



ACS Committee
Professional Training

Periodic Report Guide

January 2019

This guide provides field-by-field instructions for completing the Periodic Report for ACS approved undergraduate programs.

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2019 Periodic Report Checklist

Refer to the [ACS Guidelines](#) for the requirements for an ACS-approved program.

Periodic Report Form

Complete and submit your **periodic report form**.

Catalogue

A copy of the catalogue pages for the chemistry department (pdf)

- Be sure that these pages include a department description, degree requirements, and a list of courses and their descriptions.

Supplementary Materials

Submit one complete set of course materials from five **in-depth** courses that include a classroom component taught within the chemistry program that represent coverage in each of the five chemistry subdisciplines: analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, and physical chemistry (ABIOP).

Preparation of Supplementary Materials:

Single pdf (maximum size 10 Mb) containing syllabi and exams from in-depth course material

Separate by sub-discipline: Analytical, Biochemistry, Inorganic, Organic, Physical (ABIOP)

Requirements

All course materials should meet the following requirements:

- Syllabi should
 - Include a list of topics taught
 - Include the course name and number
 - Include the semester and year that the course was taught
 - Correspond to the most recent offering of the course (within the previous 2 years)
- Exams should come from the same semester/year as the syllabus from the corresponding course.
- If you did not teach an in-depth course in a particular subdiscipline during the last two academic years, **submit the materials for the foundation course instead**.
- If the **only coverage in a foundation area is provided by a course taught outside the chemistry department**, submit the syllabi and exams for that course work *as well as* materials from five courses taught within the chemistry department.
- Submit syllabi and exams for courses taught **outside the chemistry program** if they are used as one of the four (or six for programs on the quarter system) required in-depth courses used for student certification. Include a description of how the course(s) builds on the molecular nature of chemistry.

If a lab course has a lecture component (whether the two are coupled or not), the experiment list, exams, and syllabus should all be from the same offering of the course (e.g. all materials will be from the course taught during fall 2018).

Experiment Lists

- Submit the **experiment lists from courses used to cover at least four of the five foundation areas** (ABIOP).
 - Experiment lists should include
 - A course title and description
 - A list of experiments performed in that class
 - A descriptive title for each experiment
 - The instruments utilized for each experiment
 - A list of compounds used for each experiment
- All experiment lists can be combined into a single pdf (max 10 Mb) and uploaded.

Undergraduate Research

- **If undergraduate research is used** to fulfill requirements in the approved curriculum, submit 3-5 research reports that are
 - Prepared by individual undergraduate students (i.e. not co-authored by students)
 - Published work can be submitted as long as a single undergraduate was the primary author
 - Represent a breadth of disciplines (if possible)
 - Represent work with different faculty members (if possible)
 - Have been assessed and graded
 - If the department uses a standard rubric to evaluate the student research reports, upload the rubric in the "Student Research" folder in CPRS.

PUIs

If your department does not have a Ph.D. program, submit a list of all faculty and student publications from the last six years. Please underline the names of undergraduate student authors where applicable.

Report Guide

Section 1: Demographics

- 1.1. Use the drop-down menu to choose “Yes” or “No” to indicate whether your chemistry department offers this type of degree.
- 1.2. Academic calendar:
For “semester” and “quarter” enter the length in weeks (excluding final exam weeks)
For “other” enter the type of academic calendar (e.g. 4-1-4) and the length in weeks
- 1.3. Include enrollments only for the current academic year.
- 1.4. Please provide your response as a whole number (not a percentage).
Please include only the first placement and not subsequent employment.

Examples:

Graduate school: Any graduate program in the chemical sciences

Professional Schools: Medical, Dental, Veterinarian, Pharmacy, Law, etc.

Government: Federal or state government agencies: e.g. NIH, FDA, State Crime Labs

NGO: Non-governmental agencies

Nonprofit: Includes professional societies like ACS

Industry: Includes any industrial position

Other: May include scientific writing, policy, outreach, etc. positions.

Section 2: Institutional Environment

- 2.1. Use dropdown menu to indicate “Yes” or “No”
Enter the full name of the accrediting body
- 2.2. The department must have control over an adequate budget, faculty selection and promotion, curriculum development, and assignment of teaching responsibilities in order to be considered independent. If your program is part of a combined department or college, but still meets these guidelines, please answer “yes” to this question.
- 2.3. Mark an “x” in the cell that corresponds to the salary range for each faculty rank. Long term, non-tenure track faculty can include lecturers, instructors, lab coordinators etc. if they are considered long term (i.e. with renewing contracts). Do not include part time faculty members.
- 2.4. Complete this item only if your department’s expenditures are \leq \$60k annually (excluding salaries, library, and grant expenditures, both internal and external)
- 2.5. For this item, please indicate if the institutional support is adequate to meet the needs of the department or program.

Section 3: Faculty and Staff

Item 3.1 Please enter integer values for the number of faculty members in each category (see definitions below). For each category, enter an integer for the number of faculty members with terminal degrees (Ph.D. or equivalent). Also enter the number of female faculty in each category and the number of faculty in each ethnic

or racial category. For faculty members who identify as mixed race, please use “other”. The spreadsheet will automatically calculate a total and percentage for each category.

Faculty categories

Please note that we use the term “faculty member” to include all of the categories below.

Full Time: Do not include visiting professors, adjuncts, or faculty that have appointments in more than one department in this category.

Tenure track: Includes full, associate, and assistant professors wholly dedicated to the chemistry department.

Teaching Faculty (Instructional Staff): Titles for this category include, but are not limited to, Lecturer, Instructor, Lab Coordinator. Typically have an expectation of a renewing contract and are assigned a full time teaching load. Wholly dedicated to the chemistry department. May also be referred to as *Long Term, Non-tenure track*. For faculty members that fit this description, but whose title is not included in item 3.1, please use “other.”

Part time: Work full time at the institution but are not wholly dedicated to the chemistry program; may have appointments in more than one department.

Part time, tenured: Full or associate professors who have appointments split between two departments.

Part time, pre-tenure: Assistant professors who have appointments split between two departments.

Part time, LT, NTT: Long term, non-tenure track faculty whose appointment is split between two departments or is hired on a part time contract.

Temporary: Typically adjunct or visiting faculty members

Full-time: Typically visiting faculty

Part-time: Typically adjunct

3.1.a. **Diversity:** Please include any additional information about the diversity of your faculty in this space. Examples of diversity that you might choose to include are: Faculty who identify as people with disabilities, as LGBTQ, or were first generation college students.

3.2. This question is optional. As the Committee for Professional Training prepares for the next revision of the ACS Guidelines for Approved Programs, we are interested in defining the workloads of the faculty members contributing to the education of undergraduate students. Please report the percentage of time spent for the **typical faculty member** in each of the following:

Teaching: All activities involved with teaching, including time spent with teaching assistants, preparing course materials, office hours, classroom time, etc.

Research: Includes all activities involved with both undergraduate and graduate research.

Advising: Both formal and informal advising

Service: Includes department, college, and institutional service. Do not include outreach in this category

Other: May include outreach, involvement in professional society governance/committee work

- 3.3. Provide a description of the courses that are taught by adjuncts. Are these courses part of the approved curriculum or are they service courses for other majors or taught by local experts outside the department? Indicate if the use of temporary faculty is due to extenuating circumstances (e.g. unexpected leaves of permanent faculty).
- 3.4. Examples of activities used by programs to recruit, welcome, and retain faculty may include the following: Welcome packet describing resources and communities on campus. Connect candidates with faculty of diverse backgrounds across campus when requested by candidates. Retain: Mentors and community building events. Network supports. Resources to attend conferences focused on underprivileged or underrepresented groups. Resources for families.
- 3.5. Please include only full- or part-time employees (not student workers). Discuss the use of students in the comment section of this question.

Definitions & Examples:

Administrative staff: Any full time or part time employee that supports the administrative processes of the department/program. May include, but is not limited to: Office assistants, data analysts, office managers, payroll managers for the department, program administrative assistants, grant management staff, department secretaries, finance and accounting personnel

Stockroom: Any full- or part-time employee that maintains the department stockroom, handles the chemical and equipment inventory, or does preparatory work for laboratory courses (do not include instructors or lab coordinators).

Instrument technicians: Any full- or part-time employee that maintains and repairs department instruments. Please indicate if this position is shared between departments. If you use contract employees to maintain instruments, please indicate that in the comments.

- 3.6. Sabbaticals and professional leaves: Include leaves taken for any form of professional development. This includes traditional sabbaticals as well as leaves for work at the NSF, NIH, etc.

Teaching Contact Hours

Definition: Face-to-face teaching in the classroom or laboratory performed by chemistry faculty members.

Please note that we use the term “faculty member” to include all of the categories in item 3.1.

3.7 a. Calculate the average number of contact hours per week for all faculty members that teach chemistry department courses, including tenure track, instructional, permanent, and temporary faculty members.

- If the average is < 12 , **report only faculty members that teach 12 or more contact hours in Table 3.1.** If a faculty member’s contact hours are < 12 , then you do not have to list them in Table 3.1. This includes ALL faculty in all categories.
- If the average is ≥ 12 , then complete the contact hour table (Table 3.1) **for ALL faculty members listed in item 3.1** regardless of how many contact hours they have (e.g. if you list 3 lecturers in item 3.1, then all 3 of these should appear in Table 3.1).

3.7 b. Calculate the average number of contact hours per week for all instructional (lecturers, instructors, lab coordinators, non-tenure track) faculty members that teach chemistry department courses.

3.7 c. Use this space to describe how your department counts contact hours. Possible examples may include:

- Institutional policy for counting contact hours for asynchronous teaching assignments (e.g. online courses)
- Institutions that equate 1 hour of contact time for teaching a 3-hour lab course
- Institutions where all courses are weighted equally (e.g. 1 credit)

3.7 d: Describe any policies that govern teaching assignments.

Examples:

- Institutional mandates for teaching assignments for each category of faculty
- Union contracts that mandate minimum contact hours
- Larger course loads for faculty with only teaching responsibilities

3.8 Specific items to consider when describing how TAs are trained:

- Are the TAs undergraduate or graduate students?
- Are undergraduate TAs alone in the lab?
- Do supervisory personnel visit the lab on a regular basis?
- Is there training prior to the start of the semester?
- Are there regular meetings throughout the term to go over experiment-specific safety considerations?

Table 3.1: Teaching Contact Hours – Instructions

Teaching Contact Hours is located on a separate tab in the Periodic Report spreadsheet. Submit contact hours for 1 academic year. If a faculty member is on sabbatical or has a teaching release for one of the two semesters, please indicate that.

- Complete Table 3.1 for all faculty **IF the average contact hours for the department is ≥ 12** .
 - **If the average number of contact hours for the department is < 12 , then complete Table 3.1 for any faculty member with 12 or more contact hours.**
- **Rank:** Try to use the categories as described in Item 3.1, however if your institution uses different titles, please use “Other” and indicate the rank used by your institution. Use a hashtag (#) to identify non-tenure track faculty members.
- **Group:** **Group A** faculty members teach lecture only, or lecture and labs. **Group B** faculty teach only lab courses.
- **Course Title:** Be sure to indicate labs with an asterisk (*). Include the course designation (i.e. chem, chm, cem) and number along with the title. Feel free to use abbreviated titles for your courses.
- **Contact hours:** Calculated automatically using the following: $\frac{\text{ClassTime} \times \text{TimesOffered}}{60}$ and rounded up to an integer value. This is the method used by ACS to calculate contact hours. Please do not edit this equation.
- **Total:** Automatically calculated.

Best practices

- Recitations count if the faculty member is involved in face-to-face teaching of the recitation.
- Do not include time spent instructing teaching assistants or working with undergraduate research students.
- Attendance at department/program seminars does not count unless the faculty member is the instructor of record and received some form of teaching credit for leading the seminar.
- Do not report fractional contact hours unless it is an unusual circumstance where a department can rightly report half hours (e.g., 2 hour 30 minute lab sections)
- All contact hours must be reported even if some of them involve courses taught for another department
- If a faculty member has contact hours that exceed the maximum, provide an explanation (e.g. laboratory coordinators, temporary faculty members with no service or research responsibilities OR the courses taught are not for certification OR an unusual set of circumstances resulted in a one-time non-compliance)
- If the average over two semesters results in a half integer value, it will be rounded up to the next highest integer value, i.e. 15.5 contact hours becomes 16.

Table 3.1a Workload

This section is new in 2019 and is included to help the reviewers understand the primary duties of faculty members with differing academic appointments. For any faculty member with 15 or more contact hours, please complete this table. Include the following:

- Faculty member's name and academic appointment (i.e. "title")
- Identify whether that person is in Group A (lectures only) or Group B (lecture & lab, or lab only)
- Reiterate the contact hours for each semester/quarter
- The average will be automatically calculated
- Identify the primary responsibilities of that individual using the standard teaching/research/service split.
- If there is another aspect of the faculty member's responsibility, please use the "Other" column.

This information is being gathered, in part, to help us understand workload as part of our 2019 guideline revisions.

Section 4: Infrastructure

4. Infrastructure is covered in the ACS Guidelines, Section 4, pp. 6-9.
 - 4.1.a. Rate each aspect of infrastructure in the table on whether the needs of your undergraduate program are being met. For any "does not meet needs" response, please provide a narrative describing how the program's needs could be met in that area. In this context, "apparatus" includes anything necessary for instructional/research laboratories excluding instrumentation.
 - 4.1.b. Include the person responsible and schedule for repair, maintenance, and replacement of instruments.
- 4.2 (Section 4.2, p. 7) For institutions that participate in instrument sharing, please describe any arrangements for use. Please include level of access, whether or not students are able to use the off-site instruments, and whether the instruments are used for instruction, research, or both.

- 4.3.a. (Section 4.4, p. 8) Include all journals to which students have immediate institutional access, include journals that undergraduate students use for either instruction or research. A list of journals recommended by CPT can be found [here](#). The journals available should include *at least* 3 journals with a general focus and at least 1 journal in each of the sub-discipline areas and in chemical education.
- 4.3. b. If you utilize a different document delivery service (other than interlibrary loans), please indicate that on the tab labelled “Additional Space”.
- 4.4 Use the dropdown menu to choose your response.
- 4.5 If your program has 26 or more students in a lab section, programs will be asked to work with their administration to reduce this number and to report any efforts taken to reduce the size of their lab sections. Programs are asked to report this information at the time of their next periodic report. **For programs with 30 or more students in a lab section**, please explain how you handle safety and supervisory issues in the labs. Use the “Additional Space” tab to enter your response and be sure to label your response with “Item 4.5.”
- 4.6 (Section 4.5 p. 8) For each of the items listed indicate whether it currently is adequate for the instructional program and whether it is regularly tested or inspected. For each item in the second table, indicate your response with an “x” in the appropriate cell. Provide an explanation for any “no” response. You may use the “Additional space” tab to expand on any response.
- 4.7 Use the dropdown menu to respond to 4.7a. and c. A response is required in 4.7b. only if the response to 4.7a. is “yes.” Provide an explanation only if responses to 4.7 a. and c. is “no.”

Table 4.1 Instrumentation - Instructions

- Provide a list of functioning instruments that are used by undergraduates in each of the following categories: NMR spectroscopy, optical molecular spectroscopy, optical atomic spectroscopy, mass spectrometry, chromatography and separations, and electrochemistry. There is additional space for other types of instruments.
- Indicate whether the instrument is used by undergraduates in coursework, research, or both by placing an “x” in the appropriate cell.
- Please provide the year the instrument was acquired and the manufacturer and model.

If you have more than one particular instrument, please list up to two (report on the two newest instruments).

For instruments older than 15 years, your review may include a request for a long-term plan for replacement.

Section 5: Curriculum

5.1 Sections 5.1 – 5.11, pp. 10 – 16

Definitions

Foundation courses: Provide the first experience in each of the sub-disciplines: Analytical, Biochemistry, Inorganic, Organic, and Physical (ABIOP). Foundation courses build on the concepts covered in the introductory course and provide the breadth of content needed for the in-depth courses.

Requirements:

- Semester: 1 course (3 credits) **in each** sub-disciplines, ABIOP.
- Quarters: 8 courses (3 credits each) that include the equivalent of **at least 1 quarter in each** of the sub-disciplines, ABIOP.
- ***In general, a foundation course should provide 45 hours of instruction in each sub-discipline for a total of 225 hours of foundation content.***

Frequency: Each foundation course must be taught annually, however if a course is taught every other year and a clear path to completing the degree in 4 years is available, the program is still compliant with the Guidelines.

- Semester: 4 courses taught annually; must cover 4 of 5 sub-discipline areas
- Quarters: At least 6 of 8 taught each academic year.

Best practices

- The first experience in a yearlong course (e.g. organic, physical chemistry) is categorized as a foundation course; the second is an in-depth course.
- A foundation course cannot use a general chemistry textbook
- If a course is taught outside of the chemistry department (e.g. biochemistry), then it must require general chemistry as a pre-requisite. Course materials for this course must be provided.
- Content from a sub-discipline can be distributed amongst multiple courses and still meet the guidelines. This may be accomplished by indicating the number of hours taught in the sub-discipline and showing that students receive the equivalent of 45 hours of content in each sub-discipline. Provide documentation of this by submitting all associated course materials.

In-depth courses: These courses focus on depth rather than breadth. Each must have a foundation course or another in-depth course as a pre-requisite. Research experiences cannot be included as one of the four in-depth courses taught annually, however they **can** be used by students to fulfill the in-depth degree requirements..

Requirements

- Semester: 4 courses that provide a minimum 180 hours of instruction.
- Quarters: 6 courses that provide a minimum of 180 hours of instruction.
- These courses do not have to cover all of the sub-disciplines.
- Laboratory components of lecture courses are not included as in-depth coursework regardless of whether the lab component is coupled or uncoupled from the lecture component.
 - For example: Organic II can be counted as an in-depth course, but if you offer a 4 credit course (3 hours of lecture with a 3 hour lab), then only 3 credits will “count” toward the 12 credits required for in-depth coursework.
- The same course cannot be used as both a foundation and in-depth course.

- Cannot be the first experience in one of the sub-disciplines *even if* it requires a foundation pre-requisite.
- Can be an elective course for the certified degree
- Research cannot be used towards the in-depth course requirement by the program, but **students** can use it to fulfill their in-depth requirements for certified degree.

Frequency

- Semester: 4 courses must be taught each academic year
- Quarters: 6 courses must be taught each academic year

Best practices

- 1- and 2-credit topical courses can count toward the requirement of teaching four in-depth courses a year using the following schemes.
 - Three 1-credit topical courses = One in-depth course (3 hours of instruction)
 - Three 2-credit topical courses = Two in-depth courses (6 hours of instruction)
- Seminar courses that have a topical area of chemistry as their focus often count as in-depth courses, even when they do not have a foundation course as a pre-requisite.
- Seminar courses that focus on professional development activities (e.g., resume writing) and/or general skills development (e.g., preparation of a department seminar, writing a report from a literature review) do not count as in-depth courses.

5.2 **Degree tracks:** Include only degree tracks that have an ACS approved curriculum. Your department may have tracks available that are not ACS approved, please do not include these in this list.

Curricular Tables

Table 5.1 Introductory Course Work - Instructions

Introductory Course Work: General chemistry classes that prepare students for foundation course work.

Please list only those courses that students use to prepare for foundation course work. Do not include courses that are not used in preparation for the certified degree curriculum.

- Include the course designation and number: e.g. **CEM131**
- Provide the course title: e.g. General Chemistry I
- Total hours: The total number of hours that the student spends in class. Example: 3 hours per week for a 14 week semester = 42 hours. Differentiate between lecture hours and lab hours. If the course has a coupled lab, both values should be reported in the same row.
- Textbook & Authors: Self-explanatory
- Credits: Course credits
- Tracks: For each track, indicate if the course is required (**R**) for the certified degree or is one of several courses that could meet the requirements for the degree (alternate: **A**)
- If the course is offered online, please indicate that after the course title.

Table 5.2 Foundation Course Work - Instructions

Foundation course work is defined above in Item 5.1. Enter all foundation courses into this table. The tracks should automatically populate.

- Include the course number and designation: e.g. **CEM241**
- Provide the course title: e.g., Organic Chemistry I
- Total hours: Number of contact hours per semester or quarter; includes the final exam. For example, for an organic course that includes 3 hours of lecture, 3 hours of lab, and 1 hour of recitation each week for a 14 week semester, you would enter 56 hours of class and 42 hours of lab in the appropriate cells.
- Enter the title and author of the textbook used for this course. If you use a custom text or electronic text, be sure to include that information as well. In-house course materials used in lieu of a text should also be indicated.
- Credit hours: The number of credits earned by the student for the course.
- Indicate the percentage of course content in each of the 5 sub-disciplines of chemistry (ABIOP). The total across any row should equal 100. Remember that the guidelines require the equivalence of a 3-credit course in each of the 5 sub-disciplines.
- For each track **that leads to a certified degree**, indicate whether that course is required (R) or is one of several from which the student can choose (alternates, A).

Table 5.3 In-Depth Course Work - Instructions

In-depth course work is defined above in Item 5.1. Enter all in-depth courses taught into this table, regardless of whether or not they are required for a certified degree. Do not include research courses or seminars unless they meet the specification described [above or are used for certification](#). The tracks should automatically populate.

- Include the course number and designation: e.g., CEM241
- Provide the course title: e.g., Organic Chemistry II
- Total hours: Number of contact hours per semester or quarter; includes the final exam. For example, for an organic course that includes a 3-hour final plus 3 hours of lecture, 3 hours of lab, and 1 hour of recitation each week for a 14 week semester, you would enter 59 hours of class and 42 hours of lab in the appropriate cells.
 - If your lab course is not coupled to the lecture course, please list it separately. Please note that the credits associated with component labs cannot be used to fulfill the in-depth course requirement.
- Enter the title and author of the textbook used for this course. If you use a custom text or electronic text, be sure to include that information as well. In-house course materials used in lieu of a text should also be indicated.
- Foundation pre-requisite: Enter the course number and designation for the foundation course that is a pre-requisite. Note that the pre-requisite can also be another in-depth course. Any foundation pre-requisite course should also be listed in Table 5.2.
- Credit hours: The number of credits earned by the student for the course.
- For each track **that leads to a certified degree**, indicate whether that course is required (R) or is one of several from which the student can choose (electives, E).

Table 5.4 Physics & Math Course Work - Instructions

Include only courses that are used to satisfy the requirements for the certified degree. The tracks should automatically populate.

- Include the course number and designation: e.g., **PHY241**
- Provide the course title: e.g., Physics I
- Total hours: Number of contact hours per semester or quarter; includes the final exam. For example, for an organic course that includes a 3 hour final exam plus 3 hours of lecture, 3 hours of lab, and 1 hour of recitation each week for a 14 week semester, you would enter 59 hours of class and 42 hours of lab in the appropriate cells.
- Enter the name of the department that teaches the course.
- Credit hours: The number of credits earned by the student for the course.
- For each track **that leads to a certified degree**, indicate whether that course is required (R) or is one of several from which the student can choose (electives, E).

5.5 For each degree track that leads to a certified degree, enter all of the courses needed to meet the in-depth requirements. Students can use research to fulfill the in-depth course requirement, so it can be included in this table. The notes section allow you to explain the electives that are required. Feel free to merge cells as needed for clarification (see example below). If you need more space, use the “Additional Space” tab.

Degree Track (1-5)	Required courses (include course numbers & credits)	Req'd or Elective	Additional Notes		
Chemistry Track	CEM241 Organic Chem I (3)	R			
	CEM351 Physical Chem I (3)	R			
	CEM 421 Instrumental (3)	E	Students can take either 421 or 445 to get experience in analytical		
	CEM 445 Bioanalytical Chem (3)	E			
	CEM399 Independent Research (1-6)	E	Students must take at least 3 credits worth of coursework from this list.		
	CEM454 Biochemistry (4)	E			
	CEM337 Organic Synthesis (3)	E			

5.6 (Section 5.6 pp. 13-14) Enter the course number, title, area, total number of hours in lab/semester or quarter, and whether the course is required for the certified degree or an elective. The course should also appear in either Table 5.2 or 5.3. Use the “Additional Space” tab if you run out of space in this table.

Best practices for laboratory hours:

- Must total 400 hours or more (the table will automatically provide a total)
- Must cover 4/5 sub-disciplines (ABIOP)
- Do not include introductory chemistry lab courses.
- May be distributed between foundation and in-depth courses.
- Virtual laboratories cannot be used to fulfill this requirement.
- Up to 180 hours of undergraduate research can be included (please provide 3 – 5 examples of student research reports if research is used to meet the lab hour requirement).

5.7 Macromolecular, Supramolecular, and Meso or Nanoscale Materials (MSN Requirement): (Section 5.1 p. 10)

5.7 a. Indicate whether the content is covered in a single course or distributed amongst multiple courses

5.7 b. i. If **biological macromolecules** coverage is used to meet up to half of the requirement, please list the courses in which the material is covered. Course materials (syllabi, exams, and experiment lists) are required for any course listed in this item.

5.7 b. ii. For other areas covered, complete the table as directed. Again, submit course materials for all classes listed in this table.

5.8 Include all software that students use for computational work as well as all computing facilities used by chemistry majors.

5.9 Describe how students gain experience using instrumentation.

5.10 Please let us know if any certified courses are being taught wholly in an online classroom and whether these classes are meeting your departmental and professional standards for undergraduate education.

Section 6: Undergraduate Research

6.1 (Section 6 pp. 16-17) Use the drop down menus to indicate whether undergraduate research hours are used to meet the 400-lab hour requirement and, or, by students to meet their in-depth requirements for the certified degree. If you've answered "yes" to either question, use the drop down menu to indicate whether you require a comprehensive written research report and if that report has a standard assessment tool (e.g. rubric).

6.2 Submit comprehensive written research reports if you use research to meet either the lab hour requirement or if your students use research hours to meet the in-depth course requirement.

6.3 Number of students and faculty members that are regularly involved in undergraduate research. Please do not provide percentages.

6.4 If students do research outside of the department, do they submit a report and do department faculty members review those reports? Use the drop down menus.

6.5 Describe the safety instruction that undergraduate research students receive as part of their training.

Section 7: Student Skills

(Section 7 pp. 17-19)

For each of the skills listed in the table, identify the course or courses where the skill is initially introduced, any other courses where the skill is developed further, and provide up to 3 examples of course assignments and assessments of that skill.

Section 8: Program Self Evaluation

Use the "Additional Space" tab as needed for clarity.