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EDUCATION RESEARCH

It's in the syllabus . . . or is it? How biology syllabi can serve as communication tools for creating inclusive classrooms at a large-enrollment research institution

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Abstract

Syllabi are usually required by institutions of higher education and often are the first exposure that students have to a particular course. Instructors can use syllabi as a mechanism to convey important information to students. Moreover, a syllabus can be considered a tool to create inclusive biology courses by transmitting information to all students equitably. In this study, we examined 75 biology course syllabi collected from a research-intensive institution to examine what content instructors include. We reviewed the syllabi to determine the presence or absence of elements and assessed to what extent there were differences in the presence or absence of certain syllabus elements based on course level and course size. We found that instructors are most likely to include content about course expectations and least likely to include content about creating positive classroom climate on their course syllabi. Despite university requirements, many instructors did not include the university-mandated criteria and they did not include elements that could increase how inclusive students perceive the course to be. However, instructors more often included inclusive content when it was required by the university. We also found that students enrolled in upper level courses and small enrollment courses are provided with less content on their syllabi, which we would then interpret as a less inclusive syllabus. We discuss the implications of how these results may differentially impact students in these courses and how the syllabus can be a tool for creating more inclusive college biology courses.

capital; cultural capital; hidden curriculum; inclusive; syllabus; syllabi

INTRODUCTION

The course syllabus is a near universal feature of college courses that can affect how students approach different aspects of the class (1, 2). Typically posted on course management sites or handed out on the first day of class, these documents provide a source of information for students about the mechanics of the course and can serve as a written contract between instructors and students (3). Additionally, the syllabus is often the first encounter that a student has with a course and an instructor, so the syllabus is often not only a student's first impression of a course but can also initiate building student-instructor relationships (4, 5).

Although the syllabus is a common element of college courses and is frequently described as a written contract between the student and instructor, there has been surprisingly little research into describing how such an agreement is used by students and instructors. Syllabi have been used by students in court proceedings (6); these proceedings have included grade disputes, such as instances where an instructor added additional grading criteria not included in the syllabus and where an instructor did not follow the procedures outlined in the syllabus for failing a student in a course.

However, with the exception of these more extreme examples, we know of no studies that have examined how the syllabus is being used as a contract between the instructor and the students in the context of the course. This brings into question whether the syllabus is better described as a contract or as a communication tool for students.

What Information Do Syllabi Include and What Do Students Perceive Is Important?

What information do syllabi communicate to students? Prior studies have analyzed what is most often included by instructors on a course syllabus (1, 3, 7). A study that examined internet-gathered syllabi from 1,000 courses across a wide range of disciplines from different institutions found that syllabi are most likely to include contact details for the professor, course topics and required text, and grading policies (7). Another study examining the information included on course syllabi from 100 general education courses at a single midsized, midwestern university found similar results (1). Multiple studies have explored what students perceive to be the most important information communicated via course syllabi; one study found that students perceive the most

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important syllabus elements to be those relating to course logistics and grading (e.g., exam dates, project descriptions, and attendance policies) as well as information about how to contact instructors outside of class (8). Another study documented that while instructors and students are generally in agreement about which elements of a syllabus they perceive as important, there were also some significant differences; namely, while instructors placed more emphasis on course, instructor, and textbook information, students found details of exams and quizzes, dates and times of required events, availability of extra credit, and information about support services, such as tutoring, to be more important (9).

Additional studies have explored how frequently students referenced course syllabi and which items students were looking for most often. These studies found that students referenced syllabi more frequently in the beginning of the semester compared with later in the semester and the elements most often reviewed were what topics would be covered in class, dates for upcoming tests and quizzes, grading policies, and how to contact the instructor, whereas course information, withdrawal dates, and titles and authors of readings received the lowest attention from students (10, 11). Another similar study found that students reported most frequently turning to their syllabi for the course schedule, assigned readings, test dates, and due dates (12). These studies indicate that students are using the syllabus primarily as a source of information and predominantly at the beginning of the course. They also may not necessarily be looking for course or campus resources, but this could be because these are often not included on course syllabi.

Most institutions require that instructors create a syllabus for each course and may even request specific elements to be on course syllabi. For example, many institutions have written statements that the distribution of a course information sheet or syllabus is required for all university undergraduate courses (13). However, most instructors, particularly at research-focused institutions, have a lot of autonomy in how and in what way information is presented on a syllabus. Specifically, instructors have freedom over what to include on the syllabus, how to organize that information, and what tone to write it in, and as such, there is much variation in instructor syllabi (14, 15). Some instructors seek and receive feedback on their syllabi when they design a course for the first time, and a syllabus for a new course or new degree program may have to be officially approved by the department, institution, or even a state-wide board for some public institutions (16, 17). However, even though some institutions have specific policies that are required elements of a syllabus, once a course has been approved, at many institutions there is little oversight of the specific syllabus presented to students each semester and whether an instructor is being compliant with institutional policies or recommendations. When a new instructor starts teaching a course that has been created by someone else, they can often make changes to the syllabus without getting prior approval. Furthermore, some instructors get a copy of a syllabus created by someone else and may not think deeply about the way the syllabus is written. As such, an instructor's syllabus may actually be a relic of the instructional decisions or biases of former instructors of the course (1, 18–20). Although syllabi can be evaluated for accreditation purposes and sometimes course syllabi are used for promotion and tenure as a measure of teaching (2), for the most part, the syllabus remains within the purview of the instructor.

While there are certainly common elements of course syllabi, the content included on individual syllabi can vary widely. While syllabi are most likely to include course name, course number, instructor name, and required text, these were only included on 80% of the syllabi in a study of syllabi gathered from 1,000 courses (7). Another study conducted two separate reviews of all undergraduate course syllabi at a single institution for instructor compliance in including university-required syllabus content (21). The 2011 review found that syllabi included ∼74% of the required elements, and the 2013 review found that syllabi included an average of 78% of the required elements. Additionally, this study analyzed "best practice" elements included on course syllabi, defined as those instructional practices that help to create a learner-centered course (e.g., expected classroom behavior, descriptions of specific course projects), and found these to be included less frequently than those elements required by the university. These studies collectively demonstrate that even when universities try to dictate elements of a syllabus, instructors are noncompliant and syllabi often lack essential elements.

Syllabi as Tools To Equitably Distribute Information Among Students

Because everyone in the course should have access to the syllabus, the content of the syllabus can serve to equalize the information that students from different backgrounds know about course policies, university policies, and university resources (22). This may be particularly relevant for first-generation college students, first-year students, or community college transfer students who are new to navigating the university environment (5, 19). In this way, the syllabus serves as an important source of cultural capital. Cultural capital includes the knowledge, skills, education, and advantages that further one's success in a particular field (23). As such, syllabi can provide students with cultural capital by making the knowledge one needs to succeed in the course explicit. The syllabus can make explicit the norms and expectations of a course (1), in essence converting information that could be unknown by some individuals into a written document that is accessible to everyone.

The social norms of colleges are well-known to students who come from a background that aligns with the culture of universities; however, students whose backgrounds are different from those highly represented at universities may struggle to understand how to navigate the process of college and what is appropriate (22, 24–27, 73). Giving access to information in a syllabus may be a powerful mechanism for combating inequities in students' incoming knowledge about a course or institution. Furthermore, it may mitigate gaps in student knowledge of the social norms of the student-instructor relationship. Evidence suggests that there are differences in student willingness to negotiate course expectations (28); specifically, men and more senior students were found to be more willing to negotiate a grade with their instructor compared with the female or first-year peers. Explicit guidelines outlined in the syllabus can

help students realize when it is appropriate to ask for these exceptions and essentially give all students permission to ask. Furthermore, universities offer a number of resources that students can use, yet not all students are aware of these resources or take advantage of them. Studies have shown that students who use campus resources more frequently reported higher social adjustment (29), but there are inequities in who is aware of campus resources and who uses them (30). Specifically, international students and nonnative speakers tend to use these resources more, especially writing centers and student success centers (31, 32). Additionally, women and students over the age of 40 are more likely to access personal counseling services on campus (32). There are likely many reasons why some students access institutional resources more than others; one reason may be that some students do not know that certain resources exist. For example, students with disabilities are sometimes unaware that Disability Resource Centers (DRCs) exist on their campus or do not know the range of services that DRCs provide (33–35). By listing general university resources on a syllabus, all students can become aware of opportunities that exist. As such, the syllabus becomes more than just a written contract between the instructor and students; sharing information through the syllabus can be used to create more inclusive courses. An inclusive course is one in which all students are welcomed and their success is maximized. Providing students with cultural capital through the syllabus can be inclusive because it can help level the playing field for students by giving all students access to the same information about the course and the institution as a whole. This makes it so that every student in the course has an equal opportunity to access and benefit from the course to maximize their own individual experience, regardless of their background or identities. Rather than pinpointing specific elements of syllabi as inclusive (although some can be specifically inclusive for certain populations of students), we view the syllabus as a whole as one way to promote inclusion by transmission of classroom standards and university resources.

Current Study

Recently, there have been calls for integrating syllabus content that helps address inequities in student incoming knowledge and expectations about the course. These have included advice on what is best to include on a syllabus and how the syllabus can be structured to make it more accessible to students (36, 37), statements that can be added to a course syllabus to help convey a positive and inclusive classroom environment (38, 39), and that the way the syllabus is presented on the first day of class can increase student engagement with the syllabus (40). These calls have all been in the form of editorials or essays, and we know of no studies that have empirically examined the presence of this content on course syllabi. To address these gaps in the literature, we have set out to explore course syllabi from a single department at one institution. We have chosen to focus on biology course syllabi because natural science courses have historically been less diverse and less inclusive of students compared with humanities or social sciences courses (41) and natural sciences instructors are often seen as less approachable (42, 43). Thus a syllabus that explicitly conveys the

norms of the course is likely to be even more important for natural sciences such as biology. Specifically, the following are our research questions centered on examining the syllabus as a way to equitably communicate information in the context of biology courses:

- What type of content do biology instructors include on their course syllabi, who could the content benefit, and how might the syllabus be used as a tool to promote inclusion?
- What type of content does the university require instructors to include on their syllabi and to what extent does requiring content affect what biology instructors actually include?
- To what extent is there a difference in the content included on biology course syllabi between upper and lower level courses and between small and large enrollment courses?

METHODS

Syllabi Collection

This study was conducted at a research-intensive institution in the Southwest United States. To generate our collection of syllabi, we used the university's course catalog to identify undergraduate biology courses offered in the spring 2019 semester at the institution. On the course catalog page, instructors have the opportunity to upload a copy of the syllabus for the course they are teaching, which can be accessed by staff and students. Our initial collection of syllabi contained 39 syllabi for in-person undergraduate biology (BIO) courses, which is ~28% of all biology courses offered at the institution in spring 2019.

To increase the number of syllabi in our data set, we identified instructors who were teaching undergraduate biology courses in the spring 2019 semester who had not uploaded their syllabus to the course catalog. We sent these instructors personal emails to request their syllabi for the courses that they were teaching. These emails were broad and did not disclose the purpose of the study (see Supplemental Data for a copy of the email request; Supplemental material for this article is available at https://doi.org/10.5281/zenodo.4317968). This resulted in an additional 53 course syllabi that were added to our collection. In total, we had 92 syllabi in our initial data set, which accounted for ~67% of all biology courses offered in spring 2019 at the institution.

To prevent oversampling syllabi from a single instructor, the data set was reviewed to identify instructors teaching multiple courses. If an instructor had more than one syllabus in our data set, one syllabus was selected at random. The final data set consisted of 75 course syllabi from unique instructors. This represents ~58% of all instructors teaching in-person biology courses during the spring 2019 semester in this department at this institution.

Because the syllabi collected are publicly available data at the institution, Institutional Review Board approval was not necessary for this study. Additionally, before analysis, we de-identified all course instructors to ensure privacy and confidentiality (e.g., replaced instructor name with an ID number). Any quotes that are used have been edited to preserve content while maintaining syllabus anonymity.

Identifying and Coding Syllabi Content

Many institutions require instructors to include specific content on their syllabi; we hypothesized that such requirements would influence what content instructors chose to include on their syllabi. Therefore, we chose to examine the university-required policies on syllabi within a single department at one institution. First, we examined what policies were required by this particular institution using the university's academic affairs manual regarding faculty responsibilities for course syllabi. Using this manual, we identified a total of 15 required syllabus elements. In addition to reviewing syllabi for the presence of required content, we wanted to take a more holistic approach in examining whether there is additional content that is present or missing from course syllabi. As such, we conducted an extensive literature search to identify additional content that has been suggested by the higher education community to incorporate onto course syllabi. Specifically, we were interested in syllabus content described in the literature as suggested for promoting diversity, equity, and inclusion. We conducted a literature search using Google Scholar and included combinations of terms, such as "course syllabus," "university," "policy," "diversity," "inclusion," and "equity." We identified prior peer-reviewed research articles regarding syllabus policies, as well as online editorial articles and advice guides developed by experts in inclusive practices. The dates on the search were not limited to any particular range. From this review of the literature, we collected supporting information on how certain university-required syllabus elements may be more inclusive for specific populations of students and we identified 10 additional syllabus elements that had been recommended to include on a syllabus to help create more inclusive courses. It is important to note that we consider all information in the syllabus to be important to include to promote inclusivity so that course information is equitability transmitted to all students.

We created a rubric defining each of the 15 university-required syllabus elements and the 10 additional syllabus elements that were identified from the literature. There was one element, offensive content notification, that was suggested by the institution because it is only required for courses that present potentially offensive content. Since this policy was only suggested in the academic affairs manual but not explicitly required and there is literature supporting the importance of this type of component on a syllabus (6, 36), we chose to include this as an additional syllabus element rather than a university-required syllabus element. A detailed version of the rubric can be found in the Supplemental Data. Using deductive coding, two researchers (L.E.G, and R.A.S.) individually coded the same 15 course syllabi (20% of the data set) for the presence or absence of each identified element. The two researchers compared results and then calculated the interrater reliability value (κ = 0.86), which was within the acceptable range. One researcher (R.A.S.) then coded the remaining 60 course syllabi. While coding for the absence and presence of specific elements on course syllabi, one researcher (R.A.S.) also kept a log of excerpts and examples from specific elements of the syllabi, noting differences in wording and presentation. These excerpts were later analyzed based on literature about the use of inclusive language and taking a student-centered approach in the classroom (1, 19, 44). We then used this repository of excerpts to highlight certain language that meets the minimum requirements for an element. We also classified other excerpts as exemplars that could better promote an inclusive course environment.

Examining Whether Content Is Disproportionately Likely To Be Present in Upper Versus Lower Level Courses or in Small Versus Large Enrollment Courses

We used binary logistic regression to determine to what extent course level and course enrollment size predict which criteria are more likely to be included on the course syllabi. Courses at this institution are labeled as 100 level, 200 level, 300 level, or 400 level. As such, 100- and 200-level courses are considered to be lower level while 300- and 400-level courses are upper level. With regard to class size, we used the actual enrollment size reported at the start of the spring 2019 semester for each course syllabus. We predicted that if the instructors perceived the course was small enough that they could easily communicate information to students in-person without the need for written communication to all students, then this may affect what content instructors choose to include on their syllabi. We know that this number varies by institution, but we estimated a cut-off of <50 students to be labeled as "small enrollment" and $\geq$50 students as "large enrollment." We decided to make this distinction using Freeman et al. (45) as a guide for classifying course size, combining medium and large courses as "large enrollment" given they are perceived as large in the context of this institution and for purpose of analysis. Before conducting the regression, we calculated the variance inflation factor (VIF) for each predictor variable to determine that our predictor variables were not too colinear to be included in the same model (46). The VIF results confirmed that multicollinearity was not an issue and that we could proceed with our regression analyses. Using linear regression, we first tested whether course level and size significantly predicted the average number of total elements listed on a course syllabus. Then, we used binary logistic regression to test whether course level and size significantly predicted whether an instructor was likely to include a particular element on their syllabus. We used the model: whether a particular criterion is present on an instructor's syllabus (Y/N) $\sim$ course level (lower or upper) + course enrollment size (small or large). We organized the syllabus elements into five categories, which we explain in more detail in RESULTS. Because we ran a regression for each syllabus element within a category, we applied the Bonferroni correction for significance at the $P < 0.05$ level for each regression within a category (0.05/number of elements in a category). See Fig. 1 for an overview of the methods.

RESULTS

Characteristics of BIO Course Syllabi Collected in Spring 2019

A total of 75 biology course syllabi from the spring 2019 semester at a single institution were analyzed. Whether the syllabi came from upper versus lower level courses and small versus large enrollment courses is summarized in Table 1.
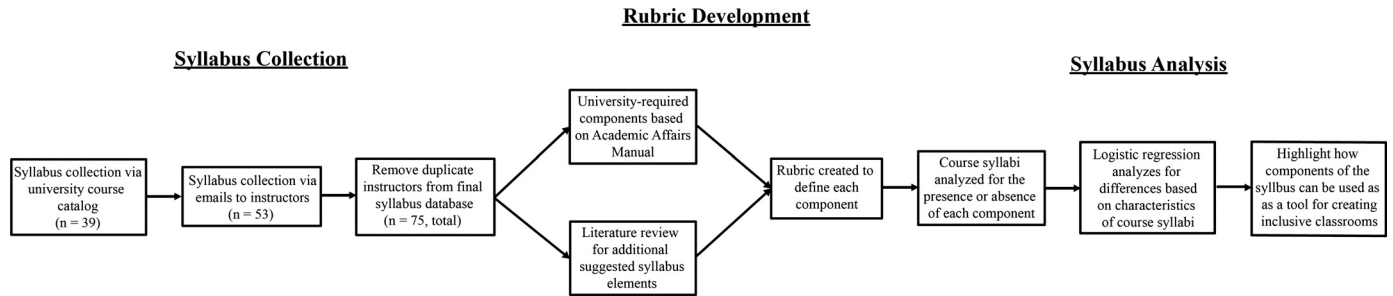
Rubric Development

Figure 1. Overview of study methods.

Instructors Are Most Likely to Include Content About Course Expectations and Least Likely to Include Content About Creating Classroom Climate on Course Syllabi

The 25 elements of a syllabus that we examined, both the elements required from the institution as well as additional elements identified in the literature, are described in Table 2. Because the elements of a syllabus may not be universally applicable or useful to all students, we also report who is most likely to benefit from each element, considering all students, students of particular demographic groups, and instructors. Determination of who potentially benefits from the presence of each element on a course syllabus was based on our review of the literature regarding course syllabi (cited per each element in Table 2) as well as additional literature regarding cultural capital (22, 24, 26, 27, 47). We hope that this will make it clearer that decisions to include each specific element may have a differential impact on students in a course.

To identify patterns in what faculty include and exclude on their syllabi, we organized each of the elements into categories based on what the element is meant to address. The five categories are as follows:

1) *Course expectations*: This category includes syllabus elements that describe what students should expect in the course with regard to what they will learn, how they will learn that information, how they will be graded, and how they should expect to behave and demonstrate academic integrity.

2) *Disruptive events*: This category includes syllabus elements that provide information to students if they experience a disruptive event such as an absence or if they witness or experience sexual harassment.

3) *Getting help*: This category includes syllabus elements that provide information for students who are interested in seeking help.

4) *Unique student groups*: This category includes syllabus elements that provide information that does not pertain

to all students but to only a subset of students based on who they are.

5) *Creating classroom climate*: This category focuses on elements that are meant to set the tone for the classroom and includes providing students with advice for success in the course, a statement regarding a safe learning environment, a diversity and inclusion statement, and notifying students of potentially offensive content.

In Table 3, we present the syllabus elements organized by category and the percent of syllabi that included each element. Instructors were most likely to include elements about course expectations; individual course expectation elements were present on as few as 73.3% of syllabi (expected classroom behavior policy) and as many as 98.7% of syllabi (grading policy). This was in stark contrast to elements focused on creating classroom climate and providing students the information that they need to get help. The most common element related to creating classroom climate was providing advice for success in the course, which was only identified on 40.0% of syllabi. The least common element, a diversity and inclusion statement, was present on 13.3% of syllabi. With regard to providing students with information about getting help, the most frequently reported element, information about office hours, was only present on 53.3% of syllabi, while the most infrequently reported element, general campus resources, was present on 36.0% of syllabi. Elements related to disruptive events, such as absences, sexual harassment, or threatening behavior, were present on over 70.0% of syllabi with one exception: withdrawal policies were only present on 28.0% of syllabi. Finally, elements that only pertained to unique student groups ranged in how prevelent they were. Accommodation policies for students with disabilities were present on 80.0% of syllabi, while policies about religious absences were present on 58.7% of syllabi. Policies pertaining to mental health resources (14.7%) and to students associated with the military (9.3%) were least likely to be included on syllabi. There was one element focused on content and copyright information that was found on 40.0% of syllabi that did not fit into any other category and was therefore classified as "Other."

Instructors More Often Include Content Related to Disruptive Events, Unique Student Groups, and Classroom Climate When it is Required by The University

We hypothesized that instructors would be more likely to include elements required by the university, which may explain some of the stark contrasts in the percent of syllabi

Table 1. *Characteristics of course syllabi included in analyses*

Syllabi Characteristics	Percentage of Total Syllabi (n = 75)
Course level	
Lower (100/200)	30.7% (23)
Upper (300/400)	69.3% (52)
Course enrollment size	
Small (<50)	64.0% (48)
Large (≥50)	36.0% (27)

Table 2. *Elements of a syllabus with definitions, students likely to benefit from each element, how these elements can be used to promote inclusion, and literature supporting each element*

Syllabus Element	Definition	Who Potentially Benefits?	How Can This Be Used to Help Promote Inclusive Classrooms?	Literature Support
Grading policy*	Syllabus includes information on the grading structure of the course and how students can expect to be evaluated.	All students, especially students with disabilities, nontraditional students, students who work, and students with families who may gain additional benefits from knowing the course structure for the purpose of planning around commitments outside of school. Instructors also benefit from having a clear grading policy in the instance of a grade dispute.	Grading policies directly impact how a student may be able to learn in the classroom and their success in the course. Making these explicit allows students to potentially change courses early if they will be more successful with certain grading structures. Additionally, grading policies can be structured so that students are assessed in ways that best reflect their understanding of the course material.	Refs. 8, 37
Academic integrity policy*	Syllabus includes policy addressing academic integrity and plagiarism, per the university's Student Academic Integrity Policy.	First-generation students, transfer students, and nontraditional students who may be unaware of university-level academic integrity policies (e.g., self-plagiarism, proper citations). Instructors benefit by the potential lower likelihood of an integrity violation if students are informed, as well as having a reference if a violation occurs.	Relating the importance of integrity and credibility to future academic and professional careers helps students understand the importance beyond the classroom. Furthermore, welcoming questions regarding what is and is not allowed helps prevent accidental violations of integrity.	Ref. 51
Course objectives and learning outcomes*	Syllabus includes the objectives of the course broadly as well as learning outcomes students can expect to gain. This may explicitly be under a section or sections entitled Course Objectives and/or Learning Outcomes or could be included under a section that provides an overview of the course.	All students, notably nontraditional students, first-generation students, and transfer students who may not know what to expect of university course content would benefit from having a clearly defined overview for better understanding and course characterizations.	Clear expectations laid out from day one benefit the students by offering context and structure. This is often the first section students will read, essentially setting the tone for the rest of the syllabus and potentially the course, so positivity and enthusiasm may increase student excitement for the course. Understanding learning outcomes and their relationship to future educational and career applications may help students feel more invested in the coursework.	Refs. 37, 38
List of required curricula*	Syllabus lists any required readings, assignments, assessments, special materials, and additional activities. This can also include a statement that no textbooks, etc. are required for purchase and materials will be provided throughout the course.	All students benefit from accessibility to the required curriculum as these tools are necessary for the student's educational success.	Giving students the required tools for course completion helps ensure all students have the opportunity to succeed. Including additional suggested resources, such as websites, may also help further student success and learning.	Ref. 19
Important course dates	Syllabus provides important dates relevant to the course, such as dates for exams, finals, assignments, etc. This can be in the form of a course calendar or as dates listed under respective sections. If a separate document or link to a course calendar is provided, this is coded here.	Students with additional life responsibilities outside of school, such as students who work or serve as a caregiver, benefit from the structure provided by a course calendar. Instructors benefit from students coming to class prepared for the day's topic.	Providing important course dates at the beginning of the course allows for students to appropriately manage their time in a course. This allows for students with obligations outside the course to plan accordingly to be able to succeed.	Refs. 1, 6, 8, 19
Expected classroom behavior*	Syllabus includes a policy regarding expected classroom behavior. This could include guidelines for how to interact with others during in-class or online discussions, how to use clickers, use of technology in the classroom (e.g., cell phones, laptops, or recording devices) or	Students who may be unfamiliar with university classroom etiquette, such as first-generation students, transfer students, and students just beginning at or returning to the college environment. Instructors benefit from students knowing behavior expectations as it will result in	Since it cannot be assumed that all students come to college knowing classroom etiquette, and every course has different policies, it is important to be explicit about these norms so students know what is expected of them. Students of all different backgrounds or identities can also	Refs. 36, 38, 52

Continued

Table 2.— Continued

Syllabus Element	Definition	Who Potentially Benefits?	How Can This Be Used to Help Promote Inclusive Classrooms?	Literature Support
	any other behavioral norms that instructor establishes. If a syllabus provides behavioral policies regarding exams but not general classroom behavior guidelines, or only provides a link to the university code of conduct, this would not be counted here.	fewer class disruptions to inform or reprimand students as issues arise.	obtain a sense of comfort and belonging if they know the behaviors expected of them as well as others in the classroom. Inviting students to participate in class discussions while emphasizing the value students can bring by sharing their ideas helps communicate an inclusive classroom environment.	
General absence policy*	Syllabus includes policy information on missing class. If an instructor provides attendance information (e.g., attendance is required) it would be coded here. If there is only a participation policy (and it does not explicitly mention attendance or absences), then it would not be coded here.	Students who have children, other family obligations, jobs, disabilities, illnesses, sports, extracurriculars, or any life circumstance that may cause them to miss a class would benefit from knowing these policies as they can directly impact the student's ability to succeed in the course and whether or not they would be able to pass given their life situations (e.g., some labs only allow 2-3 total absences before automatic failure).	Students with various life situations may anticipate needing to miss class(es) and including an absence policy allows them to plan accordingly. A flexible absence policy allows accommodation for students who need to miss class for circumstances outside religious and university-sanctioned absences (e.g., death in the family, undocumented disability).	Refs. 6, 38
General make-up work policy*	Syllabus includes the conditions under which assigned work and/or tests may be made up. For example, if an instructor says that they will accept no make-up work for absences, then it would be coded here. Conditions surrounding late work, such as percent penalties per day, would also be coded here.	Students who have children, other family obligations, jobs, disabilities, illnesses, sports, extracurriculars, or any life circumstance that may cause them to miss an assignment or deadline would benefit from knowing these policies as they can directly impact the student's success in the course and whether or not they would be able to pass given their life situations (similar to the absence policies, students will have to account for the work they missed during those class periods).	Students with various life situations may anticipate needing to miss class(es) and including a general make-up work policy allows them to plan accordingly. A flexible make-up work policy allows accommodation for students who need to miss class for circumstances outside religious and university-sanctioned absences (e.g., death in the family, undocumented disability).	Refs. 6, 38
Sexual discrimination and harassment policy (Title IX)*	Syllabus provides a policy on sexual discrimination as described in ACD 401, "Prohibition Against Discrimination, Harassment, and Retaliation," including the fact that the instructor is a mandated reporter and therefore obligated to report any information regarding alleged acts of sexual discrimination. Note: There may also be mandated language that must be used here.	Any student who may feel harassed or discriminated against and/or who has witnessed harassment or discrimination of others.	Provides students with a feeling of support and safety should discrimination or harassment occur. This policy helps show that all students matter, regardless of gender, race/ethnicity/sexual orientation, etc. It also shows they can reach out if they feel harassed or discriminated and lets them know they are protected.	Refs. 36, 53
Threatening behavior policy*	Syllabus includes policy against threatening behavior, per the Student Services Manual, SSM 104–02, "Handling Disruptive, Threatening, or Violent Individuals on Campus."	All students, especially as physical safety in the college classroom has proven to be a bigger concern in recent years. Additionally, students from marginalized populations who may have greater anxiety about threatening discriminatory events.	Allows students to feel safe in their learning environment. Violence in schools has become a real concern for some students, and assuring measures are in place to handle threats allows students to be at ease, relieves anxieties, and in turn promotes better learning.	Ref. 54
Policy on university-sanctioned absences*	Syllabus includes explicit information on excused absences related to university-sanctioned events/activities that are in accordance with ACD 304–02, "Missed Classes Due to University-Sanctioned	All students, notably first-generation students, transfer students, nontraditional students, or working students who may have limited time to participate in extracurricular events but would like the experience for their	Shows that the instructor, as well as the university, is accepting and accommodating of students who participate in activities outside the traditional classroom. Instructors can also use this area to promote extracurricular	Refs. 6, 38

Continued

Table 2.— *Continued*

Syllabus Element	Definition	Who Potentially Benefits?	How Can This Be Used to Help Promote Inclusive Classrooms?	Literature Support
	Activities." This can be nested within the general attendance policy.	academic careers would benefit from knowing absences for university-sanctioned activities (such as clubs, sports, or academic conferences) will not count against them.	activities and student involvement (such as encouraging participation in research or academic conferences) by showing their support of these absences without penalty.	
Withdrawal policy	Syllabus provides information on the university's circumstantial withdrawal policy with regard to medical and/or compassionate withdrawal policies. Only mentioning university drop/withdrawal deadlines (not the policies specifically) is not coded here.	Any student who experiences unexpected events in their family, health, home, etc. can feel reassured they will not be academically penalized for something outside of their control. This can be especially beneficial for caregivers or students with health or mental health conditions.	Gives students the reassurance that in the instance that something tragic may occur, there are options for withdrawal without ruining GPA and future education prospects. Some institutions do not broadly advertise this option, so some students end up unnecessarily penalized for circumstances outside of their control.	Ref. 8
Office hours*	Syllabus includes office hours and appointments available outside office hours.	Any student who may need to contact a professor outside of class, with the flexibility of office hours by appointment especially benefitting students with outside time commitments, such as caregivers or students who work.	Provides accessibility for all students to be able to build student-instructor relationships. Flexibility in office hours or providing additional office hours by appointment allows for all students to feel they can meet with the instructor, regardless of potential schedule conflicts.	Refs. 19, 44
Instructor contact information*	Syllabus includes instructor's name, e-mail address, telephone number, and office/room number.	Students who need additional help with course content and students with schedules that do not allow them to meet with instructors during standard office hours or before/after class (e.g., class during office hours, employment, family obligations).	Students have a way to contact the instructor outside of scheduled class hours for any questions or concerns they may not have a chance to or feel comfortable brining up during class. Multiple points of contact allow for students to use whichever method is most comfortable to them. Personalizing this section rather than just listing info is more inviting to students.	Ref. 19
Instructor encourages student contact	Syllabus welcomes student interaction and explicitly tells students that the instructor, TA(s), and/or any part of the instructional team can be contacted for help or assistance.	First-generation students, transfer students, nontraditional students, military veterans, and those with varying cultural backgrounds benefit from language that encourages them to ask their instructors questions as they may not fully understand the student-instructor dynamic.	Encouraging contact with the instructor or instructional team fosters a welcoming environment where all students feel connected with the instructor(s).	Ref. 44
General campus resources	Syllabus provides information about campus resources that students could go to for help or assistance (e.g., financial aid office, academic advising, tutoring services, writing center, etc.) aside from disability resources, academic dishonesty, or another category specifically listed elsewhere in the rubric. If an instructor provides information for technical support for classroom software such as clickers or Canvas, this would not be coded here. If resources are offered regarding mental health, this is coded under "Mental health resources."	Students who may be unfamiliar with the resources available to them accessible through their campus (e.g., first-generation students, transfer students, nontraditional students, students with disabilities, military veterans, students who may have a lapse in time since taking prerequisite courses, any student who struggles with specific course topics, etc.).	Provides resources for student success for all students, helping to remove potential barriers. "Detailed syllabi educate students about course and university resources and reduce student anxieties" (37).	Refs. 19, 36, 37

Continued

Table 2.— *Continued*

Syllabus Element	Definition	Who Potentially Benefits?	How Can This Be Used to Help Promote Inclusive Classrooms?	Literature Support
Accommodation policy for students with disabilities*	Syllabus provides a reminder to students when requesting accommodation for a disability that they must be registered with the Disability Resource Center (DRC) and submit appropriate documentation from the DRC.	Students with documented or undocumented disabilities, including students who may not see their situation as a disability, benefit from knowing the process and the resources for receiving classroom accommodations.	Provides the necessary contact and accommodations for students with disabilities. Along with providing information regarding the DRC and documented disabilities, this section can also be used to provide additional resources for accessibility and success, as well as to encourage students to talk to the professor directly.	Refs. 19, 36, 54–56
Policy on religious absences*	Syllabus includes explicit information on excused absences related to religious observances/practices that are in accordance with ACD 304–04, "Accommodation for Religious Practices." This can be nested within the general attendance policy.	Religious students receive confirmation that their absences for religious reasons are excused as well as potentially feel more comfortable/welcome knowing the instructor is aware of and sensitive to these conditions.	Stating policies on religious absences and other religious accommodations gives religious students a sense of belonging, as well as the knowledge that their religious status will not negatively affect their success in the course. Rather than just providing the policy, instructors can invite students to contact them to discuss absences, accommodations, and expectations for make-up work.	Ref. 36
Mental health resources	Syllabus provides resources for students to seek counseling or other mental health resources on campus. This can be presented as its own section or in conjunction with other campus resources, however it must provide some context as to the services being offered. If a link to the counseling services website is nested within another policy (such as Title IX) this is not coded here.	Students who have diagnosed or undiagnosed mental health issues can find the help they need to succeed in their courses and persist in their careers.	Validates mental health as a barrier students may be facing and provides means for students to overcome this potential barrier.	Refs. 36, 38, 54
Veteran/ military statement	Syllabus specifically mentions or offers resources, support, or guidance for those who have previously served or are actively serving military duty. Section should mention resources available to veterans such as, but not limited to: extra financial help, counseling services, clubs or support groups, career or graduate programs for veterans, etc. Mentioning veterans as a group protected against discrimination without other mention of resources, support, attendance/withdrawal policies, etc. would not be coded here.	This policy directly affects students who are actively serving or have previously served in the military, as well as students who have spouses or other family members in the military. This is especially important for those with duties that may interfere with education completion or who are utilizing military benefits to fund their education.	A statement offering support and providing resources to veterans, current military, and military families alleviates the stress of unclear policy regarding potential accommodations and absences (e.g., duty assignments, spousal deployments, Veterans Affairs appointments, undocumented disabilities) and helps them know they are valued in the classroom.	Ref. 57
Advice for success in the course	Syllabus provides advice on ways in which students can be successful, such as proposed study habits or encouragement of formation of study groups.	First-generation college students, incoming freshman, transfer students, or any student who may not have a preexisting knowledge of ideal study habits for success in a university setting.	It cannot be assumed that all college students know the steps to succeeding in a college classroom, so by explicitly stating this in the syllabus, instructors are providing a more equitable learning environment for students who may not have this baseline knowledge set.	Refs. 2, 19, 38
Offensive content notification	Syllabus provides a warning to students that some course content may be deemed offensive and provides information on how to bring this to the attention of the	Students who may have cultural or religious conflicts with the course content (e.g., viewing/ handling cadavers), students who may be sensitive to graphic	Statement of potentially offensive content, the fact that it is not intentionally offensive, and how to address the instructor should a student find content offensive	Refs. 6, 36

Continued

Table 2.— *Continued*

Syllabus Element	Definition	Who Potentially Benefits?	How Can This Be Used to Help Promote Inclusive Classrooms?	Literature Support
	instructor or, alternatively, to the unit chair or director. This could be specific classroom activities such as animal dissections, or in regards to subject content such as historical topics that might make some students uncomfortable. Sections considered a "Trigger Warning" would also be coded here.	imagery or language, or students who have conditions that can be triggered such as post-traumatic stress disorder (PTSD) can benefit from having a policy that allows them to bring offensive content concerns to the instructor.	provides transparency and potential relief to students who may fear facing offensive content due to religious or other personal reasons. This also allows students to find alternate course options if they feel certain content (e.g., cadavers, historical content) is not something they are comfortable with in a course.	
Statement regarding a safe learning environment	Syllabus specifically mentions creating a respectful and safe learning environment where everyone's contributions are valued, people should be respectful of each other's viewpoints, and everyone should be treated fairly.	All students, especially those who are from varying religions or cultures, students with disabilities, students with mental health issues, military veterans, and LGBTQ+ students can benefit from feeling their views are respected and protected and that their contributions are valued by their institution.	Encourages equitable class participation from all students without fear of judgement based on their viewpoints, identities, background, etc.	Refs. 38, 52, 73
Statement on diversity and inclusion	Syllabus provides a statement on diversity and inclusion, such as how diverse identities (e.g., gender, race/ethnicity, LGBTQ+ status, veteran status) contribute to a more positive and inclusive classroom experience. This could be presented as the instructor's personal view or the stance the institution takes as a whole.	All students, especially those who are from varying religions or cultures, students with disabilities, students with mental health issues, military veterans, and LGBTQ+ students, as well as less traditional students (e.g., transfer students, older students, students with children) benefit from feeling their identities are accepted, valued, and supported by their institution.	Shows all students their diverse identities and life circumstances are accepted and welcome in the classroom and at the university.	Refs. 36, 38, 56, 73
Content upload copyright information*	Syllabus includes a warning to students that they must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's original work, unless they first comply with all applicable copyright laws.	Instructors benefit from being protected against their course material being shared without permission. Students also benefit from being protected against their contributions to the course being shared by other students.	Presenting this section as informative rather than threatening helps students know the rules around copyright to help prevent accidental violation. Allows students to also feel comfortable making contributions to the course with the understanding that their own work is protected.	Refs. 44, 51

*Represents a university-required element.

that included specific elements. In Table 3, we highlight which elements are required by the university. Elements that are presented in Table 3 that were not university required were identified from our literature search. We found that for policies focused on course expectations, the one element that was not required, important course dates, was still commonly included on syllabi (89.3%). There was not a difference in the percentage of syllabi that included required versus nonrequired elements related to students getting help. However, this was not the case for policies related to disruptive events. All required elements in this category were present on the majority of syllabi, while the one element that was not required, information about withdrawing from a course, was present on only 28.0% of syllabi. Similarly, required elements targeting unique student groups were present on at least half of syllabi, while the two nonrequired elements, providing mental health resources and providing veteran/military resources, were present on <15% of syllabi. All syllabus elements in the creating classroom climate category were present on less than half of all syllabi. Overall, we found that only 8% of syllabi included all 15 university-required syllabus elements, indicating a lack of compliance with university expectations.

Students Enrolled in Upper Level Courses and Small Enrollment Courses Are Provided with Less Content on Their Syllabi

We examined whether all elements were more likely to be included in small versus large and upper level versus lower level courses. We found that upper level and small enrollment courses were predicted to include fewer total syllabus elements than lower level and large enrollment courses ($P = 0.002$, $P = 0.01$, respectively). A summary of these results can be found in Table 4; linear regression model outputs can be found in the Supplemental Data.

We also tested whether each individual element was more likely to be excluded in a particular type of course syllabus.

Table 3. *Syllabus elements organized by category, the percent of syllabi that included each element, and course type most likely to exclude a particular element*

Category/Criterion	Percent of Course Syllabi Including the Criteria	Required Policy	Significantly Likely to Exclude the Element
Course expectations			
Grading policy	98.7%	R	
Academic integrity policy	94.7%	R	
Course objectives and learning outcomes	94.7%	R	
List of required curricula	90.7%	R	
Important course dates	89.3%		
Expected classroom behavior policy	73.3%	R	
Disruptive events			
General absence policy	86.7%	R	
General make-up work policy	80.0%	R	
Sexual discrimination and harassment policy (Title IX)	73.3%	R	
Threatening behavior policy	70.7%	R	
Policy on university-sanctioned absences	57.3%	R	Upper level courses
Withdrawal policy	28.0%		Upper level courses
Getting help			
Office hours	53.3%	R	
Instructor contact information	44.0%	R	
Instructor encourages student contact	37.3%		Small enrollment courses
General campus resources	36.0%		Upper level courses
Unique student groups			
Accommodation policy for students with disabilities	80.0%	R	
Policy on religious absences	58.7%	R	Upper level courses
Mental health resources	14.7%		
Veteran/military statement	9.3%		
Creating classroom climate			
Advice for success in the course	40.0%		
Offensive content notification	26.7%		Upper level courses
A statement regarding a safe learning environment	25.3%		
A statement on diversity and inclusion	13.3%		Upper level courses
Other			
Content upload copyright information	40.0%	R	Small enrollment courses

"R" represents a university-required element.

Upper level courses were less likely to have a policy on religious absences ($P = 0.008$), a withdrawal policy ($P = 0.003$), general campus resources ($P < 0.001$), a policy on university-sanctioned absences ($P = 0.007$), an offensive content notification ($P < 0.001$), and a statement on diversity and inclusion ($P = 0.009$). Small enrollment courses were less likely to include a statement where the instructor encourages student contact ($P < 0.001$) and copyright information ($P = 0.02$). Interestingly, lower level and large enrollment courses were never less likely to include any of the syllabus elements. A summary of these results can be found in Table 3; logistic regression model outputs can be found in the Supplemental Data. There were several instances in which the model estimation did not converge, likely due to lack of distinction between the percentage of inclusion of a given syllabus element across lower/upper level courses and/or across small/large courses. In these cases, we do not report the logistic regression results but rather report the data descriptively in the Supplemental Data.

How Syllabus Elements Are Presented Can Further Affect the Inclusiveness of a Course

Beyond analyzing for presence or absence of the identified syllabus elements, the presentation of the element itself can potentially have an effect on student interpretation of what

the instructor intends to communicate (37, 39, 51, 55). To begin to explore how syllabi can differentially communicate similar messages, we investigated how the presentation of syllabus elements could alter the effectiveness of promoting inclusion. The following examples shown in Table 5 were taken from the analyzed set of syllabi to represent the difference between including a basic syllabus component and including a component in a way that further promotes inclusion in the classroom.

As shown in Table 5, Syllabus 72 includes an absence policy that would meet the university requirements and communicates what a student needs to know about basic course attendance. Syllabus 31, on the other hand, expands on the basic attendance policy to include information for students who may need to miss a class. While Syllabus 72 informs students of the basic expectations for attendance, Syllabus 31 further accommodates student needs for situations outside the norm. This language helps transform the syllabus from a basic contract into a more student-centered document (1). For the more specific university-sanctioned absence policy, Syllabus 27 assumes students understand what is meant by a university-sanctioned absence. However, Syllabus 59 not only explains what is meant by a university-sanctioned absence but also explicitly provides examples of what counts as

Table 4. *Average number of total elements included on syllabi based on course level and course enrollment size*

	Average Number of Total Elements (out of 25) [Mean (SD)]
Course level	
Lower	17.1* (3.6)
Upper	12.8 (4.2)
Course enrollment size	
Small	12.8* (4.3)
Large	16.5 (3.8)

Comparisons are between lower vs. upper level and small vs. large enrollment size (*$P \leq 0.01$). Model: number of elements ~ course.level + enrollment.size.

a university-sanctioned absence. This additional information also has the potential to expose students to opportunities outside the course, such as research conferences, that they may not have known were available to them before enrolling in the course (24).

Another way that the information presented on a syllabus can be used as a tool to promote inclusion relates to what a student might experience in the course. For example, statements about expected classroom behavior can be used to illustrate to students what is expected of them during class. While the language of Syllabus 91 tells students what not to do in class, it does not offer an explanation or rationale for why these behaviors should not take place during a class meeting. However, Syllabus 2 communicates the reasoning for these expectations in the classroom and specifically explains the importance of each of these actions as it relates to being inclusive of other students and student learning. Syllabus 2 reiterates that the goal of these behaviors is to build a classroom climate that is comfortable for all.

Providing information about academic integrity can also assist students in their knowledge of expectations around plagiarism. As Syllabus 52 presents this policy, it only states the consequences of academic dishonesty but does not provide information on how to avoid it. In contrast, Syllabus 38 provides strategies, information, and resources for avoiding plagiarism and offers the instructor as an additional resource if students should have any questions or concerns regarding academic integrity. This approach helps promote a more inclusive classroom by setting up students for success through providing them with tools to avoid a mistake rather than simply informing them of the consequences once a mistake has been made.

The extent to which syllabi provide information about resources can also vary. At the university that was the focus for this study, syllabi are required to include a policy regarding accommodations for students with disabilities and a statement directing those students to the Disability Resource Center (DRC). Syllabus 88 provides students with this necessary information. Similarly, Syllabus 2 includes these same resources; however, the instructor also offers their own assistance in helping accommodate students with disabilities. By communicating the instructor's desire to help students along with directing them to the appropriate resources, Syllabus 2 is an example of a syllabus that provides students with disabilities with a greater sense of belonging (19, 48). These types of statements help students

see that not only does the institution provide the resources to assist in their success but also that the instructor has their best interests in mind (3).

One of the additional literature-suggested syllabus elements is information regarding mental health resources for students. As seen in Syllabus 13, this can include contact information for counseling services offered on-campus. In addition to offering the information for services available on campus, instructors can also offer their own support to students struggling with mental health, as demonstrated by Syllabus 65. By offering the instructor as a point of contact for assistance with mental health, Syllabus 65 can help to make students feel more supported by the instructor. Additionally, this can help to destigmatize mental health concerns among students, which may increase their likelihood to seek help (58).

While we recognize there are many ways that syllabus components can be presented to help promote inclusion, we offer these examples as concrete differences in how an instructor can choose to include an element on a syllabus. Example quotes for all syllabus components discussed in this study can also be found in the Supplemental Data. The tone and specific language can influence if a student perceives the course and the instructor to be accommodating and inclusive (44); however, a more systematic exploration of these aspects was outside the scope of this study. Based on our literature review, we have designed a template syllabus that instructors can use as a guide and starting point to promote inclusive courses (see Supplemental Data). We hope that this can help instructors use their own course syllabus as an inclusive teaching tool to broaden access to course and institutional information.

DISCUSSION

This study illustrates that even though the course syllabus is a required component of most college courses, there is much variation in what is presented on these syllabi. Specifically, we found that instructors were more likely to include information about course expectations related to grading and less likely to include information that is more geared toward creating a positive classroom climate. Additionally, we documented that large enrollment and lower level courses had more information presented on syllabi than small enrollment and upper level courses. Although university requirements for what to include on a syllabus increases the probability of including it, there is still significant noncompliance by instructors.

We do not have any data that explain why instructors are more likely to include information about course expectations rather than positive classroom climate, but we can speculate. One possibility is that instructors view the utility of the syllabus more from their own perspective and want to avoid issues related to grading expectations, so they focus on these elements in the syllabus (8). It also could be that fewer instructors think about creating a positive classroom climate as an important aspect of a course, so they do not think to include these elements on a syllabus or may consider them extraneous and unnecessary (15). As far as the finding that large enrollment courses include more information on syllabi, we hypothesize that it is because the instructor-to-

Table 5. *Example syllabus excerpts from the analyzed data set to represent how presentation and wording can further promote inclusion*

Syllabus Component	Example Quote: Basic Presentation of Syllabus Component	Example Quote: Component Presentation Promoting Inclusion
General absence policy	"Attendance: Attendance at lectures and labs is expected. This is especially important for the labs, since the resources (e.g., study skins) that will be used each week will usually only be available that day." – Syllabus 72	"IF YOU'RE NOT SURE IF YOU QUALIFY FOR AN EXCUSED ABSENCE, PLEASE ASK. We understand that sometimes life happens and situations are out of our control. Thus, we try to accommodate for these situations by laying out a general policy for excused absences (although other situations also apply). Examples of valid excuses for excused absences are medical/family emergencies, police incidents, and/or catastrophes. These emergencies must be documented with a physician's note, police report, etc. In the unfortunate event of an emergency, please make every effort to contact us within 1 week of an incident or as soon as possible." – Syllabus 31
Policy on university-sanctioned absences	"Students wishing to obtain an excused absence(s) for university sanctioned events/activities must follow policy ACD 304–02, Missed Classes Due to University-Sanctioned Activities." – Syllabus 27	"Absences for university-sanctioned events and activities, including course-related activities or attendance at research conferences, will not count as an absence for the purpose of the course grade. However, the student must contact the instructor before the missed class in order to confirm that the absence is excused." – Syllabus 59
Expected classroom behavior	"Students should arrive on time and stay for the entire class. All cell phones, recording devices, watch alarms, music players, and other electronic equipment must be shut off or set to vibrate or silent mode at the beginning of each class, so as not to disturb the instructors or other students. Do not eat during class." – Syllabus 91	"We want to build a classroom climate that is comfortable for all. It is important that we *1*) display respect for all members of the classroom–including the instructor and students; *2*) pay attention to and participate in all class sessions and activities; *3*) avoid unnecessary disruption during class time (e.g. having private conversations, reading the newspaper, surfing the Internet, doing work for other classes, making/receiving phone calls, text messaging, etc.); and *4*) avoid racist, sexist, homophobic, or other negative language that may unnecessarily exclude members of our campus and classroom. This is not an exhaustive list of behaviors; rather, it represents examples of the types of things that can have a dramatic impact on the class environment. Your final grade may be reduced by 5% each time you engage in these sorts of behaviors. Cell phones are allowed in lecture for your use in the learning environment only. As such, the ringers should be silent, and you should not be engaging in activity unrelated to the lecture." – Syllabus 2
Academic integrity policy	"Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see [link]" – Syllabus 52	"Of course, all the university rules of academic integrity apply to all assignments. No plagiarism (which is especially serious with what is supposed to be your independent and individualized research project), use proper citations, etc. If you have any questions about citations or strategies for avoiding inadvertent plagiarism, please ask us. Any violations will be handled in [university]'s approved way, including with an XE grade or expulsion if appropriate. We hope that will never happen! If you haven't done so already, please familiarize yourself with [university]'s policies on this issue: [link]" – Syllabus 38
Accommodation policy for students with disabilities	"If you are learning, sensory, or physically disabled and feel that you need special assistance with assignments, please contact the university Disability Resource Center at [DRC website] to arrange accommodations." – Syllabus 88	"If you need academic accommodations or special consideration of any kind to get the most out of this class, please let me know at the beginning of the course. If you have a disability and need a reasonable accommodation for equal access to education, please call Disability Resources for Students at [phone number] The site can be found here: [DRC website]" – Syllabus 2
Mental health resources	"University Counseling Services offers confidential, personal counseling and crisis services for students experiencing emotional concerns, problems adjusting, and other factors that affect their ability to achieve their academic and personal goals. Please call [phone number] M-F or [phone number] 24 hours a day. Visit [counseling website] for more information." – Syllabus 13	"Mental health – Please reach out to me if you feel overwhelmed by the class or feel that you are struggling. I am happy to listen confidentially. You can also contact Counseling Services if you need more support. More information is available at [counseling website]" – Syllabus 65

Quotes were lightly edited to preserve content while maintaining syllabus, instructor, and institutional anonymity. DRC, Disability Resource Center.

student ratio of these large courses necessitates more explicit communication so that instructors get fewer clarification emails from the large number of students in the course. However, these are all hypotheses so future research should explore these ideas more directly.

While certain aspects of syllabi could be considered more inclusive (e.g., the specific tone or including specific accommodations for students with disabilities) than others (e.g., including the instructor office location or grading policy), we view the syllabus as a whole as an inclusive

teaching tool. Because the syllabus is a source of information and this information is conveyed at the same time to all students in the course, the syllabus can be a powerful equalizer to help mitigate incoming student knowledge differences about the course, expectations of college students, and university resources. As such, the syllabus becomes a source of cultural capital and the more information that is presented through the syllabus, arguably the more cultural capital is conveyed to students. A study has shown that students prefer a longer syllabus if the information provided is detailed so that they have access to more information about the semester (59). It is possible that once the syllabus gets past a certain length, students are less likely to read it, but an argument could still be made for making information available to students if they want to access it. Furthermore, if the syllabus is electronic and can be searchable, students may not need to read the whole syllabus to find information that may be pertinent to their situation. We are not recommending any particular syllabus length, as a longer syllabus does not automatically equate to a better syllabus or a syllabus that promotes a more inclusive course. However, we advocate against the mindset of "less is more," since the information that instructors may be most likely not to include, or to cut from their course syllabus, may be information that seems obvious to the instructor but may not be obvious to students.

The syllabus as a provider of cultural capital may be particularly beneficial to students who have been historically marginalized and underrepresented in college. Specifically, we would predict that first-generation students would highly benefit from making the rules of college explicit to them because they may not be able to gain that information from their parents (47, 60, 61). Studies have also shown that first-generation college students may be less likely to continue in science majors and may need additional support to persist in STEM (62, 63). It is also concerning that we found that upper level courses were less likely to include certain elements compared with lower level courses. We found that upper level courses were not as likely to include policies on university-sanctioned absences, withdrawal policies, general campus resources, policies on religious absences, an offensive content notification, and a statement on diversity and inclusion. Instructors of upper level courses may assume that students have already become familiar with these policies in lower level courses, but this may widen the knowledge gap between community college transfer students and students who begin college at that 4-yr institution. This may in part contribute to what is referred to as "transfer shock," which is the common dip in community college transfer student grades in their first semester at the new institution (64–66). With community college transfer students being comprised of a higher percentage of both underrepresented racial and ethnic minority students and lower socioeconomic status students (33, 49, 67), this may have broader implications for diversity and inclusion beyond just transfer student identity. Additionally, the lack of general campus resources on upper level course syllabi has the potential to negatively impact all students, not just first-generation and transfer students. Even a student who has spent their entire college career at that 4-yr institution may not have needed on-campus services such as tutoring or counseling in early years, but if

courses become more difficult and stress increases, they could benefit from these resources being available on their upper level course syllabi.

If the syllabus is a required component of most courses and has the potential to communicate information effectively to students, we ponder why there seems to be so much instructor noncompliance with what is required or what could be considered "best practices" of a syllabus. Is it because instructors only think of the syllabus as a contract that they hold students to if they miss an assignment or want to contest a grade? Is it because there is little to no oversight of whether instructors are adhering to the requirements and recommendations, so instructors do not take the time to review them? Although these are possibilities, we offer the consideration that instructors may not be thinking deeply about the potential of the syllabus as a way to create a positive and inclusive classroom community. The syllabus is not often described as a dynamic document that can be the start of a relationship between the instructor and students that establishes respect for identities and personal circumstances, yet this could make the syllabus an even more useful tool. We encourage instructors to rethink how the syllabus can be an inclusive teaching tool and how the content and language of the syllabus can create an inclusive classroom dynamic before the course even starts. While the elements suggested in this study provide a starting point for how instructors can use course syllabi as tools for creating inclusive classrooms, additional articles have suggested concrete steps on constructing and presenting course syllabi, such as using a student-centered approach. For instructors interested in further exploring these suggestions in syllabus writing, we recommend reviewing some of these resources (36, 38, 50, 55).

Through this process, we created a template syllabus that can help promote inclusion (see Supplemental Data). We offer this as a starting point for new instructors who are interested in trying to write their first syllabi or for more experienced instructors to compare their current syllabi. While this template is not meant to be a "best practice" syllabus, it was created with diversity and inclusion at the forefront and instructors may want to incorporate some of these elements or borrow some of the language. We especially hope that this can stimulate conversations about students with different identities and personal situations who may benefit from receiving an exception but may be unsure of how to ask for one. By being explicit, all students know the process for what to expect. Of course, students still need to have the motivation to access this information and there are reported demographic differences in who reviews the information on a syllabus (51, 68). An additional part of cultural capital for navigating college courses is knowing to read the syllabus, so instructors can be transparent about the importance of reading the syllabus or can incentivize this through syllabus quizzes or scavenger hunts at the beginning of the semester (5, 40, 69, 70).

Finally, with syllabi providing information to students, it is important that instructors stay consistent with what they have provided on the syllabus. If instructors give exceptions to students that are in contrast to what is written on the syllabus, then this is rewarding students who may know that the syllabus can be negotiable and may disadvantage

students who view it to be absolute and not changing (71, 72). Making the rules explicit on the syllabus is only useful to students if the "rules of the game" are the same for all students. The syllabus is a way to even out the knowledge of the rules, but the rules need to stay the same.

Limitations

A limitation of this research was that data collection was from a single biology department at one research-intensive institution, which may not be representative of student experiences enrolled in courses at other institutions, such as liberal arts institutions and community colleges with much smaller average class sizes. These collected data represent the norms, values, and standards of this particular department and institution, which may differ across departments and institution types. We chose to focus on one department and one institution so that we could examine the compliance of instructors with the university's required elements of a syllabus, as defined by that specific institution and department. We predict that some of our findings achieved through this approach would be generalizable; for example, our result that if a component is not required, then it is less likely for instructors to include it. We encourage future work to explore syllabi content across different departments and institution types to establish whether these patterns can be replicated.

Given the ubiquity of the course syllabus as a feature of higher education courses, it is surprising how little systematic research has been done on syllabi. This study represents an exploration into how a course syllabus could be used to promote inclusion, but we acknowledge that systematic exploration of additional aspects of syllabi, including language and tone, were beyond the scope of this study. We encourage future work to take a more nuanced approach to the language used in course syllabi to identify fine-grained aspects of a syllabus that could enhance its ability to promote inclusion. We present our template syllabus as a starting point that will hopefully be useful to instructors who want to broaden the delivery of knowledge to students as an inclusive classroom practice. However, the specific language, graphics, capitalizations, underlined components, and tone of the syllabus could be essential for whether the syllabus could be used to create a sense of inclusion in the course, and we acknowledge that we do not know enough about the impact of these aspects of course syllabi to form recommendations at this point.

Conclusions

In this study, we found that biology course syllabi are most likely to include content about course expectations and least likely to include content about creating classroom climate on syllabi. If a particular element is required by the university, instructors are more likely to include elements related to disruptive events, unique student groups, and classroom climate. Specifically, upper level courses and small enrollment courses have less content on their syllabi than lower level and large enrollment courses. We hope that this study and the template syllabus that is provided as a resource can help make undergraduate biology classrooms more inclusive for all students.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the authors.

AUTHOR CONTRIBUTIONS

L.E.G., R.A.S., L.D.P., K.M.C., and S.E.B. conceived and designed research; L.E.G., R.A.S., and L.D.P. performed experiments; L.E.G., R.A.S., and L.D.P. analyzed data; L.E.G., R.A.S., Y.Z., K.M.C., and S.E.B. interpreted results of experiments; L.E.G. and R.A.S. prepared figures; L.E.G., R.A.S., K.M.C., and S.E.B. drafted manuscript; L.E.G., R.A.S., L.D.P., Y.Z., K.M.C., and S.E.B. edited and revised manuscript; L.E.G., R.A.S., L.D.P., Y.Z., K.M.C., and S.E.B. approved final version of manuscript.

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