

Supporting Information
for
Integrating Social Responsibility and Diversity, Equity, and Inclusion into the Graduate
Chemistry Curriculum

Survey Instruments, Survey Data, and Interview Protocols

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Note: the authors encourage the use and adaptation of the included materials for teaching similar courses at other institutions or in other disciplines. With the use of these materials, please acknowledge this publication and its authors, and the Scientific Responsibility and Citizenship course taught in the UC Berkeley Department of Chemistry. The corresponding authors (K.T.X. and A.M.B.) can be contacted for further questions.

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Surveys

Pre-Survey

Student ID: _____

Division (please circle): Synthetic Physical Chemical Biology

To what degree do you agree with each of the following statements (please circle a number):

| | Strongly Disagree | Slightly Disagree | Neither Agree Nor Disagree | Slightly Agree | Strongly Agree |
|--|----------------------|----------------------|----------------------------------|-------------------|-------------------|
| There is no evidence of systemic bias in STEM and academia | 1 | 2 | 3 | 4 | 5 |
| Don't politicize science! Stick to the science, not social issues | 1 | 2 | 3 | 4 | 5 |
| My research is fundamental, so I can't control what other people use it for eventually | 1 | 2 | 3 | 4 | 5 |
| As an academic chemist, the eventual impacts and applications of my work are not my responsibility | 1 | 2 | 3 | 4 | 5 |
| Hiring, awards, and citations should be based on merit; the identity of the scientist does not need to be considered | 1 | 2 | 3 | 4 | 5 |
| Scientific research is objective; the identity of the scientist is irrelevant | 1 | 2 | 3 | 4 | 5 |
| Scientific progress and discovery inherently benefits everyone | 1 | 2 | 3 | 4 | 5 |
| I'm not racist or sexist, so I don't need to do anything more | 1 | 2 | 3 | 4 | 5 |
| There's no such thing as racist or sexist science, only scientists | 1 | 2 | 3 | 4 | 5 |
| Improving equity and inclusion does not benefit STEM as a whole | 1 | 2 | 3 | 4 | 5 |

Post-Survey

Student ID: _____

Division (please circle): Synthetic Physical Chemical Biology

To what degree do you agree with each of the following statements (please circle a number):

| | Strongly Disagree | Slightly Disagree | Neither Agree Nor Disagree | Slightly Agree | Strongly Agree |
|--|----------------------|----------------------|----------------------------------|-------------------|-------------------|
| There is no evidence of systemic bias in STEM and academia | 1 | 2 | 3 | 4 | 5 |
| Don't politicize science! Stick to the science, not social issues | 1 | 2 | 3 | 4 | 5 |
| My research is fundamental, so I can't control what other people use it for eventually | 1 | 2 | 3 | 4 | 5 |
| As an academic chemist, the eventual impacts and applications of my work are not my responsibility | 1 | 2 | 3 | 4 | 5 |
| Hiring, awards, and citations should be based on merit; the identity of the scientist does not need to be considered | 1 | 2 | 3 | 4 | 5 |
| Scientific research is objective; the identity of the scientist is irrelevant | 1 | 2 | 3 | 4 | 5 |
| Scientific progress and discovery inherently benefits everyone | 1 | 2 | 3 | 4 | 5 |
| I'm not racist or sexist, so I don't need to do anything more | 1 | 2 | 3 | 4 | 5 |
| There's no such thing as racist or sexist science, only scientists | 1 | 2 | 3 | 4 | 5 |
| Improving equity and inclusion does not benefit STEM as a whole | 1 | 2 | 3 | 4 | 5 |

Post-Survey Course Feedback

What was your favorite case study? (circle one)

Nuclear chemistry

Birth control

Rare earth elements

PVCs and legacy chemicals

Did you talk about this course with anyone outside of class? (check all that apply)

- Other first year graduate students
- Other graduate students (not first years)
- My advisor
- Faculty other than my advisor
- My friends
- My family
- My significant other
- Other _____

If you answered yes to the previous question, which parts of this course did you talk about?

What is the most important thing you learned from this course? Why?

How might you change your approach to research as a result of this course?

Should this course be offered again next year?

YES

NO

How did this course affect your sense of connection to the community in our department?

How did this course impact your values as a professional chemist?

Do you think the department's values are well-aligned with yours?

The instructors for your other classes also tried to relate their teaching to the content in this course. Did you think this was effective?

Do you have feedback on how we can better incorporate social responsibility content into our curriculum?

Do you have any feedback for improving this course? (For example, on the format of the course, the teaching style, the classroom, the snacks, feedback for the instructors, etc.)

Survey Data

Statement agreement data is shown below.

Scale: 1 = strongly disagree, 2 = slightly disagree, 3 = neither agree nor disagree, 4 = slightly agree, 5 = strongly agree

There is no evidence of systemic bias in STEM and academia

| Respondent | Before | After | Respondent | Before | After |
|------------|--------|-------|------------|--------|-------|
| 1 | 1 | 1 | 24 | 2 | 2 |
| 2 | 1 | 2 | 25 | 2 | 1 |
| 3 | 1 | 1 | 26 | 1 | 1 |
| 4 | 1 | 1 | 27 | 2 | 1 |
| 5 | 1 | 1 | 28 | 2 | 1 |
| 6 | 1 | 1 | 29 | 1 | 1 |
| 7 | 1 | 1 | 30 | 2 | 1 |
| 8 | 1 | 1 | 31 | 1 | 1 |
| 9 | 4 | 5 | 32 | 1 | 1 |
| 10 | 1 | 1 | 33 | 5 | 1 |
| 11 | 5 | 1 | 34 | 1 | 1 |
| 12 | 3 | 2 | 35 | 2 | 1 |
| 13 | 1 | 1 | 36 | 1 | 1 |
| 14 | 1 | 5 | 37 | 2 | 2 |
| 15 | 1 | 1 | 38 | 1 | 1 |
| 16 | 1 | 1 | 39 | 1 | 1 |
| 17 | 2 | 1 | 40 | 1 | 1 |
| 18 | 1 | 1 | 41 | 3 | 1 |
| 19 | 1 | 1 | 42 | 4 | 2 |
| 20 | 1 | 1 | 43 | 2 | 1 |
| 21 | 1 | 1 | 44 | 2 | 4 |
| 22 | 1 | 1 | 45 | 1 | 1 |
| 23 | 2 | 1 | | | |

Don't politicize science! Stick to the science, not social issues

| Respondent | Before | After | Respondent | Before | After |
|------------|--------|-------|------------|--------|-------|
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| 3 | 1 | 1 | 26 | 1 | 1 |
| 4 | 1 | 1 | 27 | 1 | 1 |
| 5 | 2 | 2 | 28 | 1 | 1 |
| 6 | 4 | 4 | 29 | 2 | 2 |
| 7 | 2 | 1 | 30 | 2 | 1 |
| 8 | 1 | 2 | 31 | 1 | 1 |
| 9 | 5 | 5 | 32 | 1 | 1 |
| 10 | 2 | 2 | 33 | 1 | 2 |
| 11 | 4 | 2 | 34 | 4 | 2 |
| 12 | 2 | 3 | 35 | 2 | 2 |
| 13 | 2 | 2 | 36 | 1 | 1 |
| 14 | 1 | 1 | 37 | 3 | 4 |
| 15 | 2 | 2 | 38 | 1 | 1 |
| 16 | 1 | 2 | 39 | 3 | 1 |
| 17 | 5 | 2 | 40 | 5 | 5 |
| 18 | 1 | 1 | 41 | 5 | 5 |
| 19 | 2 | 1 | 42 | 4 | 2 |
| 20 | 1 | 1 | 43 | 2 | 1 |
| 21 | 1 | 1 | 44 | 3 | 3 |
| 22 | 2 | 1 | 45 | 3 | 2 |
| 23 | 1 | 1 | | | |

My research is fundamental, so I can't control what other people use it for eventually

| Respondent | Before | After | Respondent | Before | After |
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| 1 | 2 | 1 | 24 | 2 | 3 |
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| 3 | 3 | 2 | 26 | 3 | 2 |
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| 6 | 5 | 5 | 29 | 3 | 3 |
| 7 | 2 | 3 | 30 | 4 | 1 |
| 8 | 3 | 2 | 31 | 3 | 2 |
| 9 | 3 | 4 | 32 | 4 | 5 |
| 10 | 2 | 2 | 33 | 3 | 2 |
| 11 | 1 | 3 | 34 | 2 | 3 |
| 12 | 2 | 3 | 35 | 3 | 2 |
| 13 | 4 | 4 | 36 | 4 | 3 |
| 14 | 1 | 4 | 37 | 4 | 2 |
| 15 | 4 | 3 | 38 | 3 | 1 |
| 16 | 2 | 3 | 39 | 4 | 1 |
| 17 | 5 | 3 | 40 | 4 | 1 |
| 18 | 4 | 2 | 41 | 4 | 1 |
| 19 | 1 | 2 | 42 | 2 | 3 |
| 20 | 2 | 2 | 43 | 1 | 1 |
| 21 | 3 | 3 | 44 | 5 | 3 |
| 22 | 4 | 4 | 45 | 4 | 3 |
| 23 | 2 | 2 | | | |

As an academic chemist, the eventual impacts and applications of my work are not my responsibility

| Respondent | Before | After | Respondent | Before | After |
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| 1 | 2 | 1 | 24 | 2 | 3 |
| 2 | 3 | 3 | 25 | 3 | 1 |
| 3 | 3 | 1 | 26 | 3 | 1 |
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| 6 | 5 | 3 | 29 | 3 | 2 |
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| 10 | 2 | 1 | 33 | 3 | 1 |
| 11 | 1 | 1 | 34 | 2 | 2 |
| 12 | 2 | 2 | 35 | 3 | 2 |
| 13 | 4 | 2 | 36 | 4 | 2 |
| 14 | 1 | 2 | 37 | 4 | 2 |
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| 18 | 4 | 2 | 41 | 4 | 2 |
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| 20 | 2 | 2 | 43 | 1 | 1 |
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Hiring, awards, and citations should be based on merit; the identity of the scientist does not need to be considered

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| 20 | 2 | 3 | 43 | 2 | 2 |
| 21 | 2 | 1 | 44 | 5 | 5 |
| 22 | 2 | 4 | 45 | 4 | 4 |
| 23 | 3 | 2 | | | |

Scientific research is objective; the identity of the scientist is irrelevant

| Respondent | Before | After | Respondent | Before | After |
|------------|--------|-------|------------|--------|-------|
| 1 | 1 | 1 | 24 | 2 | 2 |
| 2 | 1 | 2 | 25 | 2 | 4 |
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| 14 | 1 | 1 | 37 | 4 | 3 |
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Scientific progress and discovery inherently benefits everyone

| Respondent | Before | After | Respondent | Before | After |
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| 6 | 2 | 2 | 29 | 3 | 4 |
| 7 | 3 | 3 | 30 | 3 | 1 |
| 8 | 4 | 5 | 31 | 5 | 3 |
| 9 | 4 | 5 | 32 | 4 | 2 |
| 10 | 3 | 2 | 33 | 1 | 1 |
| 11 | 3 | 3 | 34 | 4 | 3 |
| 12 | 5 | 3 | 35 | 4 | 4 |
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| 15 | 5 | 2 | 38 | 2 | 1 |
| 16 | 1 | 3 | 39 | 2 | 1 |
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| 19 | 5 | 5 | 42 | 2 | 2 |
| 20 | 2 | 1 | 43 | 2 | 1 |
| 21 | 3 | 1 | 44 | 5 | 3 |
| 22 | 3 | 3 | 45 | 2 | 3 |
| 23 | 4 | 1 | | | |

I'm not racist or sexist, so I don't need to do anything more

| Respondent | Before | After | Respondent | Before | After |
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| 6 | 2 | 1 | 29 | 1 | 1 |
| 7 | 1 | 1 | 30 | 2 | 1 |
| 8 | 1 | 1 | 31 | 1 | 1 |
| 9 | 4 | 4 | 32 | 1 | 1 |
| 10 | 1 | 1 | 33 | 1 | 1 |
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| 12 | 1 | 1 | 35 | 2 | 2 |
| 13 | 2 | 2 | 36 | 1 | 1 |
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| 17 | 2 | 2 | 40 | 2 | 1 |
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| 19 | 1 | 2 | 42 | 2 | 1 |
| 20 | 1 | 1 | 43 | 2 | 1 |
| 21 | 1 | 1 | 44 | 1 | 1 |
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There's no such thing as racist or sexist science, only scientists

| Respondent | Before | After | Respondent | Before | After |
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| 3 | 1 | 1 | 26 | 1 | 1 |
| 4 | 1 | 1 | 27 | 1 | 1 |
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| 17 | 5 | 3 | 40 | 3 | 5 |
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| 20 | 2 | 1 | 43 | 4 | 1 |
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| 22 | 3 | 1 | 45 | 1 | 1 |
| 23 | 1 | 1 | | | |

Improving equity and inclusion does not benefit STEM as a whole

| Respondent | Before | After | Respondent | Before | After |
|------------|--------|-------|------------|--------|-------|
| 1 | 1 | 1 | 24 | 2 | 2 |
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| 3 | 1 | 1 | 26 | 1 | 1 |
| 4 | 1 | 1 | 27 | 1 | 1 |
| 5 | 1 | 1 | 28 | 1 | 1 |
| 6 | 1 | 1 | 29 | 1 | 1 |
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| 8 | 1 | 1 | 31 | 1 | 1 |
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| 13 | 1 | 1 | 36 | 1 | 1 |
| 14 | 1 | 1 | 37 | 2 | 2 |
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| 16 | 1 | 1 | 39 | 1 | 1 |
| 17 | 1 | 1 | 40 | 1 | 2 |
| 18 | 2 | 1 | 41 | 2 | 3 |
| 19 | 1 | 1 | 42 | 1 | 1 |
| 20 | 1 | 1 | 43 | 1 | 1 |
| 21 | 1 | 1 | 44 | 1 | 1 |
| 22 | 1 | 1 | 45 | 1 | 1 |
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Interview Protocols

Student Interview Guide

Can you explain to me your interpretation of these statements in your own words? You do not need to express whether you agree or disagree with them.

- There is no evidence of systemic bias in STEM and academia
- Don't politicize science! Stick to the science, not social issues
- My research is fundamental, so I can't control what other people use it for eventually
- As an academic chemist, the eventual impacts and applications of my work are not my responsibility
- Hiring, awards, and citations should be based on merit; the identity of the scientist does not need to be considered
- Scientific research is objective; the identity of the scientist is irrelevant
- Scientific progress and discovery inherently benefits everyone
- I'm not racist or sexist, so I don't need to do anything more
- There's no such thing as racist or sexist science, only scientists
- Improving equity and inclusion does not benefit STEM as a whole

What are some concepts from the course that were new to you or that were particularly thought-provoking?

Do you have any specific ideas for things you plan to do as a graduate student or in the future to improve the inclusivity of your work as a scientist?

How did the course affect your connection with others in the cohort? What about your connection with the faculty who were involved?

What are some things that you value in chemistry research? What impacts do you hope your research will have, either on the scientific community or beyond?

How do you feel about the alignment of your personal values with those of the department or the chemistry community? What does value alignment mean to you?

Faculty Interview Guide

Last fall we invited you to attend a class for the new Chem299 Scientific Responsibility and Citizenship Course. What are some things you remember about either the course content or the experience of attending? Here are the slides from the session that you attended.

What are some concepts from the Chem299 class you attended that were new to you or that were particularly thought-provoking?

Do you think this course is a good addition to the graduate curriculum? Why or why not?

How do you think this course could be improved?

Do you think scientific responsibility and DEI should be integrated more into our curriculum? What are other ways we can integrate concepts about scientific responsibility into our graduate curriculum?

Are there occasions when you engage in conversations about broader impacts and social responsibility with students?

Do you have any other comments on your experience attending the class or on the course in general?