant fossils, fungi, algae, and ethnobotanical artifacts collected between the Civil War era and the present. While the herbarium has been a well-regarded scientific collection for many years, my hope is to make it into a more accessible resource for both the scientific community and the public. The culmination of this effort will take several steps, the first of which will be addressed by our Service Learning projects.

1. Enhancing the MU Herbarium for the scientific community: Within the past several years, an effort has been launched to 'mobilize' data from biological collections such as herbaria, and to make them more easily available to scientists, land managers and other professionals, and the public. In 2014, The Marshall University Herbarium received funding from the National Science Foundation to digitize a large part of our collection. We were able to purchase a fully computerized camera system, which we used to photograph all 42,700 vascular plant specimens housed in the herbarium. Over the coming years, those specimens will be fully transcribed and geo-referenced along with many other specimens around the country, in effect becoming part of a massive research engine for use in studies of taxonomy, ecology, climate science, geology, anthropology, illustration, and evolution.
 - a. Our SL effort this semester will be for each student to transcribe 150 specimens into a project portal. No special knowledge is required and training will be provided. These specimens will be completed a few at a time and sets will be due throughout the semester. Your grade will be based upon completing the specimens on time and accurately. Transcriptions will occur here <http://sernecportal.org/portal/collections/editor/occurrencetabledisplay.php?csmode=1&occindex=0&displayquery=1&reset=1&collid=225> and you will need to use your real name when you set up an account.

Individual Project

You will carry out a research project on a plant lineage/group of your choice (with approval). Although not strictly required, the hope is that your individual project will dovetail with your Wikipedia topic. You will be expected to compile relevant primary literature and to synthesize that information into a coherent presentation. The possible topics are virtually unlimited, as long as the project has a basic taxonomic underpinning. You will be given more details on this project early in the semester in a separate document.

WikiEducation

You will contribute to Wikipedia by writing a new entry OR substantially upgrading an existing entry on a particular group of plants. This project is permitted to integrate with your individual project, but it is not required to. This project will allow you to hone your skills at writing about biology for a general audience. The link to our class Wiki is here:

[https://dashboard.wikiedu.org/courses/Marshall University/BSC-416 \(Spring 2018\)?enroll=cizbhpga](https://dashboard.wikiedu.org/courses/Marshall%20University/BSC-416%20(Spring%202018)?enroll=cizbhpga)

Field Trip to the Great Smoky Mountains National Park Spring Wildflower Pilgrimage:

You will have the opportunity to attend the GSMNP Annual Spring Wildflower Pilgrimage as part of this class. Details and logistics will be worked out early in the term. Please see <http://www.springwildflowerpilgrimage.org/> for information (this year's information coming soon). Attendance for some portion of the fieldtrip will be counted under the Daily/Class Work partition. Students who don't wish to (or cannot) attend the Pilgrimage will be given an alternate assignment to work on during the trip.

Expectations:

- Read scheduled chapters, papers, peer-review assignments ahead of time and arrive prepared to discuss them.
- Come to class every day except in the event of serious illness or injury, or due to university functions.
- Be on time. Exercises and/or field trips will start on time.
- Be sure to put appropriate time into your projects in a timely fashion, in order to get helpful feedback from your colleagues.
- Participate actively in all exercises. Curiosity and support of peers is appreciated.
- Clean up after yourself, and help out others where you can. Treat our classroom and the herbarium with care. We share our classroom space with others.
- Be considerate about the use of electronics. Do not socialize electronically during class.

Academic Accommodation:

Policy for Students with Disabilities: Marshall University is committed to equal opportunity education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disability Services (ODS) in Prichard Hall 117 (304.696.2467) to provide documentation of their disability. Following this, the ODS Coordinator will send a letter to each of the student's instructors outlining the academic accommodation he/she will need to ensure equality in classroom experiences, outside assignment, testing, and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, access the website for the Office of Disabled Student Services: <http://www.marshall.edu/disabled>

Academic dishonesty—Academic dishonesty will not be tolerated, and cheating will be pursued vigorously. If work is intended to be done with a group, you will receive explicit instructions indicating that you have permission to exchange work with other students. Any appearance of cheating will result in a zero on that assignment without discussion. More serious forms of cheating will be referred for disciplinary action. If you have any questions, please ask, rather than take a chance.

University Policies and Procedures: Additional information can be found in the Marshall Undergraduate Catalogue at http://www.marshall.edu/wpmu/academic-affairs/?page_id=802

Course Schedule: A tentative schedule will be posted on Blackboard.