

A photograph of two students in a laboratory. A male student in the background wears safety goggles and looks on. A female student in the foreground, also wearing safety goggles and blue gloves, is using a pipette to transfer liquid into a test tube. The word 'rock' is written on her goggles. A dark teal banner is in the top right corner.

LABORATORY INSTRUCTOR HANDBOOK

Bowdoin

THE ROLE OF THE LABORATORY INSTRUCTOR

Laboratory instructors at Bowdoin College are professional educators who are directly responsible for student learning. They work both independently and collaboratively with science faculty members to design innovative exercises for the laboratory that foster student understanding of scientific concepts, methodology, and principles. The College emphasizes the curricular importance of the laboratory experience by requiring all students who major in a scientific discipline to complete laboratory courses.

Laboratory instructors play a range of important roles in the academic program. In their departments and programs, laboratory instructors support faculty and student-led research, coordinate and provide logistical support for fieldwork, procure and prepare laboratory materials for student use, and prep labs for (and de-prep labs following) experiments. Many also maintain sophisticated laboratory equipment, some of which requires specialized training. Laboratory instructors work with faculty to ensure proper safety procedures are followed both in the laboratory and the field as well as in the use and storage of hazardous chemicals and materials.

Laboratory instructors are instructional staff who have the responsibility and authority to develop and assign student work as well as assess it. In the laboratory context, laboratory instructors are responsible for presenting abstract ideas and theories clearly, for encouraging students to think independently, for assigning academically rigorous coursework, for assessing student work fairly and consistently, and for returning that work in a timely manner. They engage students in the process of scientific writing and foster both scientific and quantitative reasoning and literacy. They are also responsible for being available to meet with students individually and in small groups to support learning. Given the character of their work with students in the laboratory setting, laboratory instructors have a unique opportunity to assist students in meeting the demands of collegiate-level academic work in the sciences. When requested by students, they also serve as informal advisors, writing letters of recommendation, providing curricular guidance, and meeting a variety of other student needs.



PROFESSIONAL DEVELOPMENT

Laboratory instructors are encouraged to engage in reflective practice and professional development that will contribute directly to improving the quality of their instruction and the quality of the student learning experience in the laboratory context.

A wide range of activities can be characterized as professional development. Laboratory instructors are asked to prioritize professional development activities that will provide a direct and tangible benefit to their teaching. Instructors, for instance, might attend professional conferences that highlight effective pedagogical practices or illustrate the most up-to-date research practices in their field, and then experiment with those practices in their teaching during the following semester. In particular, laboratory instructors are encouraged to participate in professional development that expands their capacity and skills to support students who struggle with the transition to collegiate-level academic work.

Professional development may take place off campus (such as attending a professional conference) or on campus. On-campus activities may involve academic seminars, inviting an expert to campus to conduct a workshop or drawing on the knowledge of members of the college community, such as staff in the Center for Learning and Teaching. Through an associate dean responsible for providing support for all college instructors, the Office for Academic Affairs provides on-campus professional development opportunities for laboratory instructors.

Through their departments, all laboratory instructors have access to financial resources to support off-campus professional development activities. Although each department has a somewhat different process for accessing those funds, the departments provide approximately \$400 annually per lab instructor to engage in professional development. In addition, the Associate Dean for Academic Administration has a generous professional development fund for lab instructors.



PROFESSIONAL REVIEW

Laboratory instructors undergo review annually. The primary purpose of the review process is to provide laboratory instructors substantive feedback on their performance with the goal of improving the quality of their work and, consequently, student learning. The following documents are included in the review process: Fall and Spring semester Laboratory Instructor-Faculty Debrief Forms, the Laboratory Instructor Bowdoin Course Questionnaire, the Laboratory Instructor's Curriculum Vitae, and the Laboratory Instructor Professional Activities Form.

Each semester, after BCQs are available, faculty and LI who teach a course meet to debrief the course, noting successes, challenges, and areas for improvement. Lab Instructors summarize the conversation and both faculty and LI sign the summary (see Appendix A for the LI_Faculty Debrief form.) Fall and Spring semester LI-Faculty Debrief forms are due to Rebecca Banks by February 5 (for Fall semester) and June 30 (for Spring semester.) A copy will be filed with the department chair/program director.

Yearly reviews will be based on the calendar year. Materials for yearly review will be due February 5 to Rebecca Banks. The materials will be reviewed by an Associate Dean other than that for Faculty Development and Inclusion (to maintain a division of labor between support and evaluation.) In the event a LI has worked previously with an Associate Dean, the LI may request support of evaluation from a different Associate Dean by contacting Rebecca Banks. The Associate Dean will send confirmation of their review to the LI and faculty member.



THE LABORATORY INSTRUCTOR AND FACULTY FORMS

Laboratory Instructor Bowdoin Course Questionnaire (LIBCQ)

As with faculty, laboratory instructors are strongly encouraged to read and reflect on the feedback students provide on course questionnaires in order to improve the quality of their instruction. Students enrolled in lab courses are asked to complete two BCQs each semester—a faculty member BCQ and an LIBCQ. The quality of feedback students provide on both questionnaires is often aligned with the conditions under which they complete the form. Faculty and laboratory instructors should arrange the time and conditions necessary for students to provide the most constructive feedback possible. A copy of the LIBCQ is located in *Appendix B*.

Laboratory Instructor Professional Activities Form

The Laboratory Instructor Professional Activities form provides laboratory instructors an opportunity to document the teaching, service, and professional development in which they have engaged over the course of the year. The completed forms are reviewed in the Office of the Dean for Academic Affairs and merit pay increases are assigned accordingly. A copy of the Laboratory Instructor Professional Activities form is located in *Appendix C*.



Instructional

1. Laboratory instructors and science faculty members design a lab curriculum that is based on learning goals they discuss, agree to, and articulate for students.
2. Laboratory instructors work both independently and collaboratively with science faculty members to design inclusive exercises for the laboratory that foster all students' understanding of scientific concepts, methodology, and principles.
3. Faculty and laboratory instructors collaborate on efforts to make inclusive excellence a hallmark of their courses and labs. Faculty and lab instructors are strongly encouraged to avail themselves of inclusive classroom trainings and resources from the Baldwin Center for Learning and Teaching and/or their field specific professional organization.
4. Laboratory instructors work both independently and collaboratively with science faculty members to construct labs that are current with the fields of study in which lab courses are grounded.
5. Laboratory instructors develop (in consultation with faculty) lab-related curricular materials and coordinate (with faculty) semester-long syllabi and schedules of laboratory exercises.
6. Laboratory instructors facilitate student scheduling, registration, and maintenance of waitlists for all lab sections of the courses (sometimes in coordination with faculty).
7. Laboratory instructors (in consultation with faculty) develop and deliver suitable pre-instruction for each lab period they teach.
8. Laboratory instructors actively oversee students' work in the laboratory and/or field to answer questions, assist students, evaluate student performance, and maintain student safety.
9. Laboratory instructors engage students in the process of scientific communication (e.g. lab notebook, reports, posters, presentations, etc.) and foster both scientific and quantitative reasoning and literacy.
10. Laboratory instructors grade student lab assignments and return the graded assignments to students in a timely fashion (as agreed upon by faculty).
11. Laboratory instructors communicate with faculty members about student performance in lab, as warranted, and send comment cards to students when appropriate.
12. Laboratory instructors hold scheduled office hours and/or open lab time and schedule student meetings on an as-needed basis.
13. Laboratory instructors compile student final lab grades. In some cases, this is a grade summary provided by the lab instructor responsible for the course who compiles all grades and forwards them to the faculty member teaching the associated lecture course at the end of each semester. In other cases, lab instructors communicate grades directly to faculty throughout the semester. Still others meet with faculty at the end of the semester to review grades. This process is unique to each course taught.
14. Laboratory instructors write student recommendations if given sufficient notice.
15. Laboratory instructors, as is the case with faculty, are to maintain the confidentiality of student records.

Operational

16. Laboratory instructors acquire and prepare equipment, including chemicals, solutions, instrumentation, etc., as needed for each lab exercise.
17. Laboratory instructors coordinate and provide logistical support for fieldwork, including equipment and vehicles.
18. For laboratories that employ laboratory and/or learning assistants, laboratory instructors hire, train, and supervise the assistants in their lab section.
19. Laboratory instructors keep laboratory spaces in good order, supplies stocked, and support department use of equipment.
20. Laboratory instructors and faculty maintain current training as required by federal and state agencies.
21. Laboratory instructors and faculty manage all laboratory wastes generated in their labs and oversee student management of the waste.

Departmental/Program

22. Laboratory instructors participate in department/program meetings and are involved in department/program activities as appropriate.
23. Laboratory instructors—in collaboration with faculty partners, department chairs/program directors, and fellow lab instructors—will develop a plan for coverage of labs in case of short-term absences (less than 3 days). (Absences of 3 or more days should be communicated to Human Resources.)
24. Laboratory instructors participate in searches for laboratory instructors and faculty and assist with on-boarding of new lab instructors.



Appendix A: Lab Instructor and Faculty Debrief on the Course Laboratory Curriculum and Instruction

It is beneficial for Lab Instructors and Faculty to debrief the semester and you may use the questions below to guide this discussion. After the debrief meeting, we ask Lab Instructors to reflect on the following questions by filling out one debrief form per course instructed by the LI. The debrief meeting may be structured differently depending on the number of lab and course sections and instructors. If an LI teaches a lab that links to multiple sections of one course, the LI could meet once with all the faculty involved with that course. If multiple LIs teach lab sections for one course, the LI could meet individually with the faculty member(s) teaching that course. If faculty and LIs who teach courses with multiple faculty and multiple LIs agree, then one group meeting may be advantageous.

Course Name and Number: _____

Laboratory Instructor: _____

Faculty: _____

Semester and Year: _____

About your lab course

1. Understanding that there are many models for laboratory instruction at Bowdoin, briefly describe your role as a Lab Instructor in this course. You may include information such as number of sections and instructors, or integration between class and lab, or collaboration between LI(s) and Faculty member(s).

Reflection on your lab course

Taking into account the LI BCQs, the instructional expectations for LIs and faculty (Appendices A and B below and contained in revised LI Handbook), and the debrief with your faculty member(s), please reflect on and document your responses to the following questions with up to three points per question.

2. What worked well in terms of the laboratory curriculum and instruction and collaboration with your faculty?
3. What challenges did you experience with regard to the laboratory curriculum and instruction?
4. If you have taught this lab before, reflect on any changes you made based on student feedback and self-reflection?
5. What are some ideas or goals for future iterations of this lab (taking into account student feedback and the ongoing effort to be an inclusive educator)?
6. Is there anything else you would like to discuss and document (optional)?

General Expectations for Laboratory Instructors

Instructional

1. Laboratory instructors and science faculty members design a lab curriculum that is based on learning goals they discuss, agree to, and articulate for students.
2. Laboratory instructors work both independently and collaboratively with science faculty members to design *inclusive* exercises for the laboratory that foster *all* students' understanding of scientific concepts, methodology, and principles.
3. Faculty and laboratory instructors collaborate on efforts to make inclusive excellence a hallmark of their courses and labs. Faculty and lab instructors are strongly encouraged to avail themselves of inclusive classroom trainings and resources from the Baldwin Center for Learning and Teaching and/or their field specific professional organization.
4. Laboratory instructors work both independently and collaboratively with science faculty members to construct labs that are current with the fields of study in which lab courses are grounded.
5. Laboratory instructors develop (in consultation with faculty) lab-related curricular materials and coordinate (with faculty) semester-long syllabi and schedules of laboratory exercises.
6. Laboratory instructors facilitate student scheduling, registration, and maintenance of waitlists for all lab sections of the courses (sometimes in coordination with faculty).
7. Laboratory instructors (in consultation with faculty) develop and deliver suitable pre-instruction for each lab period they teach.
8. Laboratory instructors actively oversee students' work in the laboratory and/or field to answer questions, assist students, evaluate student performance, and maintain student safety.
9. Laboratory instructors engage students in the process of scientific communication (e.g. lab notebook, reports, posters, presentations, etc.) and foster both scientific and quantitative reasoning and literacy.
10. Laboratory instructors grade student lab assignments and return the graded assignments to students in a timely fashion (as agreed upon by faculty).
11. Laboratory instructors communicate with faculty members about student performance in lab, as warranted, and send comment cards to students when appropriate.
12. Laboratory instructors hold scheduled office hours and/or open lab time and schedule student meetings on an as-needed basis.
13. Laboratory instructors compile student final lab grades. In some cases, this is a grade summary provided by the lab instructor responsible for the course who compiles all grades and forwards them to the faculty member teaching the associated lecture course at the end of each semester. In other cases, lab instructors communicate grades directly to faculty throughout the semester. Still others meet with faculty at the end of the semester to review grades. This process is unique to each course taught.
14. Laboratory instructors write student recommendations if given sufficient notice.
15. Laboratory instructors, as is the case with faculty, are to maintain the confidentiality of student records.

Operational

16. Laboratory instructors acquire and prepare equipment, including chemicals, solutions, instrumentation, etc., as needed for each lab exercise.
17. Laboratory instructors coordinate and provide logistical support for fieldwork, including equipment and vehicles.

18. For laboratories that employ laboratory and/or learning assistants, laboratory instructors hire, train, and supervise the assistants in their lab section.
19. Laboratory instructors keep laboratory spaces in good order, supplies stocked, and support department use of equipment.
20. Laboratory instructors and faculty maintain current training as required by federal and state agencies.
21. Laboratory instructors and faculty manage all laboratory wastes generated in their labs and oversee student management of the waste.

Departmental/Program

22. Laboratory instructors participate in department/program meetings and are involved in department/program activities as appropriate.
23. Laboratory instructors—in collaboration with faculty partners, department chairs/program directors, and fellow lab instructors—will develop a plan for coverage of labs in case of short-term absences (less than 3 days). (Absences of 3 or more days should be communicated to Human Resources.)
24. Laboratory instructors participate in searches for laboratory instructors and faculty and assist with onboarding of new lab instructors.

General Expectations for Faculty Working with Laboratory Instructors

(from the Laboratory Instructor Handbook 2022)

Instructional

1. Faculty work with laboratory instructors to design a lab curriculum that is based on learning goals they discuss, agree to, and articulate for students.
2. Faculty assist laboratory instructors to design *inclusive* exercises for the laboratory that foster *all* students' understanding of scientific concepts, methodology, and principles.
3. Faculty and laboratory instructors collaborate on efforts to make inclusive excellence a hallmark of their courses and labs. Faculty and lab instructors are strongly encouraged to avail themselves of inclusive classroom trainings and resources from the Baldwin Center for Learning and Teaching and/or their field specific professional organization.
4. Faculty assist laboratory instructors to construct labs that are current with the fields of study in which lab courses are grounded.
5. Faculty communicate with laboratory instructors about student performance in class and lab, as warranted, and send comment cards to students when appropriate.
6. Faculty visit and participate in lab sessions as appropriate.
7. Faculty provide regular check-ins with laboratory instructor(s) throughout the semester, providing constructive and respectful feedback and being open to such feedback in return.

Departmental/Program

8. Faculty—in collaboration with lab instructors—will develop a plan for coverage of labs in case of short-term absences (less than 3 days). (Absences of 3 or more days should be communicated to Human Resources.)

9. Faculty share concerns with department chair/program director, Human Resources, or Academic Affairs as appropriate.
10. Faculty give due diligence to the semester debrief with laboratory instructors, consulting BCQs and providing timely and thorough feedback.

Laboratory Instructor-Bowdoin Course Questionnaire

Appendix B

Bowdoin values teaching excellence, and student feedback on our courses provides important information for the evaluation of teaching and curricular effectiveness. At the end of every semester, the College solicits your input and asks that you take a few minutes to complete an online Bowdoin Course Questionnaire (BCQ) for each of your current courses.

Your responses to this questionnaire are of particular value to individual faculty members and lab instructors as they look to make improvements to the learning opportunities they offer in their courses. We also view the questionnaire as an opportunity for you to reflect on your role in advancing your learning.

Your instructors will likely schedule a time in class for you to fill out your questionnaire. You can find the link to your course questionnaires in the BCQs for Students link in Canvas. If you are unable to complete a questionnaire in one session, make sure to save your work by clicking the “SAVE” button so you can resume later. Please be sure to submit your BCQ by 5PM on the last day of Reading Period.

[Click here to go to Canvas](#)

Your responses are completely confidential and will be available to the instructor only after final grades have been submitted to the Registrar. We appreciate your taking the time to offer candid and substantive feedback; we ask that you do so in a constructive and respectful manner.

If you have questions, please contact Jeanne Bamforth (jbamfort@bowdoin.edu).

Thank you.

Jennifer Scanlon
Senior Vice President and Dean for Academic Affairs

1. STUDENT SELF-REFLECTION

Please rate the level of effort you put into your learning in this laboratory section.

- ☐ 5-Very high
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Very low

- 1) Please comment on your level of effort (including accessing resources the laboratory instructor provided such as laboratory manual, Canvas materials, etc.).

- 2) What motivated you to take the course affiliated with this laboratory section (to fulfill major, minor, distribution requirement, or time slot; because of your interest in the topic; because of your previous experience with courses in the department)?

2. LABORATORY INSTRUCTION

Please keep in mind that you are completing this questionnaire in relation to laboratory instruction (your faculty member[s] will ask you to complete a second, different questionnaire relating to their instruction).

A. TEACHING EFFECTIVENESS

The laboratory instructor was prepared for class.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

The laboratory instructor was able to communicate ideas, theories, skills, and/or concepts effectively, which facilitated my learning.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

The laboratory instructor encouraged critical and independent thinking.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

Please comment on the teaching effectiveness of the laboratory instructor.

B. COMMUNICATION

During scheduled lab time, the laboratory instructor was available and helpful.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

The laboratory instructor's oral feedback during lab time was helpful to me.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

Did you communicate with the laboratory instructor outside of lab time about your learning?
(Scheduled office hours/meetings by appointment/email/other)

- ☐ Yes
- ☐ No

If yes, these communications were helpful to my learning.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

Please comment on the laboratory instructor's availability, helpfulness, and communication.

C. ASSIGNMENTS

The laboratory's assignments contributed to my learning.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

The laboratory instructor's feedback on assignments was helpful to me.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

The laboratory instructor returned assignments with enough time to benefit my learning.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

D. EVALUATION

The laboratory instructor's standards for evaluation were clearly communicated (verbally and/or through the use of rubrics, and/or on the syllabus, etc.)?

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

Please comment on assignments and evaluation.

3. LABORATORY CONTENT

I found the laboratory content intellectually challenging.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

The laboratory content fostered my intellectual growth.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

The laboratory learning goals/objectives were clear.

- ☐ 5-Strongly agree
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Strongly disagree

Thinking about the answers you provided above, and other factors, what is your overall assessment of the laboratory content?

- ☐ 5-Excellent
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Poor

Please comment on your overall assessment of the laboratory content.

E. OVERALL ASSESSMENT OF THE INSTRUCTION

Overall, how would you rate the quality of the laboratory instruction in this course?

- ☐ 5-Excellent
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1-Poor

Please comment on your overall assessment.

4. RECAP

What worked best about the laboratory?

Were there particular modules or labs that you found more or less informative and engaging?

What suggestions, if any, would you offer?

- END -

Senior Vice President and Dean for Academic Affairs

Professional Activities Form for Laboratory Instructors - 2024

Please return completed form and c.v. to the Office of the Dean for Academic Affairs by **March 24 2025**.

Name: _____ Date: _____

Department(s): _____

I. Teaching

A. Labs

Please list the labs and/or lab prep you directed this year.

Semester	Course	Lab section	Enrollment	Remarks*

* Please indicate the number of hours per week for each lab. If the lab was jointly taught, note other instructor(s).

****For the following sections, please answer with up to three points for questions relevant to your work.****

B. Additional Time with Students

Please describe additional instructional time spent with students enrolled in your laboratory course including but not limited to make up lab and assisting with lecture components of the courses.

C. Laboratory-Related Curriculum Development

Please describe lab-related curricular development you pursued this year to prepare for or improve your instruction.

D. Learning/Lab Assistant Supervision

Please describe any responsibilities you may have for supervising Learning or Lab Assistants.

II. Student Support

Please list the work you conducted in support of students outside of formal laboratory instruction. Examples include but are not limited to: informal advising, writing letters of recommendation, contributing to independent studies and honors projects, and student club advising.

III. Service to Department/Program

With the understanding that opportunities for service vary across departments/programs (as well as within depending on chairs/directors), please list all activities conducted in service to your department(s)/program(s). Examples include but are not limited to: meeting with/interviewing job candidates, mentoring newly-hired lab instructors, maintaining equipment, and/or ordering supplies.

VI. Diversity and Inclusion

Please describe specific examples of how your work, including teaching and mentorship, may support Bowdoin's commitment to diversity and inclusion. These could include:

- Curricular efforts to increase the diversity of students in the major
- Extra-curricular efforts to increase students' sense of belonging within your department or program
- Efforts to further antiracist and inclusivity practices within and outside of your department or program.

VII. Other Activities

Please list participation in other work-related activities not identified above. Examples include but are not limited to: professional development on- or off-campus (e.g. BCLT workshops or consultations, conferences, trainings, reading books addressing pedagogy, online webinars/workshops), collaboration with other offices (e.g. McKeen Center or Student Fellowships office), service on college-wide working groups, summer opportunities and writing for professional publications.

VIII. The Future

- 1) What longer-term needs (e.g. resources or professional development) exist for laboratory instruction at Bowdoin?
- 2) What professional goals would you like to achieve in the next three to five years?