

## **Best Practices in Plant Biology Undergraduate Research (BOT4400)**

Drafted by the Plant Biology, Ecology, and Evolution (PBEE) Assessment Committee  
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**Purpose:** All Plant Biology majors must complete at least 1 credit hour of BOT4400. Ideally, the BOT4400 experience will expose students to the primary literature and to the process of designing an experiment/research project, carrying the project through to completion, interpreting project results, and reporting project findings. The PBEE Assessment Committee was charged with drafting this “Best Practices” document (1) to make BOT4400 course expectations more uniform across students conducting research with different PBEE faculty mentors and (2) to improve the assessment of two B.S. Plant Biology learning outcomes (#2 and #3).

### **Best Practices in BOT4400:**

- Within a given semester, students can enroll in 1-3 credit hours of BOT4400. The number of credit hours enrolled will determine the number of hours a student conducts research. Based on OSU Academic Regulations 4.8 (<https://registrar.okstate.edu/University-Academic-Regulations#4>), the following guidelines can be used to determine research hour expectations based on the number of BOT 4400 credit hours in which the student is enrolled. In addition to these weekly research hour expectations, students may also need to attend lab meetings.
  - 1 credit BOT4400 = average of 3 hours of research per week
  - 2 credit BOT4400 = average of 6 hours of research per week
  - 3 credit BOT4400 = average of 9 hours of research per week
- At the start of the semester, the faculty mentor should meet with the student to discuss the details about the project and provide the student with a syllabus describing BOT4400 research expectations, grading, and schedule detailing research timeline and assignment due dates.
- The student should complete a short research plan/proposal in which s/he reviews the relevant literature and describes the goals of the project and approaches for accomplishing the goals. This activity will help the student take ownership over her/his project and ensure s/he understands the planned research. Research proposals completed by Plant Biology B.S. students should be submitted to the PBEE assessment committee for assessing student learning outcome #3 (i.e., Plant Biology students will be able to summarize scientific journal articles).
- Throughout the semester, there should be regular (i.e., at a minimum biweekly) meetings between the faculty member and the BOT4400 student. If a graduate student is assisting with the mentoring of a BOT4400 student, ensure regular communication among all parties.
- BOT 4400 students should maintain a record of lab work in an organized manner.
- The faculty mentor may encourage the BOT4400 student to submit a mid-semester progress report.
- At the end of the semester, BOT4400 students should summarize their research activities and findings via an oral or a poster presentation for their lab group and/or a written report. When appropriate, BOT4400 students are encouraged to present their research findings at a local, regional or national scientific conference. Final products (i.e., electronic files of oral/poster presentations or written reports) completed by Plant Biology B.S. students should be submitted to the PBEE assessment committee for assessing student learning outcome #2 (i.e., Plant Biology students will be able to formulate hypotheses, design appropriate experiments, and collect and interpret data).
- Throughout the semester, the faculty mentor should encourage the BOT 4400 student to attend laboratory group meetings and departmental activities including the weekly seminars.