American Chemical Society
2019 Graduate Education Survey

The mission of the ACS Committee on Professional Training is to provide guidelines and set standards for the training of chemistry professionals, at both the undergraduate and graduate levels. This survey is an exploration of the current educational landscape and focuses on multiple facets of graduate education, from admission to post-doctoral employment. It should take about thirty minutes to complete. Because some of the information requested may need to be collected from a variety of sources, we have provided you with this hard copy version to be used prior to accessing the electronic version. Please do not submit hard copies of your responses. Ultimately, all data must be entered via the hyperlink.

If you have any questions about the validity of the questionnaire, please contact Dr. Michelle Brooks at m_brooks@acs.org. If you have any questions about proper completion of the form, please contact research@acs.org.

Q1. **Graduate Institution Information**

Please provide the following:

*Please provide a response for each field marked with an asterisk.

Name of Institution:* _____

Name of Graduate Director:* _____

Graduate Director's email address:* _____

Name of person completing the form:
(if different than graduate director) _____

Email address of person completing the form: _____

Program Faculty Demographics

This section of the questionnaire asks for quantitative information about departmental faculty members.

Q2. Please provide the <u>number of full time faculty members</u> in your department in each of the following categories. Do not include adjuncts or other temporary faculty members.
If you do not have any faculty members in a particular category, please enter the number 0. If you are not sure about the number of faculty that you have in a particular category, please enter "NA" in the field.

*Please provide a response for every field.

	Full Professors	Associate Professors	Assistant Professors	Teaching Faculty Non-tenure Track	Research Faculty Non-tenure Track
Total full time faculty					
Female faculty					
Black or African American					
Native American or Alaskan Native					
Pacific Islander or Hawaiian Native					
Latinx					
Two or more races/ ethnicities					
Other					

Doctoral Student Demographics

For the following questions please consider <u>only students enrolled in the doctoral program</u>.

Q3a. How many graduate students are currently enrolled in your doctoral program?

*A response to this question is required.

Q3b. Please provide the distribution in whole numbers of doctoral chemistry graduate students enrolled in the chemistry program at your university by immigration and international status. *If you are not sure about the number of students in a particular category, please enter "NA" in the field.*

	U.S. citizens/ permanent residents	International (non-US)
Number of Doctoral (Ph.D.) students		

↳ ***If you indicated you do not have U.S. Citizens/Permanent Residents in your doctoral program, please skip to Q5.***

Q4. Please provide the number of doctoral students who are U.S. citizens/permanent residents in each of the following categories.

If there are no students in a category, please enter zero. If you are not sure about the number of students in a particular category, please enter "NA" in the field.

*Please provide a response for every field.

	Male Students	Female Students	Non-Binary Students*	Students who Prefer Not to Say Their Gender
Caucasian students				
Black or African American students				
Native American/Native Alaskan students				
Pacific Islander/ Native Hawaiian students				
Latinx students				
Two or more races/ethnicities students				
Other students				

**Non-binary student: Gender identities that are not exclusively masculine or feminine, identities that are outside the gender binary and cisnormativity.*

Graduate Program Outcomes

This section of the survey focuses on items that are related to Ph.D. students in your chemistry graduate program. Please consider only your doctoral chemistry program in your responses.

Q5. What is the average time to degree (years) for doctoral students that graduated during the 2017 calendar year?

Please enter the number of years to one decimal place. If you are not sure of the average time to degree (years) for doctoral students, please enter "NA" in the field.

*A response to this question is required.

Q6. Is the average time to degree readily available for prospective graduate students?

Please select all that apply.

- ☐ Yes, on our department website
- ☐ Yes, on the institution website
- ☐ Yes, upon request
- ☐ No
- ☐ Not sure

Q7. For each of the last five (5) years, please provide the number of students admitted to the doctoral program, the number in that cohort that are currently enrolled in the program, and those that graduated with a Ph.D.

If there are no students in a category, please enter the number 0. If you are not sure about the number of students in a particular category, please enter "NA" in the field.

*A response to this question is required for each academic year.

Year admitted	Number of admitted students	Number of students currently enrolled	Number of students who earned a Ph.D.
Academic 2018-2019			N/A
Academic 2017-2018			
Academic 2016- 2017			
Academic 2015-2016			
Academic 2014-2015			
Academic 2013-2014			

Q8. Over the last 5 years, please enter <u>the percentage of Ph.D. recipients</u> who went on to the following for their first position:

Full time positions in academia	
Post-doctoral positions	
Academic	%
Industrial	%
Government Labs (e.g., national labs, NIH, NSF)	%
Other, please specify:	%
Academics	
K-12 education	%
Two year/Community College positions	%
Primarily undergraduate institutions	%
Research institutions (tenure track)	%
Research institutions (instructional faculty)	%
Visiting professor positions	%
Other, please specify:	%
Full time positions outside of academia	
Government (either state or federal)	%
Non-profits/Professional societies	%
Industry (CROs, law firms, R&D, etc.)	%
Consulting	%
Other, please specify:	%

Q9. Are data on these career outcomes readily available for prospective graduate students?
Please select all that apply.

- ☐ Yes, on our department website
- ☐ Yes, on the institution website
- ☐ Yes, upon request
- ☐ No
- ☐ Not sure

Q10. How is the department's graduate program evaluated?
Please check one rate of frequency for the type of evaluation selected.

	Annually	Biennially	3-7 years intervals	Other interval	Not applicable
Internal review (e.g., part of a departmental review)	○	○	○	○	○
Institutional Review (at the College or institution level)	○	○	○	○	○
External Review	○	○	○	○	○

Q11. If your graduate program is evaluated in another manner, please describe in the box below.

Q12. Which of the following changes, if any, have been made to the graduate program since the 2013-2014 academic year?
Please select all that apply.

- ☐ New course development
- ☐ Course requirements
- ☐ Added program outcome assessments
- ☐ Added learning outcome assessments
- ☐ Inclusion of a required independent development plan (IDP)
- ☐ Addition of professional development training
- ☐ Other, please specify:
- ☐ None of the above

Graduate Program

Admissions

Q13a. During the admission process which of the following are used to evaluate students?
*A response to this question is required.

- ○ We use a holistic review process*
- ○ We use a non-holistic review process
- ○ We use a hybrid review process that includes both holistic and non-holistic review processes
- ○ Not sure

*A holistic review process: An emphasis on the whole person. An admissions process that takes into consideration the whole applicant rather than just empirical data like their GRE, GPA, or grade point average.

↳ ***If you indicated that you use a holistic review during your admission process, or you do not know, please skip to Q14.***

Q13b. Earlier you indicated that your department uses a non-holistic review process. Which of the following metrics are used to evaluate students?
Please select all that apply.
*A response to this question is required.

- ☐ GRE scores, general
- ☐ GRE scores, subject
- ☐ GPA, overall
- ☐ GPA, in chemistry courses
- ☐ Letters of recommendation
- ☐ Number of publications or presentations
- ☐ Personal statement
- ☐ Other (please describe):

Q13c. Please indicate the priority of each metric that is used to evaluate students. (1= highest priority metric, 2= next in priority and so on.)

Please enter the number. You can assign the same priority to more than one metric.

*Please provide a response for every field.

Metric	Priority for evaluating students (1 = highest)
GRE scores, general	
GRE scores, subject	
GPA, overall	
GPA, in chemistry courses	
Letters of recommendation	
Number of publications or presentations	
Personal statement	
Other (please describe):	

Q14. Thinking of the last five (5) cohorts to be admitted to your doctoral program, please describe the typical level of preparedness for incoming graduate students on the following items:

*A response for every row is required.

	Exceeds expectations	Meets expectations	Does not meet expectations	Not Assessed	Not Sure
Content knowledge (overall)	○	○	○	○	○
Content knowledge (in their chosen area)	○	○	○	○	○
Oral communication	○	○	○	○	○
Written communication	○	○	○	○	○
Safety skills	○	○	○	○	○
Problem solving skills	○	○	○	○	○
Reading/Searching primary literature	○	○	○	○	○
Scientific ethics	○	○	○	○	○
Leadership skills	○	○	○	○	○

Q15. How is overall content knowledge assessed?
Please select all that apply.

*A response to this question is required.

- ☐ Placement exams in all areas of chemistry
- ☐ GRE subject scores
- ☐ Success in first year graduate courses
- ☐ Other, please specify:
- ☐ None of the above

Q16. How are deficiencies in content knowledge remediated?
Please select all that apply.

*A response to this question is required.

- ☐ Required to take undergraduate courses
- ☐ Self-directed study
- ☐ Bridge programs between undergrad and grad
- ☐ Additional graduate coursework
- ☐ Required to TA in that content area
- ☐ Other, please specify:
- ☐ None of the above

Support

Q17. During fall 2018, how many chemistry graduate students in the doctoral program were supported by the following?
Please enter a whole number response. If you are not sure about the number of students in a particular category, please enter "NA" in the field.

*A response to this question is required.

	Number
Teaching assistantships	
Research assistantships from faculty generated research funds	
Government fellowships (NSF, NIH, DOE, NASA, etc.)	
Training grants	
Industrial funds	
Internal fellowships (dept. or institution)	
Other	

Q18. What percentage of your first year students are supported with teaching assistantships?

Q19. What is the average annual stipend for your Ph.D. students supported as teaching assistants and research assistants?
If your institution has a tiered stipend structure, provide the stipend for first year students. Please enter a whole number. Do not include a dollar sign or comma. Dollar amount cannot exceed $100,000. If you do not have any students receiving an annual stipend as a teaching assistant or research assistant, please enter "NA" in the field.

*A response to this question is required.

	Average Annual Stipend
Teaching assistants	$
Research assistants (fully supported by faculty grant funds)	$

Q20. What is the limit on the number of years that a student can be supported through a teaching assistantship?
Please enter zero if there is no limit to the number of years that a student can be supported through a teaching assistantship. If you are unsure, please enter "NA" in the field.

Degree Requirements

Q21. In addition to coursework, which of the following are degree requirement for doctoral students?
Please select all that apply.

*A response to this question is required.

- ☐ Cumulative exams
- ☐ Oral preliminary exam
- ☐ Foreign language
- ☐ Seminars/presentations (exclusive of dissertation defense and group meetings)
- ☐ Defense of an original research proposal (related to research topic)
- ☐ Defense of an original research proposal (unrelated to research topic)
- ☐ Comprehensive exam
- ☐ Comprehensive oral exam
- ☐ Public dissertation seminar
- ☐ Other, please specify:
- ☐ None of the above

Choosing an Advisor

This section of the survey deals with the selection of an advisor and advisory committee for the Ph.D. students in your program.

Q22. Consider only students admitted in the previous five (5) years.
Please provide an estimate of the <u>percentage of graduate students</u> in the doctoral program that:
Please provide a whole number response as a percentage that is between 0 and 100. If you are unsure, please enter "NA" in the field.

	Percentage of Graduate Students in the Doctoral Program
Students that choose an advisor by the end of their first semester	%
Students that choose an advisor by the end of their first year	%
Students that complete rotations and then choose an advisor	%
Students that are directly admitted into a research group	%
Students that have more than one advisor (are co-advised)	%

Q23. What is the upper limit to the number of graduate department supported students an advisor may accept into their research group?
If there is no limit to the number of graduate department supported student an advisor may accept into their research group, then enter zero. If you are unsure, please enter "NA" in the field.

Q24. Who chooses the members of a Ph.D. student's dissertation committee?

- ○ The student chooses the members of their dissertation committee
- ○ A teaching faculty member chooses the members
- ○ The student chooses the member collaboratively with the advisor
- ○ Other, please specify:
- ○ Not sure

Q25. When do students typically choose their dissertation committee?

- First semester
- First year
- Second year
- Just prior to advancement to candidacy
- Other, please specify:
- Not sure

Q26. Is the research advisor a member of the student's dissertation committee?

- Yes, a full voting member
- Yes, an ex officio member
- No
- Other, please specify:
- Not sure

Q27. Excluding advisors, how many members make up the dissertation committee?

Please provide a whole number. If you are not sure, please enter "NA" in the field.

Professional Development

This section of the survey focuses on the activities and trainings outside of the classroom that help students become better chemistry professionals.

Q28. What type of training do new graduate students receive in teaching?
Please select all that apply.

*A response to this question is required.

- ☐ Department level workshop
- ☐ Institution level workshop (lead by graduate school or teaching center)
- ☐ Formal course held in the department
- ☐ Formal course taught by campus teaching center
- ☐ One-on-one mentoring
- ☐ Other, please specify:
- ☐ Not sure

Q29. What is the primary way in which doctoral students receive instruction in the following areas?
Please select one response per item.

*A response for every row is required.

	Coursework	Department Seminar or Workshop	Institution Training	Online Training Not Associated with the Dept. or Institution	No Training Available	Not Sure
Promoting a safety culture	○	○	○	○	○	○
Microethics (RCR training) *[Macroethics is understanding the global and social impact of your research]*	○	○	○	○	○	○
Macroethics (examines the collective, social responsibility of the chemist) *[Macroethics is understanding the global and social impact of your research]*	○	○	○	○	○	○
Intellectual property	○	○	○	○	○	○
Mentoring (excluding TA training)	○	○	○	○	○	○
Writing skills (professional/grant)	○	○	○	○	○	○
Communication skills	○	○	○	○	○	○
Sexual harassment prevention	○	○	○	○	○	○
Diversity and Inclusion	○	○	○	○	○	○
Career development	○	○	○	○	○	○
Leadership	○	○	○	○	○	○
Management	○	○	○	○	○	○
Business/economics	○	○	○	○	○	○

Q30. Are Individual Development Plans (IDPs) required?

*A response to this question is required.

- Required of all graduate students
- Required of some graduate students (e.g. to satisfy funding agency or University requirements
- Optional for graduate students
- Not sure

↳ ***If you indicated that you are not sure, please skip to Q34.***

Q31. What type of Individual Development Plans (IDP) do graduate students use?

*A response to this question is required.

- ChemIDP (ACS)
- My IDP
- Generated within the Chemistry Program or department
- Generated by the academic institution
- None
- Other, please specify:
- Don't know

Q32. At what stage do students begin to work on IDPs?

*A response to this question is required.

- In their first year
- After they pass their candidacy evaluation
- When they are supported with funds that require an IDP
- It varies by student and advisor
- Not sure

Q33. How often are the IDPs revisited?

*A response to this question is required.

- Annually
- Once more before completion of the degree
- Other, please specify:
- Not sure

Q34. Are faculty advisors encouraged to discuss the IDPs with their students as part of their mentoring responsibilities?

*A response to this question is required.

- Yes
- No
- Other, please specify:

Q35. In which of the following faculty committees can graduate students participate?
Please select all apply.

*A response to this question is required.

- ☐ Department seminar committees
- ☐ Faculty search committees
- ☐ Graduate program committee (Ph.D. requirements, graduate courses)
- ☐ Graduate admissions committee
- ☐ Graduate advisory and appeals committee
- ☐ Instrumentation committee
- ☐ Departmental diversity
- ☐ Safety
- ☐ Other, please specify:
- ☐ None

Q36. Are mechanisms in place for the students to evaluate their progress throughout the graduate experience?

- ○ Yes, please describe:
- ○ No

Benefits and Support

Q37. Please indicate the amenities provided or available to students in the doctoral program below. If a benefit is not available at your institution, please indicate that as well.

*A response for every row is required.

	Yes (free of charge)	Yes (subsidized)	Yes (regular payment required)	Not available to graduate students	Not available at institution	Not sure
Dental insurance	○	○	○	○	○	○
Disability insurance	○	○	○	○	○	○
Health insurance	○	○	○	○	○	○
Life insurance	○	○	○	○	○	○
Vision insurance	○	○	○	○	○	○
Fitness program	○	○	○	○	○	○
Housing	○	○	○	○	○	○
Onsite child care	○	○	○	○	○	○
Parking	○	○	○	○	○	○
Public transportation	○	○	○	○	○	○

Q38. Which of the following is available to graduate students in your program?

Please indicate whether or not the following items are available to graduate students. Please select one answer per item.

*A response for every row is required.

	Yes (Yes, it is available at the institution and is available to graduate students)	No (It is available at the institution, but NOT to graduate students)	Not available at this institution (Not an available benefit at the institution for any employee)	Not sure
Maternity/paternity leave	○	○	○	○
Sick leave	○	○	○	○
Vacation/annual leave	○	○	○	○
Title IX Officer (knowledgeable about campus policies procedures regarding sex discrimination and sexual misconduct)	○	○	○	○
Chemistry graduate student organization	○	○	○	○
Graduate student association	○	○	○	○
Graduate student orientation	○	○	○	○
On campus counseling services (e.g., mental health support)	○	○	○	○
Data on educational outcomes from previous research trainees of the graduate program	○	○	○	○
International research experience support	○	○	○	○