

# Doctor of Philosophy - Chemistry

## 2 Graduate Program Change 2020-21

### I. General Information

The faculty member originating this proposal is to complete sections I and II.

TURN ON help text before starting this proposal by clicking  in the top right corner of the heading. You will need to turn on help text again after any actions that refresh the page including after saving proposals, importing information, or running impact reports.

IMPORT curriculum data from the Catalog by clicking  in the top left corner.

**Do not make any changes to any information until the proposal has been launched in Step 4.**

Department\*

Chemistry and Biochemistry

Degree/  
Certificate Name\* Doctor of Philosophy - Chemistry

Plan Code\* CHEPHD

Degree Type\*

Doctor of Philosophy

Program Type\*

Doctoral

### II. Program Changes

FILL IN ONLY fields required marked with an \* after importing data. You will not be able to launch the proposal without completing required fields. Do not make proposed changes to the information that was imported until after the proposal has been launched in Step 4. Changes will only be tracked after the proposal is launched

Are you changing admission requirements?\*

Yes

No

Are you changing course requirements?  Yes  No

Are you changing degree completion requirements?  Yes  No

Are you changing the primary instructional mode?  Yes  No

Are you changing program learning objectives?  Yes  No

If yes, describe changes to learning objectives:

**Provide a Brief Summary of Proposed Changes** Change Graduate Seminar Course requirements to add CHEM 791 as a second option so students can take both CHEM 691 or CHEM 791 Graduate Seminar.

**Provide a rationale for each proposed change** Department is transitioning to only offer CHEM 791 seminars. By allowing both CHEM 691 and CHEM 791 seminars to satisfy Graduate Seminar requirements, this allows more flexibility to complete seminar degree requirements for all doctoral students.

### **Do not make any changes to any information until the proposal has been launched in Step 4.**

Follow these steps to change the program curriculum:

1. Click on  "View Curriculum Schema." Edit existing cores or click 'Add Core' and name your core (please use a comparable degree program in the current graduate catalog as a template). Edit or add any descriptive text (do not add courses until Step 2). Descriptive text is generally used in the following cores: Plan Description, Plan Admission Requirements, Plan Requirements, Plan Graduation Requirements.
2. There are two options for adding courses (see Step 3 to remove courses): "Add Course" and "Import Course." For courses already in the catalog, click on "Import Course" and find the courses needed. For new classes going through a Curriculog Approval Process click on "Add Course"-- a box will open asking you for the Prefix, Course Number and Course Title.
3. Click on  "View Curriculum Schema." Click on the area/header of the program where you would like to add courses. When you click on "Add Courses" it will bring up the list of courses available from Step 2. Select the courses you wish to add. For removing courses click on the  and proceed.

After you have launched proposal, update prospective curriculum here\*

### **Plan Description**

The Ph.D. degree in chemistry is primarily a research-based program that includes sufficient advanced course work to provide a strong background from which students may pursue forefront research, under the direct guidance of a faculty member, in their chosen areas of interest. The program is designed to develop the professional skills required to function as an independent researcher in chemistry. For more information about your program, including your graduate program handbook and learning outcomes please visit the Degree Directory.

## Plan Admission Requirements

**Application deadlines** Applications available on the UNLV Graduate College website. For preferential consideration, please submit materials for Fall semester admission by February 1, and for Spring semester, by October 1. The applicant is required to submit a completed Graduate College application, application fee and official transcripts to the Graduate College with copies submitted to the department. Admission to the Ph.D. degree program in Chemistry requires a B.S. degree or a M.S. degree in Biochemistry, Chemistry, Biology, or a related discipline. A minimum grade point average (GPA) of 3.00, on a 4.0 scale, for all undergraduate or graduate work is required for admission to the program. In addition, the Graduate College application and official transcripts, the Department of Chemistry requires a statement of interest from the applicant. A letter of application should state interests and goals for graduate study. This is a 1-2 page essay describing the applicant's reasons for considering graduate study, goals after completion of the graduate degree, and the applicant's specific areas of interest. The Department of Chemistry requires three letters of recommendation from persons familiar with the academic record of the applicant. Each letter should detail the potential of the applicant for advanced graduate work in Chemistry or Biochemistry. The Department of Chemistry requires scores for GRE, General Record Exam, for admission. All domestic and international applicants must review and follow the Graduate College Admission and Registration Requirements. Students are accepted into a degree program as described in the Graduate Catalog. The faculty and corresponding sub-disciplines and sub-plans within the described programs are subject to change at any time.

## Plan Requirements

See Subplan Requirements below. Subplan 1: Post-Bachelor's Track  
Subplan 2: Post-Master's Track

## Subplan 1 Requirements: Post-Bachelor's Track

Total Credits Required: 60

### Course Requirements

#### Graduate Seminar Course – Credits: 5

Complete 5 credits of graduate seminar courses in CHEM 691 or CHEM 791 or combination of both. A minimum of 3 presentations are required in graduate seminar in CHEM 691 or CHEM 791 or combination of both.

|   |          |
|---|----------|
| <b>CHEM 691 Graduate Seminar in Chemistry</b> | <b>1</b> |
| <b>CHEM 791 Graduate Seminar</b>              | <b>1</b> |

#### Coursework Elective Courses – Credits: Minimum of 12

A minimum of 12 credits of advisor-approved coursework electives. These courses may include but are not limited to:

|  |          |
|--|----------|
| <b>CHEM 710 Environmental Aquatic Chemistry</b>        | <b>3</b> |
| <b>CHEM 715 Environmental Organic Chemistry</b>        | <b>3</b> |
| <b>CHEM 725 Advanced Organic Chemistry</b>             | <b>3</b> |
| <b>CHEM 726 Organic Synthesis</b>                      | <b>3</b> |
| <b>CHEM 735 Advanced Physical Chemistry</b>            | <b>3</b> |
| <b>CHEM 745 Instrumental Analysis-Inorganic</b>        | <b>3</b> |
| <b>CHEM 749 Polymer Chemistry</b>                      | <b>3</b> |
| <b>CHEM 750 Quality Assurance and Statistics</b>       | <b>3</b> |
| <b>CHEM 770 Protein Chemistry</b>                      | <b>3</b> |
| <b>CHEM 771 Metabolism and Energetics</b>              | <b>3</b> |
| <b>CHEM 772 Nucleic Acid Chemistry</b>                 | <b>3</b> |
| <b>CHEM 773 Physical Biochemistry</b>                  | <b>3</b> |
| <b>CHEM 775 Bioanalytical Environmental Toxicology</b> | <b>3</b> |
| <b>CHEM 783 Spectral Interpretation</b>                | <b>3</b> |
| <b>CHEM 793 Special Topics</b>                         | <b>3</b> |

## Research Elective Courses – Credits: 31

Complete 31 credits of advisor-approved research electives. These courses may include but are not limited to:

|   |              |
|---|--------------|
| <b>CHEM 792 Research Seminar</b>        | <b>3</b>     |
| <b>CHEM 795 Independent Study</b>       | <b>1 – 3</b> |
| <b>CHEM 796 Dissertation Prospectus</b> | <b>1</b>     |
| <b>CHEM 797 Directed Research</b>       | <b>1 – 6</b> |

## Dissertation – Credits: 12

|                              |              |
|------------------------------|--------------|
| <b>CHEM 799 Dissertation</b> | <b>3 – 6</b> |
|------------------------------|--------------|

## Degree Requirements

Doctoral students in Chemistry are required to complete a minimum of 60 credit hours beyond the baccalaureate. All students are required to maintain a minimum a 3.00 grade point average in all graduate-level courses. Two grades of B- are permitted in the degree program as long as the GPA remains at or above 3.00. One grade of C+ or lower will result in academic probation even if the overall GPA is above 3.0. Two grades of C+ or lower will result in automatic suspension or separation from the program. All students must meet with their advisory committee on a yearly basis, and all students must complete an annual evaluation form. A dissertation advisor must be chosen by the end of the first semester, and the Doctoral Advisory Committee must be appointed prior to the end of the second semester. An approved graduate degree program must be filed prior to the beginning of the third semester of enrollment. All students must meet these deadlines; failure to do so will result in academic probation. Failure of a student on academic probation to meet these requirements within the next semester could result in separation from the program. The Doctoral Advisory Committee must consist of the faculty advisor (chair), chemistry graduate faculty in the discipline of study, one additional chemistry graduate faculty member, and one graduate-college representative from outside the department. Failure to identify an advisor and form this committee will result in the student being placed on academic probation. The use of committee members external to UNLV is allowed with approval from the examination committee. External members without graduate faculty status at UNLV will be non-voting members of the Ph.D. examination committee. All students are required to schedule an interview with the advisor either before or during the first semester of study. If the student does not select an advisor, the Graduate Coordinator will assign a temporary advisor. The purpose of the initial interview is to develop a plan of course work for the first year. All students are required to

plan of course work for the first year. All students are required to schedule a diagnostic interview with the Doctoral Advisory Committee before the end of the 2nd semester. The purpose of the interview is to develop a list of recommended courses and design the student's degree program, which must be submitted prior to completing 16 credits of course work toward the degree. All students must prepare a dissertation proposal for a Proposal Defense Examination. The student should register for the Dissertation Prospectus course. This examination must be completed prior to the end of the fourth semester. To remain in good standing students are required to develop and defend a dissertation prospectus no later than the fourth semester of enrollment. If a student does not defend a dissertation prospectus they will be placed on academic probation. The Proposal Defense Examination focuses on the dissertation proposal and the student's ability to perform the research. It includes a formal oral presentation of the student's dissertation proposal, research to date, and questions by the dissertation advisory committee on the dissertation topic. The Proposal Defense Examination is to be taken prior to the Comprehensive Examination. Advancement to Candidacy. Students will advance to candidacy if the Comprehensive Examination is passed and the enrolled coursework is successfully completed based on the evaluation of the student's Doctoral Advisory Committee. The comprehensive exam will consist of written and oral components as defined by the Ph.D. Examination Committee. Satisfactory performance on the Comprehensive Examination requires that Ph.D. students have a basic knowledge of the discipline of study. It also requires the student to follow the guidelines established for each discipline (i.e., Biochemistry, Physical Chemistry, Analytical Chemistry, Inorganic Chemistry and Organic Chemistry). The student's Doctoral Advisory Committee or the faculty from the discipline of study will determine the format and content of both the written and oral exams. The Ph.D. Examination Committee will determine if the student passes the Comprehensive Examination. If a student fails any part of the Comprehensive Examination, the Ph.D Examination Committee will determine if the student is allowed to retake the portion of the comprehensive exam that is not passed. Students who fail to pass any part of the Comprehensive Examination or Proposal Defense on the first attempt must successfully complete a second attempt (as specified by the Ph.D. Examination Committee) within the next six months to remain in the program. Failure to advance to candidacy by the end of the sixth semester of enrollment will result in the student being placed on academic probation. Failure to advance to candidacy by the end of the seventh semester will result in the student being separated from the program. Students who enter the program with a baccalaureate degree and who fail the second examination may be allowed to continue as a Master of Science student with the consent of the Doctoral Advisory Committee. A student who has successfully passed both the Proposal Defense and Comprehensive Examinations will advance to candidacy for the Ph.D. degree. After advancement, subsequent years of study will be required for the graduate student to complete their degree. The duration of this period will depend on the success of the research project as defined by the Doctoral Advisory Committee. Completed coursework will only be counted towards the graduation requirements

of this program for eight years if the student completed a baccalaureate degree. It is recommended that students publish at least one research-based manuscript in a peer-reviewed journal prior to graduation. Satisfactory performance on the final examination will consist of the presentation and defense of the dissertation research. The defense will consist of an oral presentation open to the public, a short period of questions from the public, a closed session of questions from the Doctoral Advisory Committee, and a closed deliberation and vote by just the Doctoral Advisory Committee members. Any graduate faculty member may attend the closed session of questions of the defense. It is expected that each student be a teaching assistant for a minimum of two courses prior to graduation. It is also expected that each student publish research-based manuscripts in peer-reviewed journals.

## Graduation Requirements

See Plan Graduation Requirements below.

## Subplan 2 Requirements: Post-Master's Track

Total Credits Required: 30

## Course Requirements

### Graduate Seminar Course – Credits: 5

Complete 5 credits of graduate seminar courses in CHEM 691 or CHEM 791 or combination of both. A minimum of 3 presentations are required in graduate seminar in CHEM 691 or CHEM 791 or combination of both.

|   |          |
|---|----------|
| <b>CHEM 691 Graduate Seminar in Chemistry</b> | <b>1</b> |
| <b>CHEM 791 Graduate Seminar</b>              | <b>1</b> |

### Elective Courses – Credits: 13

Complete 13 credits of advisor-approved electives. These courses may include but are not limited to:

|  |          |
|--|----------|
| <b>CHEM 710 Environmental Aquatic Chemistry</b>        | <b>3</b> |
| <b>CHEM 715 Environmental Organic Chemistry</b>        | <b>3</b> |
| <b>CHEM 725 Advanced Organic Chemistry</b>             | <b>3</b> |
| <b>CHEM 726 Organic Synthesis</b>                      | <b>3</b> |
| <b>CHEM 735 Advanced Physical Chemistry</b>            | <b>3</b> |
| <b>CHEM 745 Instrumental Analysis-Inorganic</b>        | <b>3</b> |
| <b>CHEM 749 Polymer Chemistry</b>                      | <b>3</b> |
| <b>CHEM 750 Quality Assurance and Statistics</b>       | <b>3</b> |
| <b>CHEM 770 Protein Chemistry</b>                      | <b>3</b> |
| <b>CHEM 771 Metabolism and Energetics</b>              | <b>3</b> |
| <b>CHEM 772 Nucleic Acid Chemistry</b>                 | <b>3</b> |
| <b>CHEM 773 Physical Biochemistry</b>                  | <b>3</b> |
| <b>CHEM 775 Bioanalytical Environmental Toxicology</b> | <b>3</b> |
| <b>CHEM 783 Spectral Interpretation</b>                | <b>3</b> |
| <b>CHEM 793 Special Topics</b>                         | <b>3</b> |

### **Dissertation – Credits: 12**

|                              |              |
|------------------------------|--------------|
| <b>CHEM 799 Dissertation</b> | <b>3 – 6</b> |
|------------------------------|--------------|

### **Degree Requirements**

Doctoral students entering the Ph.D. program with an approved M.S. degree in Chemistry or a closely related discipline, are required to complete a minimum of 30 credit hours in the Ph.D. program at UNLV. All students are required to maintain a minimum a 3.00 grade point average in all graduate-level courses. Two grades of B- are permitted in the degree program as long as the GPA remains at or above 3.00. One grade of C+ or lower will result in academic probation even if the overall GPA is above 3.0. Two grades of C+ or lower will result in automatic suspension or separation from the program. All students must meet with their advisory committee on a yearly basis, and all students must complete an annual evaluation form. A dissertation advisor must be chosen by the end of the first semester, and the Doctoral Advisory Committee must be appointed prior to the end of the second semester. An approved graduate degree program must be filed prior to the beginning of the third semester of enrollment. All students must meet these deadlines; failure to do so will result in academic probation. Failure of a student on academic probation to meet these requirements within the next semester could result in separation from the program.

The Doctoral Advisory Committee must consist of the faculty advisor (chair), chemistry graduate faculty in the discipline of study, one

additional chemistry graduate faculty member, and one graduate-college representative from outside the department. Failure to identify an advisor and form this committee will result in the student being placed on academic probation. The use of committee members external to UNLV is allowed with approval from the examination committee.

External members without graduate faculty status at UNLV will be non-voting members of the Ph.D. examination committee. All students are required to schedule an interview with the advisor either before or during the first semester of study. If the student does not select an advisor, the Graduate Coordinator will assign a temporary advisor. The purpose of the initial interview is to develop a plan of course work for the first year. All students are required to schedule a diagnostic interview with the Doctoral Advisory Committee before the end of the 2nd semester. The purpose of the interview is to develop a list of recommended courses and design the student's degree program, which must be submitted prior to completing 16 credits of course work toward the degree. All students must prepare a dissertation proposal for a Proposal Defense Examination. The student should register for the Dissertation Prospectus course. This examination must be completed prior to the end of the fourth semester. To remain in good standing students are required to develop and defend a dissertation prospectus no later than the fourth semester of enrollment. If a student does not defend a dissertation prospectus they will be placed on academic probation. The Proposal Defense Examination focuses on the dissertation proposal and the student's ability to perform the research. It includes a formal oral presentation of the student's dissertation proposal, research to date, and questions by the dissertation advisory committee on the dissertation topic. The Proposal Defense Examination is to be taken prior to the Comprehensive Examination. Advancement to Candidacy. Students will advance to candidacy if the Comprehensive Examination is passed and the enrolled coursework is successfully completed based on the evaluation of the students Doctoral Advisory Committee. The comprehensive exam will consist of written and oral components as defined by the Ph.D. Examination Committee.

Satisfactory performance on the Comprehensive Examination requires that Ph.D. students have a basic knowledge of the discipline of study. It also requires the student to follow the guidelines established for each discipline (i.e., Biochemistry, Physical Chemistry, Analytical Chemistry, Inorganic Chemistry and Organic Chemistry). The student's Doctoral Advisory Committee or the faculty from the discipline of study will determine the format and content of both the written and oral exams. The Ph.D. Examination Committee will determine if the student passes the Comprehensive Examination. If a student fails any part of the Comprehensive Examination, the Ph.D Examination Committee will determine if the student is allowed to retake the portion of the comprehensive exam that is not passed. Students who fail to pass any part of the Comprehensive Examination or Proposal Defense on the first attempt must successfully complete a second attempt (as specified by the Ph.D. Examination Committee) within the next six months to remain

in the program. Failure to advance to candidacy by the end of the sixth semester of enrollment will result in the student being placed on

academic probation. Failure to advance to candidacy by the end of the seventh semester will result in the student being separated from the program. Students who entered the program with a master's degree who fail the examination a second time will be separated from the program. A student who has successfully passed both the Proposal Defense and Comprehensive Examinations will advance to candidacy for the Ph.D. degree. After advancement, subsequent years of study will be required for the graduate student to complete their degree. The duration of this period will depend on the success of the research project as defined by the Doctoral Advisory Committee. Completed coursework will only be counted towards the graduation requirements of this program for six years. It is recommended that students publish at least one research-based manuscript in a peer-reviewed journal prior to graduation. Satisfactory performance on the final examination will consist of the presentation and defense of the dissertation research. The defense will consist of an oral presentation open to the public, a short period of questions from the public, a closed session of questions from the Doctoral Advisory Committee, and a closed deliberation and vote by just the Doctoral Advisory Committee members. Any graduate faculty member may attend the closed session of questions of the defense. It is expected that each student be a teaching assistant for a minimum of two courses prior to graduation. It is also expected that each student publish research-based manuscripts in peer-reviewed journals.

## **Graduation Requirements**

See Plan Graduation Requirements below.

## **Plan Graduation Requirements**

The student must submit all required forms to the Graduate College and then apply for graduation up to two semesters prior to completing his/her degree requirements. The student must submit and successfully defend his/her dissertation by the posted deadline. The defense must be advertised and is open to the public. After the dissertation defense, the student must electronically submit a properly formatted pdf copy of their dissertation to the Graduate College for format check. Once the dissertation format has been approved by the Graduate College, the student will submit the approved electronic version to ProQuest. Deadlines for dissertation defenses, format check submissions, and the final ProQuest submission can be found here.

The [Degrees Directory](#) provides current and consistent degree information. Submission of this form indicates acknowledgment and understanding that every department is responsible creating and maintaining accurate and updated program information on the UNLV Degrees Directory.

If the changes included on this form impact the program handbook attach the updated handbook before submitting this form. If you need a Word version of the most recent handbook please email [GradCurriculum@unlv.edu](mailto:GradCurriculum@unlv.edu).

|  |
|--|
| <b>Degrees Directory Program Entry*</b> <input checked="" type="checkbox"/> Check this box to acknowledge the above statement.   |
| <b>Changes will be applicable to*</b> <input type="radio"/> Current Students<br><input type="radio"/> New Students<br><input checked="" type="radio"/> Both Current and New Students |
| <b>If applicable to current students, changes are</b> <input checked="" type="radio"/> Mandatory <input type="radio"/> Optional  |
| <b>Effective Date*</b> <input type="text" value="Fall 2020"/>  |

4. LAUNCH proposal by clicking  in the top left corner.

5. After launching the proposal, make all changes and fill in all additional fields.

6. Finish the launch of your proposal by clicking the icon  located in the Proposal Toolbox on left side at top. Make your decision, comment is optional, and click on "Make decision".

You can check the status of the proposal by clicking  in Proposal Toolbox to verify that the proposal has gone to the next step.

### III. Department Vote Information

**Note:** This section is to be filled out by the Department Chair on behalf of the committee.

(The role has been assigned to the corresponding person on this step. If incorrect, please notify [GradCurriculum@unlv.edu](mailto:GradCurriculum@unlv.edu))

1. Review the proposal. Discuss and make appropriate revisions.

2. Fill in vote information.

3. Then go to the proposal toolbox at the top right side. Click on  and select the corresponding decision for the committee. This will enable the proposal to go to the next person on the workflow.

You can check the status of the proposal by clicking  in Proposal Toolbox to verify that the proposal has gone to the next step.

**Date faculty voted  
on proposal** 11/1/19

**Result of vote** 19/0/0

**Manner of vote** Hands vote - unanimous

#### IV. Unit Vote Information

**Note:** This section is to be filled out by the College Committee Chair on behalf of the committee.

(The role has been assigned to the corresponding person on this step. If incorrect, please notify GradCurriculum@unlv.edu)

1. Review the proposal. Discuss and make appropriate revisions.
2. Fill in vote information.
3. Then go to the proposal toolbox at the top right side. Click on  and select the corresponding decision for the committee. This will enable the proposal to go to the next person on the workflow.

You can check the status of the proposal by clicking  in Proposal Toolbox to verify that the proposal has gone to the next step.

**Date faculty voted  
on proposal** 11/20/19

**Result of vote** 5-0-0

**Manner of vote** person

#### V. Processing Notes (Graduate College/Registrar Use Only)

**Program Alerts**  
(E.g. This program  
is no longer  
accepting  
applications)

**PS Processing  
Notes**

**PS Processing  
Date**

**Initials**

**Acalog Processing  
Notes**

**Acalog Processing  
Date**

**Initials**