

# Writing in Ecology and Evolutionary Biology

## A program profile

This study provides a snapshot of the writing that students are required to do in EEB programs. Program profiles are useful for assessing whether a department is achieving its stated objectives for student learning and implementing practices that will help students gain the desired knowledge and skills. We asked:

- How often are EEB students writing?
- When in the four years of their program are they asked to write and in what types of courses?
- What kinds of assignments are EEB students writing?
- What information and guidance are students given about writing tasks?

**Methods:** We identified 195 assignments from 59 course syllabi and online guidelines. We identified the year level and course type for all EEB courses. For each assignment, we coded for a set of assignment features.

## Results



Fig. 1. Word cloud showing the genres assigned in EEB. Size of the word indicates the frequency of that genre in EEB assignments.

### Frequency and type of assignments

EEB students are writing a lot, and often.

- The majority of courses (80%) assign writing, with a particularly high percentage in first and fourth years: all three first year and almost all (94%) fourth-year courses have at least one writing assignment.
- There is more writing in lower enrollment seminar and research courses than in other types: 100% of independent research, seminar, and field courses have writing assignments, and seminar and research courses have the highest number of writing assignments per course ( $3.5 \pm 2.65$  and  $3.08 \pm 1.23$ ).

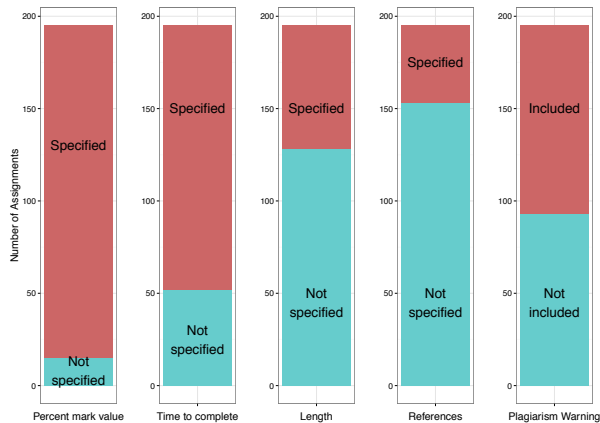
EEB students are exposed to a variety of writing assignments throughout their degree. We categorized assignments genres and identified 38 different genre types.

- Many assignments (24.6%) are some form of “report”, including lab, book, field and progress reports (Fig. 1).
- Other common assignment types include posters, critiques, proposals, and journals.

## Communicating instructor expectations to students

Including information on instructor expectations in syllabi and assignment instructions reduce student confusion surrounding the writing task.

**Rubrics** and **examples** effectively communicate expectations and evaluation criteria.



- EEB syllabi and instructions usually specify the percent mark value (92%) and the time to complete (73%) (Fig. 2).
- EEB syllabi and assignment instructions less often specify the length of the assignment (34%) and reference requirements (22%) (Fig. 2).
- Plagiarism warnings are included in the majority (53%) of assignments (Fig. 2).

Fig. 2. The number of assignments that specify the percent mark value, time to complete, length, references, and a plagiarism warning.

### Helping students with the writing task

Features of assignments can support students as they write, build skills necessary for effective science writing, and help transfer skills between courses and from academic programs to the workplace.

- Nested assignments are a common part of EEB assignments (63%). Nested assignments occur most often in first and second year (62% and 78% of assignments, respectively), and most often in independent research courses (96% of assignments).

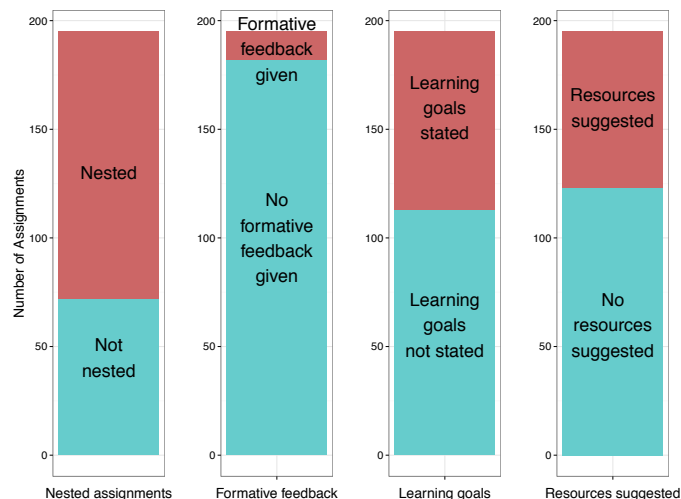


Fig. 3. The number of assignments that are nested, provide formative feedback, learning goals, and suggest resources.

**Nested assignments** break larger writing assignments into smaller components in order to effectively build skills.

**Formative feedback**, or in-process feedback, gives students feedback on an assignment before it is submitted for final evaluation. Formative feedback is helpful for guiding students through writing assignments.

- Few EEB assignments (7%) include formative feedback, with the most occurring in first year (25%) and fourth year (15%) and in lecture with TA tutorial (25%) and research (11%) courses.
- Learning goals are stated most in first (63%) and fourth (62%) year courses and less in second (23%) and third (48%) years. Learning goals are stated most in breadth (75%), seminar (54%), and lecture courses (54%), and less in field (25%) and research (33%) courses.
- Information on resources for students (such as writing centres) is included in 37% of assignments.

## Workplace writing tasks

Most EEB graduates will need to write for a **variety of audiences** in their careers, and academic and non-academic writing involves **close collaboration**.

- In most EEB assignments students presumably write for their instructor and/or TA as no specific audience is given. Only four out of 195 assignments asked students to write for a specific audience (a non-profit organization). Three assignments asked students to write for the “general public” or a “general audience.”
- Only 8% of EEB assignments include group work, either optional or required.

## Writing in independent research, seminar, and field courses

All EEB students write throughout their program, but students who take independent research, seminar, and field courses write substantially more, often with more support, and almost exclusively for academic audiences.

- Assignments in seminar and independent research courses are more often nested than those in other courses (54% and 90%, respectively).
- Students in seminar and field courses are given more examples (31% and 25%, respectively).
- These courses provide excellent academic preparation; research, seminar, and field course assignments are almost exclusively for academic audiences (100%, 100%, and 99%, respectively), and 77%, 75%, and 89% of research, seminar, and field courses require references, a skill that is very relevant to academic work.

## Summary

### Strengths

- Students taking courses in EEB have a great deal of exposure to scientific writing; they are asked to write in the majority of courses they take, and the writing assignments are diverse in their topic, form, length, and purpose.
- The majority of EEB assignments are nested.

### Challenges

- EEB instructors can be more specific about their expectations for writing assignments in syllabi and assignment instructions. Examples and rubrics would further clarify expectations.
- Instructors can more often state learning goals, providing formative feedback, and suggest resources.
- Instructors can provide students with writing skills useful beyond university; instructors could ask for assignments directed at diverse audiences, and incorporate more group work.

### Opportunities

- Notably, with the exception of providing more formative feedback, most of these suggestions can be implemented without additional resources.
- The WIT program (Writing Instruction by TAs) – in which EEB is already participating – can provide support for many of these changes.

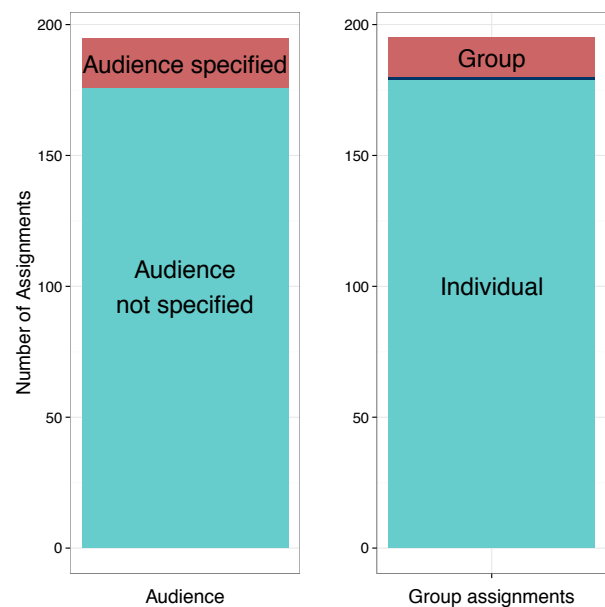


Fig. 3. The number of assignments that specify the audience, and the number of assignments that are individual and group assignments.

Table 1. Table of assignments and assignment features, by year.

	Year 1	Year 2	Year 3	Year 4	Total
Total courses	3	14	25	17	59
Courses with writing	3 (100%)	9 (64%)	19 (76%)	16 (94%)	47 (80%)
Total assignments	8	77	63	47	195
Assignments per course (mean $\pm$ SD)	2.67 $\pm$ 2.08	2.14 $\pm$ 2.309	2.52 $\pm$ 2.62	2.67 $\pm$ 1.86	2.51 $\pm$ 2.28
Academic target audience	8	74	63	46	191
Other target audience	0	3	0	1	4
References required	4 (50%)	8 (10%)	17 (27%)	13 (28%)	42 (22%)
Nested assignments	5 (62%)	60 (78%)	33 (52%)	25 (53%)	123 (63%)
Length specified	5 (63%)	18 (23%)	22 (35%)	22 (47%)	67 (34%)
Percent mark value specified	8 (100%)	64 (83%)	61 (97%)	47 (100%)	180 (92%)
Time to complete specified	5 (63%)	60 (78%)	45 (71%)	33 (70%)	143 (73%)
Suggested resources	7 (88%)	7 (9%)	27 (43%)	31 (66%)	72 (37%)
Topic choice	1 (13%)	10 (13%)	14 (22%)	13 (28%)	38 (19%)
Style manual	4 (50%)	2 (3%)	14 (22%)	8 (17%)	28 (14%)
Rubric/scoring guide	3 (38%)	6 (8%)	11 (17%)	2 (4%)	22 (11%)
Plagiarism warning	6 (75%)	20 (26%)	41 (65%)	35 (74%)	102 (53%)
Group work (optional or required)	0 (0%)	5 (6%)	10 (16%)	1 (2%)	16 (8%)
Example	2 (38%)	1 (8%)	5 (17%)	6 (4%)	14 (7%)
Formative feedback	2 (25%)	3 (4%)	1 (2%)	7 (15%)	13 (7%)
Learning goals stated	5 (63%)	18 (23%)	30 (48%)	29 (62%)	82 (42%)

Table 2. Table of assignments and assignment features, by course type.

	Lecture only	Lecture + Lab	Lecture+ TA Tutorial	Seminar	Field	Research	Breadth	Total
Total courses	11	22	4	4	3	12	3	59
Courses with writing	8 (73%)	15 (68%)	3 (75%)	4 (100%)	3 (100%)	12 (100%)	2 (67%)	47 (80%)
Total assignments	26	59	4	13	4	85	4	195
Writing assignments per course (mean $\pm$ SD)	2.09 $\pm$ 1.97	2.82 $\pm$ 2.99	1.00 $\pm$ 0.82	3.5 $\pm$ 2.65	1.33 $\pm$ 0.58	3.08 $\pm$ 1.23	1.33 $\pm$ 1.53	2.51 $\pm$ 2.28
Academic target audience	25 (96%)	59 (100%)	4 (100%)	13 (100%)	4 (100%)	84 (99%)	2 (50%)	191 (98%)
Other target audience	1 (4%)	0	0	0	0	1 (1%)	2 (50%)	4 (2%)
References required	7 (27%)	19 (32%)	2 (50%)	3 (23%)	1 (25%)	9 (11%)	1 (25%)	42 (22%)
Nested assignments	9 (35%)	23 (40%)	0 (0%)	7 (54%)	0 (0%)	82 (96%)	2 (50%)	123 (63%)
Length specified	9 (35%)	25 (42%)	3 (75%)	7 (54%)	0 (0%)	23 (27%)	0 (0%)	67 (34%)
Percent mark value specified	24 (92%)	59 (100%)	4 (100%)	13 (100%)	4 (100%)	72 (85%)	4 (100%)	180 (92%)
Time to complete specified	22 (85%)	51 (86%)	3 (75%)	12 (92%)	2 (50%)	49 (58%)	4 (100%)	143 (73%)
Suggested resources	16 (62%)	31 (53%)	3 (75%)	11 (85%)	2 (50%)	9 (11%)	0	72 (37%)
Topic choice	4 (15%)	6 (10%)	2 (50%)	0	3 (75%)	20 (24%)	3 (75%)	38 (19%)
Style manual	6 (23%)	15 (25%)	0	2 (15%)	1 (25%)	4 (5%)	0	28 (14%)
Plagiarism warning	18 (69%)	58 (98%)	3 (75%)	11 (85%)	1 (25%)	8 (9%)	3 (75%)	102 (52%)
Rubric	1 (4%)	16 (27%)	2 (50%)	0	0	2 (2%)	1 (25%)	22 (11%)
Group work (optional or required)	1 (4%)	12 (20%)	0	0	0	1 (1%)	2 (50%)	16 (8%)
Example	0	9 (15%)	0	4 (31%)	1 (25%)	0	0	14 (7%)
Formative feedback	0	2 (3%)	1 (25%)	1 (8%)	0	9 (11%)	0	13 (7%)
Learning goals stated	14 (54%)	27 (46%)	2 (50%)	7 (54%)	1 (25%)	28 (33%)	3 (75%)	82 (42%)