The University of Tennessee
College of Agricultural Sciences and Natural sources

PLSC 453: Introduction to Plant Breeding (3 credit hours)

Course Information & Syllabus

Fall 2022

Lecture Time: Tuesday and Thursday 9:45 to 11:00 am

Location: Biosystems Engineering and Environmental Science Room 266

Contact Information:

Lead Instructor: Dr. Vince Pantalone, Professor, Plant Sciences Department

Co-Instructors: Dr. Surya Shrestha, email: sshres18@utk.edu and

Chris Wyman, email: cwyman@vols.utk.edu

Guest Instructors: Dr. Virginia Sykes, Dr. Dennis West, and Dr. Chris Smallwood

Vince Pantalone

Office: 254 Plant Biotechnology Building

Phone: 865-974-8801

E-mail: vpantalo@utk.edu

Office Hours: By appointment for Lead and Co-Instructors

Course Description

Introduction to general principles, practices and techniques used to breed plants, select traits, and develop crop cultivars. Concepts discussed will range from quantitative and population genetics, historical through conventional plant breeding (through self- and cross-pollinations) and hybridization, then end with exploration of contemporary approaches to improve plant traits including molecular breeding and genetic engineering.

Credit restriction: Students may not receive credit for both 453 and 553.

Reference Textbooks (optional)

Brown J and P. Caligari. 2014. An Introduction to Plant Breeding. Blackwell Publishing (2nd Ed)

Allard R.W. 1999. Principles of Plant Breeding John Wiley and Sons, Inc. (2nd Ed)

Acquaah G. 2012. Principles of Plant Genetics and Breeding. Wiley – Blackwell.

Note: You can access the 2012 version of Acquaah here: https://gtu.ge/Agro-Lib/Principles%20of%20Plant%20Genetics%20and%20Breeding.pdf

Course Objectives: Upon completion of this course, students will be able to:

1. Describe sources of genetic variation in plants.
2. Understand plant's reproductive systems and identify appropriate selection approach.
3. Describe changes in population structures due to selection in self and cross pollinated crops.
4. Describe different approaches of selection to improve plant genetic potential.
5. Understand roles of advanced tools in expedited cultivar improvement.

Technology Use in the Course:

PLSC 453 will utilize Canvas. Find information about Canvas at http://online.utk.edu; where you are prompted to login. As a student registered for this course, you are automatically loaded into the course on Canvas site and it should appear on your homepage. Course related announcements and lectures will be posted on Canvas.

Readings:

Supplemental reading on your own is optional.

Examinations:

Students will be evaluated on their progress in part through **examinations; (2) during the semester and one (1) optional final examination**. After the second exam, 6 quizzes, and 6 homework assignments, students will have the option of having their semester average determined at this point in time, and avoid taking the final; or take the final and have the semester average consist of all 3 exams plus the quizzes and homework assignments. Instructor must be notified of the decision by November 30, 2022 by email.

Quizzes

There will be announced quizzes periodically throughout the semester. The best of 5 quizzes will count toward the grade.

Class Policies:

Attendance is very important during the lectures, although it is not mandatory except for Quiz and Exam days. Students with approved University absences on Quiz or Exam days must make prior arrangements with Instructor to take the Quiz or Exam at a different time or date. Students will be responsible for all classes missed. Field trips are optional, yet encouraged. Cell phones are not to be used during class. Laptop computers may be used in class for note taking or other class-related activities only (i.e., no e-mailing, chatting, checking Facebook, etc.).

Homework is due at the beginning of the class period on the date that it is due. Students may turn in a homework assignment late, up to the date of the next class after it is due, at the beginning of class, with a 10% reduction of total grade earned. Assignments turned in later than the next class after due date will receive a grade of zero.

Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature will be excused from class and should stay at home. Instructors have the right to ask those who are not complying with these requirements to leave class in the interest of everyone's health and safety. In the event that a student refuses to comply with these requirements, the instructor has the right to cancel class.

The Volunteer Creed reminds us that we bear the torch in order to give light to others. As Volunteers, we commit to caring for one another and for the members of the communities in which we live, work, and learn. This semester, the University asks that we all demonstrate the Volunteer spirit by following these and other health guidelines and requirements.

University Diversity Statement:

The University of Tennessee, Knoxville, is committed to providing an inclusive learning environment for all students. If you anticipate or experience a barrier in this course due to a chronic health condition, a learning, hearing, neurological, mental health, vision, physical, or other kind of disability, or a temporary injury, you are encouraged to contact Student Disability Services (SDS) at 865-974-6087 or sds@utk.edu. An SDS Coordinator will meet with you to develop a plan to ensure you have equitable access to this course. If you are already registered with SDS, please contact your instructor to discuss implementing accommodations included in your course access letter.

Grading Policy:

Two 75-min exams .....200 points

Quizzes ……100 points

Homework…….. 100 points

Optional Final exam: …… ……..100 points

Letter Grade*	**Performance Level**	**Percentage (%)**
A	Superior	95 - 100
A -	V. Good to Superior	90 - 94
B+	Very Good	87 – 89
B	Good	84 - 86
B -	Fair to Good	80 – 83
C+	Fair	77 - 79
C	Satisfactory	74 - 76
C -	Unsatisfactory	70 – 73
D +	Unsatisfactory	67 - 69
D	Unsatisfactory	64 - 66
D -	Unsatisfactory	60 - 63
F	Failure	≤ 59

*Instructor reserves the right to curve grades

For further information on grading scales, see the Undergraduate Catalog.

Course syllabus and class schedule are subject to change by instructor at any time. Students will be given notice of any changes.