

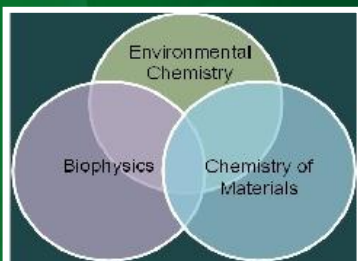
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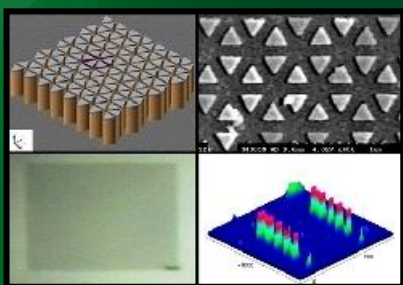
Department
of Chemistry



UNIVERSITY OF PUERTO RICO
Mayagüez Campus

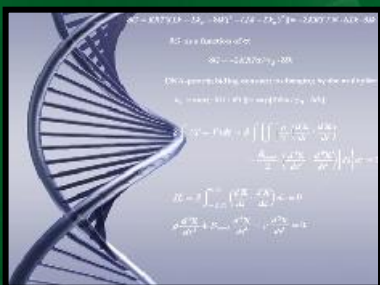


Graduate Student Guide to the Graduate Program in Applied Chemistry



Requirements and procedures:

This document describes the current Graduate Program in Applied Chemistry's requirements and procedures as revised and approved by the Graduate Committee of the Chemistry Department.



REVISED BY: GRADUATE COMMITTEE OF
THE CHEMISTRY DEPARTMENT

V. 4.1



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Graduate Student Guide to the Ph.D. Program in Applied Chemistry

Department of Chemistry

University of Puerto Rico – Mayagüez Campus

March 2012

Introduction

The Graduate program in Applied Chemistry at the University of Puerto Rico – Mayagüez Campus started in January 2004. The program was approved by the Puerto Rico Council on Higher Education on December 18, 2003 through Certification #2003-191. The doctoral program currently has three areas of research: Biophysical Chemistry, Chemistry of Materials and Environmental Chemistry. Likewise the master degree program offers the traditional areas of chemical research: Analytical, Inorganic, Biochemistry, Organic and Physical Chemistry, as well as applied research on the three abovementioned interdisciplinary areas.

This document describes the current Applied Chemistry's requirements and procedures as revised and approved by the Graduate Committee of the Chemistry Department. This document is subject to change as deemed appropriate by the departmental graduate committee, whenever the program's procedures or requirements change, or to include additional information.

This document is a complement to the *Certification 09-09*, which establishes the Norms and Regulations of the Graduate Studies at the Mayagüez Campus of the UPR. *Certification 09-09* includes those requirements that are common to all graduate programs within our Campus. This student guide includes those norms, regulations and requirements that are specific to our program. A current version of *Certification 09-09* is available online at <http://grad.uprm.edu>. This guide applies to graduate students pursuing studies as part of the program in Applied Chemistry at the University of Puerto Rico – Mayagüez Campus. Students accepted onto the graduate program will be considered active students as long they make satisfactory progress towards the completion of the program's requirements.

Student's Graduate Committee

Certification 09-09 requires that students must select their advisor and the members of the student's graduate committee during their first semester in the program. It also states that the director of the chemistry department or the graduate program coordinator will designate the members of the committee, by agreement with the advisor and the student. The committee should be constituted by professors related to the student's research project. It will also consist of 4 to 6 members for the doctoral program and a minimum of three members for the master's degree program. At least half of its members must belong to the Chemistry Department. Professors from other institutions and government, or industrial scientists may also belong to the committee, but they must receive an *ad honorem* appointment as established in *Certification 02-46*. The documents required by this certification must be submitted to the Department of Chemistry- Personnel Committee for its revision and its subsequent endorsement (or refusal).

Students must choose faculty members with a Ph.D. degree, from the Department of Chemistry or from a list of Adjunct Professor to serve as research advisor (President) of the student's graduate committee. If deemed appropriate the students's graduate committee may also include a Co-Chair (co-President), when there is strong research collaboration among the professors (see *Certification 09-09* for details). Each student must file the forms for the selection of a research advisor and committee, copy of which is included in the appendix section of this guide.

According to *Certification 09-09*, the students' graduate committee should meet every semester to evaluate his academic and research progress, and to provide advice.

Plan of Study

The students' graduate committee will prepare a plan of study in consultation with the student. The plan of study should be submitted to the **Chemistry Department Graduate Program Office** for revision and approval. The Plan of Study lists the courses that students will take, and it is an excellent planning tool for the student and the research advisor. It also helps the Department Director in determining the courses to offer in the future.

The Plan of Study contains a record of graduate level courses previously approved for transfer by the Departmental Graduate Committee. Advanced B.S. level or M.S. courses with a 5000 level or higher will not be accredited until the Plan of Study is submitted and approved by the Department Director. The student should complete his plan of studies within two weeks of the selection of his committee and no later than 3 days prior the established graduate school deadline of their second semester within the program. Copy of the document will be sent to the Office of Graduate Studies. This is a highly important document since the Registrar's Office will evaluate any requests for graduation by checking whether the student has completed the courses listed in their Plan of Study.

Research Proposal

M.S. Program:

The student shall present a written research proposal which defines his/her future research. The proposal must be submitted before the end of the first semester in which the student is registered in research (QUIM-6988). This proposal does not require an oral defense.

Ph.D. Program:

The student shall present a written research proposal that defines his doctoral dissertation project, and will defend it before his graduate committee. The research proposal requirement involves two very important activities: the first is the preparation of the proposal, and the second is the formal defense of the proposal before his/her graduate committee. The proposal preparation is a requirement of the Applied Chemistry Program, as well as the Graduate Studies Office (*Certification 09-09 of the UPRM Academic Senate*). The oral proposal defense is not required by *Certification 09-09*, **but it is a requirement of the Ph.D. in Applied Chemistry Program**. The oral presentation and defense will be carried out following the *Norms for the Administration of Oral Exams to Graduate Students*; however it does not require the participation of a representative of the Director of the Office of Graduate studies during the defense. **A copy of the defended and approved**

proposal must be presented to the Graduate Studies Office before the student is enrolled in graduate research for the fourth time. Students must use the form available in the appendix of this guide as the formal cover page of the proposal.

Students must start to prepare the research proposal as soon as they register for research, QUIM 8997 (Ph.D.) or QUIM 6998 (M.S.). Although *Certification 09-09* requires completion of the research proposal before the fourth time that a student registers for research, **it is strongly recommended that students complete their research proposals during their second enrollment in either QUIM 8997 or QUIM 6998. Students are also encouraged to schedule the defense of their proposal within 2-3 weeks after the student's advisor has approved the proposal for release to the other committee members.** This will allow students to avoid the following consequences of missing the research proposal deadline: 1). The Registrar will issue an administrative withdrawal (W) from QUIM 8997 to those students that do not turn in their proposal on time. 2). If the student is taking courses other than QUIM-8997 or QUIM-6998, he may continue taking those courses as a part-time student, ineligible to receive assistantships. 3). If the student is not registered in courses other than QUIM 8997 or QUIM 6998, then he is no longer an active student and therefore ineligible for assistantships. 4). International students who are not in compliance with this regulation may be at risk of losing their student status and therefore their visa privileges.

The research advisor and the student graduate committee will provide counseling in the preparation of the research proposal. Additional guidance can be obtained from the *Guide for the preparation of Proposals, Thesis, Disertations and Project Reports at the UPRM Campus.* (<http://grad.uprm.edu/normastesis.htm>). **It is a requirement of the Chemistry Department that proposals follow the structure and quidelines of a funding agency such as NIH, NSF, EPA or USDA. Students should consult their research advisors and committee members on the content and format of their proposals.** Students are encouraged to include preliminary results as part of the proposal, even though it is not a specific requirement.

In the case of doctoral students, committee members must agree on a date on wich the proposal defense will be held. Students must then notify (at least one week in advance), the date, time, and location of their defense to the Graduate Coordinator, who will notify the department at large. The appropriate form, available in the appendix, should be completed by the student's committee after he passes the oral exam. This form must be turned in to the Chemistry Department Graduate Program Office.

Upon completion of all the research proposal requirements, the research advisor will provide the student with a letter acknowledging the completion of the proposal requirement and summarizing the recommendations of the student's graduate committee. This letter is delivered to the student within one week after completing the oral defense and sets the time frame for the committee to meet with the student and assess his progress. The typical time frame for the abovementioned meeting is within 8–12 months after the initial defense. Copy of this letter must be sent to the Chemistry Department Graduate Program Office.

Financial Aid

Assistantships (see Certification 05-62 for details).

Graduate students may receive teaching or research assistantships. **Assistantships are not regarded as a job or any other form of employment. Assistantships are stipends offered for a number of academic activities intending to train a student towards a career in teaching and/or research.** Graduate students must maintain an overall grade point average of 3.00 to be eligible for assistantships. Assistantships may be renewed if funds are available and if students' performance is satisfactory. Students must file a request for assistantship one semester prior the corresponding period using the latest version of the request form available either at the Graduate Program web site or in the Appendix section of this guide.

Graduate students with total or conditional admission may apply for assistantships. Students who fall under any of the following categories are not eligible for assistantships:

1. Suspended
2. On Probation
3. Holding a job
4. Visiting Student
5. Enrolled in continuous education courses

Some agencies provide scholarships for students, but request that they do not accept other forms of aid or assistantships. Students holding these scholarships are responsible for following the guidelines established by the funding agencies.

Students who receive assistantships must be registered in one of the following:

- a. No less than 9 credit hours in 5000 or higher level graduate courses.
- b. QUIM 8997 or QUIM 6998(0-6 credit hours)

The maximum number of credit hours that a student may have in a semester is 18 credit hours (registered credits + assistantship credits). A typical teaching assistantship at the chemistry department will total 7 credit hours.

NOTE: The maximum number of credit hours that a student may have in a semester is 18 credit hours (registered credits + assistantship credits). Due to federal regulations, international students are eligible to a maximum compensation equivalent to seven (7) credit hours per semester. US citizens are eligible to a maximum of nine (9) credit hours of compensation per semester.

The period covered by the teaching assistantships depends upon the student highest academic degree upon admission and the enrolled program. For instance **students holding a B.S. degree when admitted to the Ph.D. program will be eligible for up to 5 years of assistantships (see the table below for details). The 5 year term applies regardless of whether the funds are institutional or external.** If justified, assistantships may be extended for up to 2 years, after a

formal request by the student advisor, endorsement from the Department Director (or Graduate Coordinator), and approval from Graduate Studies Director who will evaluate the merits of the request. Nonetheless, **only 1 of the 2 years can be sponsored with institutional funds**. Under exceptional circumstances, a one year extension can be granted upon request by the student advisor to the Graduate School Director and endorsement of the Departmental Graduate Committee.

Ph. D. Support (Students that hold a B.S. degree)

Support Source	Years	Special Requirements
Institutional	5	None
External or Institutional	1	Letter of approval signed by Director or Grad. Program Coordinator
External	1	Letter of approval signed by Director or Grad. Program Coordinator
External authorized by Graduate Council	1	Letter of request to Grad. School Director (signed by mentor) and
		Letter of endorsement by the Department graduate committee and approved by the Director

Students holding a M.S. degree when admitted to the Ph.D. program will be eligible for up to 3 years of assistantships (see the table below for details). **The 3 year term applies regardless of whether the funding comes from institutional or external funds**. If justified the assistantship may be extended for up to 2 years, after a formal request by the student advisor, endorsement from the Department Director (or Graduate Coordinator), and approval from Graduate Studies Director who will evaluate the merits of the request. Nonetheless, only 1 of the 2 years can be sponsored with institutional funds. Under exceptional circumstances and institutional interest, a one year extension can be granted upon request by the student advisor to the Graduate School Director and endorsement of the Departmental Graduate Committee.

Ph. D. Support (Holding an M.S. degree)

Support Source	Years	Special Requirements
Institutional	3	None
External or Institutional	1	Letter of approval signed by Director or Grad. Program Coordinator
External	1	Letter of approval signed by Director or Grad. Program Coordinator
External authorized by Graduate Council	1	Letter of request to Grad. School Director (signed by mentor) and
		Letter of endorsement by the Department graduate committee and approved by the Director

Teaching Assistants (TA) are selected by the Department Associate Director and the Course Coordinator. All TA candidates must be enrolled as full time students to qualify as a teaching assistant (TA). Students are selected according to availability of funds, academic performance, and service record and evaluations from previous TA experiences. TA's are assigned to the equivalent of 20-hours of work equivalent to 7 credit hours.

Graduate students do not have to register to receive assistantships during the summer. For students with conditional admission, the 9 credit hours may include undergraduate level courses specified as deficiencies in their program admission letter.

Students enrolled in the MS program are eligible for up to 2 years of support. **The 2 year period applies regardless of whether the funding comes from institutional or external funds.** If justified, the assistantship may be extended for up to 2 years, after a formal request by the student advisor and the endorsement from the Department Director (or Graduate Coordinator) and approval from the Graduate Studies Director, who will evaluate the merits of the request. **Only 1 of the 2 extension years can be sponsored with institutional funds.** Under exceptional circumstances, a one year extension can be granted upon request by the student advisor to the Graduate School Director and endorsement of the Departmental Graduate Committee.

M. S. Support

Support Source	Years	Special Requirements
Institutional	2	None
External or Institutional	1	Letter of approval signed by Director or Grad. Program Coordinator
External	1	Letter of approval signed by Director or Grad. Program Coordinator
External authorized by Graduate Council	1	Letter of request to Grad. School Director (signed by mentor) and
		Letter of endorsement by the Department graduate committee and approved by the Director

Master of Science Program Requirements

Courses:

The M.S. program in applied Chemistry consists of a minimum of 30 credits, of which 9 will be on departmental core courses, 2 on seminars, 13 credits on electives, and up to 6 may be in thesis research. In addition:

- Minimum grade point average of 3.00 will be required.
- Requests for credits transfer to the doctoral program either from a Master's program or other sources will be evaluated on an individual basis by the the Departmental Graduate Committee.

Due to the interdisciplinary nature of the program the student may take one or more courses in other Science or Engineering Department of the system. The Graduate Program Office at the Chemistry Department has a list of additional courses which the student could take.

Course Distribution

Course Category	Total Credit Hours	Plan of Graduate Studies Code
Department Elective Core Courses (Advanced: Analytical, Biochemistry, Inorganic, Organic, Physical Chemistry)	9	Elective (3)
Electives or courses by Areas of Applied Chemistry	13	Elective (3)
Two seminar courses are required (1 credit hour each):		Core (1)
QUIM 6005 – Graduate Seminar I – the seminar is given on papers chosen from the scientific literature. Students usually take this course in the third or fourth semester.	1	
QUIM 6006 – Graduate Seminar II – The students research is described.	1	
QUIM 6998 – Master’s Research	6	Core (1)
Total	30	

Research

The student should perform independent research that represents a significant contribution to furthering knowledge in their specialty area every semester. The student must also meet with his graduate committee to assess his academic and research progress and to receive advice regarding the progress of his/her research. Each student should file the latest version of the term-semester progress report form available at the graduate program website or in the appendix section.

Students are encouraged to submit at least one publication before defending their thesis.

The thesis defense will be scheduled at least 30 days after students turn in their dissertation to the Graduate Studies Office (deadlines apply).

Candidacy

The student will be considered a Master of Science candidate when he or she successfully completes all courses listed in the students Plan of Study, and successfully passes the thesis exam.

Transfer of Courses from M.S. Degree

The Graduate Committee will evaluate requests for equivalencies and/or transfer of courses from previous graduate work towards the M.S. in Applied Chemistry.

Transfer from the M.S. to the Ph.D. track

According to the rules of the Chemistry Department Graduate Committee on May 3, 2006, any student that has at least 18 credits approved within the M.S. track with a GPA of at least 3.40 can request an internal transfer from the M.S. to the Ph.D. track. For the request to be considered, the research advisor, members of the graduate committee, and the director of the chemistry department, must recommend the re-classification of the student. The request will be evaluated by the Director of the Chemistry Department who will decide the appropriate course of action.

Roadmap toward the completion of a M.S. degree.

Year in program	Orientation Week	First Semester	Second Semester	Summer Term
1	Orientation	Elective Dept-Core Elective Dept. Core Elective Graduate Seminar	Elective Dept-Core Elective Research 1 Graduate Seminar	Proposal Write-Up
2		Elective Elective Present Seminar I Research 2	Elective Present Seminar II Research 3 Thesis Defense	

Ph.D. Program Requirements

Placement Tests

Placement tests will be offered one to two weeks before the start of doctoral studies (first semester of studies). Students will take **five placement tests** to evaluate their knowledge at the undergraduate level in: **analytical, biochemistry, inorganic, organic, and physical chemistry**. New graduate students will not be enrolled until complying with placement test requirement. According to the rules of the Chemistry Department Graduate Committee on May 3, 2006, any student with a GPA of ≥ 3.39 that approves 3 out of the five exams who have not requested the Ph.D. track can request a reclassification toward the Ph.D. program.

The main objective of the placement test is to assess knowledge of chemistry and to encourage students to review and prepare for graduate study before starting the Doctoral Program. The exams will assist the student advisor, the graduate program coordinator and program faculty to better ascertain the students strengths and weaknesses. According to the rules established by the Graduate Committee of the Chemistry Department on October 25, 2007, the student's advisor will recommend to the student one of the following strategies to address any deficiencies on his placement examination.

- Option 1: In no less than a year, the student can repeat the entire placement exam sequence, and approve the areas with deficiencies.
- Option 2: The student will enroll as part of his/her plan of studies courses in the area(s) with deficiencies according to the following criteria:

- ✓ If the student's score lays 15% below the A.C.S. national average, the student will schedule a graduate level course in the area of need.
- ✓ If the student's score lays 25% below the A.C.S. national average the student will schedule an undergraduate level course in the area of need.

Note: Students that choose the first option and fail to comply with the placement exam requirement within the allocated period can recur to Option 2 to comply with the placement requirement.

Doctoral Exam

The first two parts of the doctoral exam consist of written exams that **will require a maximum of 4 hours for completion. The first part** will be based on the *Department Elective Core Courses (analytical, biochemistry, inorganic, organic, and physical chemistry)*. All students will select two of these areas. The tests will be organized by the professors that taught these courses within the last 3 years. The course syllabi from these courses will serve as study guides for the exam.

The second part will be based on the *Courses by Areas of Applied Chemistry* of the program (*see course distribution list for details*), which are at this time: biophysical chemistry, environmental chemistry, and chemistry of materials. In this part, students will answer questions relative to two specialty courses. The tests will be organized by the professors that taught these courses over the past 3 years. The course syllabi from these courses will serve as study guides for the exam. **This second part will occur within 3 weeks of the first one and will also require a maximum of 4 hours for completion.**

The third part will consist of an original research proposal where students will propose a plan for their practicum and defend this proposal before our Department's Ph.D. faculty. This third part will be coordinated 3 – 6 weeks after the second part. Third part schedule will depend on the professor's time availability (typically on Tuesdays and Thursdays 10:30-12.00 pm, beginning on the third week after the completion of the second part of the exam). Students will propose the objectives of the Practicum, the advantages of the proposed research facilities and conduct a reasonable research background-check based on scientific literature. The proposal should follow formats established by the National Science Foundation (NSF), National Institute of Health (NIH), Environmental Protection Agency (EPA), or United States Department of Agriculture (USDA/NIFA). The proposal should include:

- Abstract
- Problem definition and its importance
- General and Specific Objectives
- Literature relevant to the research topic and the proposed internship
- Preliminary results for the research project and its relation to the internship proposal.
- Work plan and contribution to the student's research goals and alternative strategies.
- Timetable for the Practicum and the student's research project.

NOTE: The internship results must represent part of the final dissertation.

The student's performance in each part will be graded in terms of (+) for excellent, (0) for adequate, and (-) when the student does not demonstrate the knowledge required for the doctoral

exam. **Students will be required an overall score of (+) to successfully complete the doctoral exam, and must show adequate knowledge in all parts of the exam (students cannot pass the exam with a (–) in any of the parts.** If a student does not obtain an overall score of (+) , the exam may be repeated once. However, students will only be required to take those parts where a (-) was obtained. In cases where a student obtained a (+) or (0) these grades may be considered as completed. **In the event of a failure, the exam may be repeated once, as specified in Certification 09-09. Students who fail the exam a second time will be suspended as indicated in Certification 09-09.**

In the event, that a student considers that an exam was not evaluated correctly; the student will have two weeks after receiving the written exam to provide a written letter to the Chemistry Department Graduate Program Office with copies to the Chemistry Department Director, Arts and Sciences Dean, and Graduate Studies Director. The doctoral exam coordinator will then discuss the test results with the professors that served as correctors, and notify the student on the final decision. If the student does not receive a response, the student may write a letter to the Graduate Studies Office or to the Graduate Council.

Internship or Practicum

The objectives of the Practicum are to:

1. Increase the student's knowledge and skills in the chosen area of specialty.
2. Develop communication and work skills in students through exposure to multiple research groups.
3. Develop skills in solving challenging problems in both fundamental and applied research.
4. Develop new multidisciplinary collaborations for the PhD in Applied Chemistry program.

Every student will work one semester or four months in an academic, industrial, or government laboratory outside UPR-Mayagüez campus. Since the department does not have funds to subsidize the internship, research advisors and graduate students must seek funding for the internship through grants or scholarships.

It is recommended that the four month period be flexible. Therefore, internship period could be distributed as follows:

1. A period of four months without interruption.
2. Two summer terms.
3. A maximum of three weeks in workshops related to the students research, and research experience to meet the four month period.
4. A flexible period where students fulfill the requirements of a teaching assistantship, and visit the laboratory outside UPR-Mayagüez Campus where the practicum research is conducted. This time period must include a total of 700 contact hours in research.

It is recommended that the Practicum be carried out during the summer since it should be easier to program and find housing for students. ***The Practicum should not consist of routine work in an academic or industrial environment; it must contribute to the student's research project and as such is expected to the part of the student's dissertation.*** Attendance to scientific meetings **will not**

be counted as an activity to meet the Practicum requirement. Professional experience in industry will not be accepted.

The appendix provides a form to be completed by the professor at the host institution prior to the internship, and by the student's research advisor. This form summarizes the research collaboration that will be developed. The host, student, and the student research advisor are expected to develop a research plan, and meet during the Internship to discuss the progress of the research. It is recommended that this form as well as travel permission forms and insurance requirements be completed two months in advance of the practicum.

After returning from the Practicum, students must present a progress report, make a presentation in the Graduate Seminar or in a scientific conference such as the Puerto Rico Senior Technical meeting and receive a formal evaluation from the Practicum supervisor or host.

Upon approval of the report, Student Graduate Studies Committee President will submit a letter (similar to that in the appendix) to the Graduate Coordinator informing him of the completion of this requirement.

Research

The student should perform independent research that represents a significant contribution to furthering knowledge in his specialty area. Every semester, each student should meet with his graduate committee to assess his academic and research progress and to receive advice regarding the progress of his/her research. Each student should file the latest version of the term-semester progress report form available at the graduate program website or the appendix section.

Students will be required two accepted publications before defending their doctoral dissertation.

The dissertation defense will be scheduled at least 30 days after students turn in their dissertation to the Graduate Studies Office (deadlines apply).

Candidacy

The student will be considered a Doctor of Philosophy candidate when he or she has successfully completed all courses listed in the students Plan of Study; has successfully defended the research proposal, and has passed the doctoral exam. Students are not required to give their doctoral seminar to become Ph.D. candidates.

Transfer of Courses from M.S. Degree

The Graduate Committee will evaluate requests for equivalencies and/or transfer of courses from previous graduate work towards the Ph.D. in Applied Chemistry.

The Graduate Committee has approved the transfer towards the Ph.D. degree of the maximum number of credit hours allowed by *Certification 09-09* previous M.S. in Chemistry program of UPR-Mayagüez students. A grade of A or B is required for course transfer.

Transfer from the M.S. to the Ph.D. track

According to the rules of the Chemistry Department Graduate Committee on May 3, 2006, any student that has at least 18 credits approved within the M.S. track with a GPA of at least 3.40 can request an internal transfer from the M.S. to the Ph.D. track. For the request to be considered, the research advisor, graduate committee members, and Chemistry Department Director, must recommend the student re-classification. The request will be evaluated by the Chemistry Department Director, who will decide the appropriate course of action.

Courses:

The PhD program in applied Chemistry consists of a minimum of 52 credits, of which up to 18 may be in thesis research. In addition:

- No more than 9 credits can be at the 5000 level
- A minimum of 9 credits will be required in areas outside of the specialty.
- The minimum grade point average required will be 3.00.
- Requests for credits transfer to the doctoral program either from a Master's program or other sources will be evaluated on a case by case basis Departmental Graduate Committee.

Chemistry Department Elective-Core Courses on the fundamental areas of chemistry – 9 credit hours. Recommended Courses and Electives by Area of Specialty – 15 credit hours of which at least 6 should be in courses in the area of specialty. The student should take these courses after consulting with his research advisor.

Due to the interdisciplinary nature of the Program, the student may take one or more courses outside Chemistry Department and Arts and Sciences College. The Graduate Program Office at the Chemistry Department has a list of additional courses which the student could take.

Course Distribution

Department Core Elective Courses (3 courses @ 3 credit hours) – 9 credit hours

Grade Requirements – 28 credit hours.

Recommended Courses and Electives by Area of Specialty – 15 credit hours.

<i>Course Category</i>	<i>Total Credit Hours</i>		<i>Plan of Graduate Studies Code</i>
Department Core Elective Courses (Advanced: Analytical, Biochemistry, Inorganic, Organic, Physical Chemistry)	9		Elective (3)
Courses by Areas of Applied Chemistry	≥6	15 total	Major (2)
Electives	9		Elective (3)
Courses in School of Business Administration (GERE 6025-Organizational Behavior, GERE 6027 - Legal Aspect of Business Organization, GERH 6037 – Wage and Salary Administration)	3		Elective (3)
QUIM 6705 – Supervised Teaching of Chemistry	3		Core (1)
QUIM 8008 – Scientific Communication in Chemistry	3		Core (1)

QUIM 8980 – Doctoral Seminar	1	Core (1)
QUIM 8997 – Doctoral Research	18	Core (1)
Total	52	

Note: According to *Certification 09-09* the student must complete at least 60% of his coursework within the program. Therefore, a maximum of 20 credits can be transferred from other programs once approved by the Chemistry Department Graduate Program Office.

Department Elective Core Courses (3 courses of 3 credit hours):

QUIM 6401 – Advanced Organic Chemistry
 QUIM 6605 – Advanced Physical Chemistry
 QUIM 6215 – Advanced Analytical Chemistry
 QUIM 6011 – Advanced Inorganic Chemistry
 QUIM 6715 – Advanced Biochemistry.

General Requirements:

QUIM 6705 – Supervised Teaching of Chemistry – 3 credit hours.
 QUIM 8008 – Scientific Communication in Chemistry – 3 credit hours.
 QUIM 8980 – Doctoral Seminar – 1 credit hour
 QUIM 8997 – Research and Doctoral Thesis -- 18 credit hours.

Courses in School of Business Administration Requirement:

GERE 6025 – Organizational Behavior – 3 credit hours.
 GERH 6027 – Legal Aspect of Business Organization – 3 credit hours.
 GERH 6037 – Wage and Salary Administration – 3 credit hours.

Courses in Areas of Applied Chemistry:

A. Biophysical Chemistry (two courses required):

QUIM 6016 – Biophysical Chemistry, 3 credit hours.
 QUIM 6009 – Spectroscopy of Biological Molecules, 3 credit hours.
 QUIM 8995 – Special Subjects in Biophysical Chemistry, 1 – 3 credit hours.

B. Chemistry of Materials (two courses required):

QUIM 6216 – Surface Analytical Chemistry, 3 credit hours.
 QUIM 6707 – Solid State Chemistry, 3 credit hours.
 QUIM 6045 – Computer Simulations Applied to Materials Science, 3 credit hours.
 QUIM 8995 – Special Subjects in Chemistry of Materials, 1 – 3 credit hours.

C. Environmental Chemistry (two courses required):

QUIM 6010 – Advanced Environmental Chemistry, 3 credit hours

QUIM 6036 – Chemical Aspects of Environmental Problems, 3 credit hours.

QUIM 6055 – Trace Analysis of Environmental Contaminants, 3 credit hours.

Roadmap toward the completion of a Ph.D. degree.

Program Year	Orientation Week	First Semester	Second Semester	Summer Term
1	Orientation	Elective Dept-Core Elective Dept. Core Elective Graduate Seminar	Elective Dept-Core Major 1 Research 1 Graduate Seminar	Proposal Write-Up
2		Major 1 QUIM-6705 Research 2 Defend and submit proposal Graduate Seminar	Doctoral Exam Free Elective 1 Research 3 Graduate Seminar	Internship/ Practicum Research 4 Publication 1
3		Free Elective 2 Free Elective 3 Research 5 Graduate Seminar	QUIM-8008 GERX-XXXX Research 6 Graduate Seminar	Research 7 Publication 2
4		Research 8 Graduate Seminar Presentation	Research 9 Disertation Defense	

References:

1. Criterion 9, Report on Findings, Puerto Rico Council on Higher Education License and Accreditation Office, May 2003.
2. This requirement will apply to all new students that start the program on August 2005.
3. Graduate Studies Office, “Criterios de Elegibilidad para Recibir Ayudantías”, <http://grad.uprm.edu/eligayudantias.htm>, accessed June 29, 2005.
4. Letter from Anand Sharma, Director of Graduate Studies on “Proceso de Alegación Examen Doctoral”, July 1, 2008.

Appendix



Selection of Thesis/Dissertation Director

Name of Student: _____

Student ID: _____

Date of Admission to the program: _____

Interviewed Faculty:

	<i>Professor's Name</i>	<i>Date</i>	<i>Professor's Signature</i>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____

After the above interviews, I choose the following professor as my Thesis/Dissertation Director (Advisor): _____

Student's Signature

Date

By signing below, I hereby accept the abovementioned student to develop a research project under my supervision and advise him/her in relation to his plan of studies within the program.

Advisor's Name

Date

Advisor's Signature

Vo. Bo.

Date

Director of the Chemistry Department

Note: Is a compulsory requirement to interview at least three (3) Professors.

YOU MUST RETURN THE SIGNED FORM TO THE CHEMISTRY GRADUATE PROGRAM OFFICE: NO LATER THAN THE LAST DAY OF CLASSES OF YOUR FIRST SEMESTER.



PLAN OF GRADUATE STUDY

The original of this record should be sent to the Registrar's Office during the student's second semester of graduate studies. A copy should be sent to the Office of Graduate Studies and a copy should remain in the Department.

1. Student's Name:		2. UPR ID Number:	
3. Degree: ☐ MA ☐ ME ☐ MS ☐ MBA ☐ PHD		4. Plan (only for Master's): ☐ I ☐ II ☐ III	
5. Major:		6. Option:	

7. Graduate Committee (3-5 members for Master's, 4-6 members for Doctorate). At least half of the members must belong to the student's graduate program.

Name	Highest Degree	Rank	Department	Signature
Chairperson:				
Co-chair (if applicable):				

8. Deficiencies-up to four 3000 or 4000 level courses included in the admissions letter. The student must successfully complete these courses with a GPA of 3.0 or more during the first two years of study after admission to avoid suspension after the two-year period.:

Course Code	Title	Term	Credits

STUDENT'S NAME:	UPR ID NUMBER:
-----------------	----------------

9. Graduate courses completed at other institutions, or previously at the Mayagüez Campus, for which transfer toward a graduate degree is being requested (students must successfully complete 60 percent of the courses in their plan of graduate study at UPRM). For second admissions, include courses from the first admissions to be accredited.

Institution	Course code	Course title	Credits	Code of UPRM Course substituted	Type of UPRM course substituted (core ¹ , major ² , or elective ³)

10. Courses taken or to be taken at the Mayagüez campus. A maximum number of nine (9) credits at the 5000 level courses is permitted. Some programs do not have core courses. Please arrange the courses in order (first core, then major, then electives).

Course Code	Title	Term	Credits	Type (core ¹ , major ² or elective ³)

STUDENT'S NAME:	UPR ID NUMBER:
-----------------	----------------

11. Special examinations – qualifying, comprehensive, preliminary, etc. Special examinations can be taken twice.

Type of examination	Date passed	Date when the result was informed to the Registrar's office

12. This plan of graduate study is approved by:

Student:	Coordinator of the Graduate Program: (if applicable)	Director of the Department:
Date:	Date:	Date:

The original of this record should be sent to the Registrar's Office during the student's second semester of graduate studies. A copy should be sent to the Office of Graduate Studies and a copy should remain in the Department.

1 Core – courses that must be taken by all students in a graduate program.

2 Major – courses central to the student's specialty

3 Electives – courses outside the immediate field of specialty (minimum 6 credits for Master, 9 for Doctorate)



Semester: ☐ Fall ☐ Spring ☐ Summer Academic Year:

*Deadlines will be: 4th Monday of September 1st Monday of March (also for summer session) of the semester prior request

Name: e-mail:

Student ID Number	Social Security Number	Nationality	Department
Highest Academic Degree ☐ BS ☐ MS	Date of Admission Fall _____ Spring _____ (Year) (Year)	Phone Number: Home: Cell:	Extension (RUM): Defending thesis/dissertation on this semester? ☐ Si ☐ No

Assistantship Record				
Academic Year	1 st Semester	2 nd Semester	Summer	Official Use-Department
	Teaching ☐ Research ☐	Teaching ☐ Research ☐	Teaching ☐ Research ☐	Need and Assistantship extension letter? In need of: YES ☐ NO ☐ Provided: YES ☐ NO ☐
	Teaching ☐ Research ☐	Teaching ☐ Research ☐	Teaching ☐ Research ☐	
	Teaching ☐ Research ☐	Teaching ☐ Research ☐	Teaching ☐ Research ☐	
	Teaching ☐ Research ☐	Teaching ☐ Research ☐	Teaching ☐ Research ☐	
	Teaching ☐ Research ☐	Teaching ☐ Research ☐	Teaching ☐ Research ☐	
	Teaching ☐ Research ☐	Teaching ☐ Research ☐	Teaching ☐ Research ☐	

I, _____, Director of the thesis/dissertation of the above mentioned student hereby notify that I:

(Choose all that apply)

WILL NOT ☐ grant an externally supported research assistantship.

WILL ☐ grant an externally supported research assistantship of ___ credits with external funds originated from the following company or agency

DO ☐ / **DO NOT** ☐ authorize the student to receive a **teaching assistantship** form the Department of Chemistry.

DO ☐ / **DO NOT** ☐ authorize to receive an additional 50% teaching assistantship based on the needs and demand of the Chemistry Department.

Signature thesis/dissertation director: _____

V^O B^O director from applicant's department:

***Deadline:** To electronically submit the documents to the Graduate Program **Office of the Chemistry Department**



Semester: ☐ Fall ☐ Spring ☐ Summer Academic Year:

Name:

e-mail:

Student ID Number	Social Security Number	Nationality	Department
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I hereby request a teaching assistantship from the Department of Chemistry for the abovementioned academic period. I acknowledge that the renewal of my assistantship will be conditioned to: **1) the needs of the Department of Chemistry 2) A favorable performance evaluation** from my superiors. Consequently I hereby commit myself to obey and follow the instructions made by my superiors and to **comply with all the safety and environmental protection regulations established for the laboratories.** I will **notify the Department of Chemistry no less than 30 days prior of the beginning of the semester for which I am requesting the assistantship**, if any of the following occur:

1. I **decline the teaching assistantship offered** by the Department of Chemistry
2. I **fall in academic probation** during the semester on which the assistantship is being granted.
3. I **accept a fellowship/grant or assistantship** in addition to the one granted by the Department of Chemistry.
4. Any other situation or condition that can affect my duties and services as a teaching assistant (health condition, business travel, presentation in a meeting or congress, etc.)

Signature of the Student requesting the teaching assistantship: _____

Date:

Expected Class Schedule:

Curse	Crs.	Schedule	Professor

Schedule		Monday (L)	Tuesday (M)	Wednesday (W)	Thursday (J)	Friday (V)
LWV	MJ					
7:30 – 8:20	7:30 – 8:45	☐	☐	☐	☐	☐
8:30 – 9:20		☐	☐	☐	☐	☐
9:30 – 10:20	9:00 – 10:30	☐	☐	☐	☐	☐
10:30 – 11:20		☐	☐	☐	☐	☐
11:30 – 12:20		☐	☐	☐	☐	☐
12:30 – 1:20	12:30– 1:45	☐	☐	☐	☐	☐
1:30 – 2:20		☐	☐	☐	☐	☐
2:30 – 3:20	2:00 – 3:15	☐	☐	☐	☐	☐
3:30 – 4:30	3:30 – 4:45	☐	☐	☐	☐	☐
4:30 – 5:45		☐	☐	☐	☐	☐
6:00 – 7:15	5:00 – 6:15	☐	☐	☐	☐	☐

Assistantship Details:

Type of Assistantship	Curse	Duties	Crs.

Rev. 02/2012





APPLIED CHEMISTRY PROGRAM: GRADUATE STUDENT REPORT (ACP:GSR)

Semester: ☐ Fall ☐ Spring ☐ Summer Academic Year: _____

During Summer/Fall semester(s) of registration advisement the student is to complete this form. Upon preliminary completion, the student is to take this form to his/her faculty advisor and student committee for a joint discussion and completion of the document. **Once both student and members of his/her committee agree upon progression information, the faculty advisor submits the form to the Coordinator of the Graduate Program. Students will not be able to register for the Fall, Spring, or Summer Term until the corresponding report is submitted.**

Student Name:	Student ID:
Program:	Degree:
Admit Date:	Years in Program:
Advisor's Name:	Status :
Date of Progress Report Meeting: _____	

List all courses taken in the past academic year. Please specify the type of requirement Core <Graduate Program core> (1), Major <Division Core> (2), Electives <Departmental Cores and elective courses> (3).

Course	Term	Credit Hour(s)	Type of Requirement

1. Have There Been Any Changes to Original Plan of Studies? *Yes [] No []

* If "Yes" then a Revision of Plan of Studies form must be completed and submitted with this document.

2. Financial Support:

Is financial support continuing? Yes [] No [] N/A []
Indicate source of financial support: Institutional [] External [] Other []
Name of the agency or organization providing the support: _____

3. Thesis / Dissertation / Practicum / Comprehensive Exam:

Research proposal defended and accepted by committee?	Yes	No	Pen.
Actively engaged in thesis or dissertation research?	Yes	No	Pen.
Completed Doctoral Examination	Yes	No	N/A
Completed Practicum Requirement	Yes	No	N/A
Completed Publication Requirement	Yes	No	N/A
Writing thesis/project/practicum report/comprehensive exam?	Yes	No	Pen.



4. Briefly and succinctly discuss and evaluate the progress toward completion of degree requirements that has been made in the past academic year. Please state if your progress is on target as specified by your plan of studies and research proposal.



5. Discuss and evaluate specific research goals for the forthcoming year and how they will be accomplished:



6. List any publications by the student during the past academic year (please use ACS format):

7. List any presentations by the student during the past academic year (in ACS Format):



8. List any awards and/or honors received by the student during the past academic year:

9. Expected Thesis/Dissertation defense Date: _____

10. Has there been a change in the Dissertation Defense Date? If so please explain why.

11. Please list the potential/actual members of your Dissertation Defense Committee.

Committee Member	Department	Status



12. Academic advisor's comments (Please provide information on the student's overall academic performance and progress over the past academic year):

13. Student Progress:

Satisfactory [] Needs Improvement [] 2nd Needs Improvement [] Unsatisfactory []

Note: If progress is Unsatisfactory, please give justification(s) in the above space or on an attached a sheet. If 2nd Needs Improvement, an automatic Continuance Review is required.

14. Required Signatures:

Name	Department	Signatures	Date
Student			
Advisor			
Member 1			
Member 2			
Member 3			
Member 4			
Member 5			



By

A proposal submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY
in
Applied Chemistry

UNIVERSITY OF PUERTO RICO
MAYAGÜEZ CAMPUS

Proposal and Defense Approved by Committee:

Date

Date

Date

Date

Date

Date



**Request for
Internship ("Practicum")
Department of
Chemistry**

Name of Student: _____

Student's Host Professor: _____

Host Institution: _____

Department: _____

Dear colleague, as part of our requirements for the Ph.D. in Applied Chemistry our students are required to conduct a research internship also known as "Practicum". As part of this internship, every student must work a term of four months to one semester in an academic, industrial, or government laboratory outside the UPR-Mayagüez campus. It is recommended that the four month period be flexible, but cumulative to comprise at least its minimum time period. This research internship may be distributed as follows:

1. A period of four months without interruption
2. Two summer terms.
3. A maximum of three weeks in workshops related to the students research, and research experience to meet the four month period.
4. A flexible period where students fulfill the requirements of a teaching assistantship, and visit the the laboratory outside the UPR-Mayagüez Campus where the research is conducted. This time period must include a total of 700 contact hours in research.

The internship should not consist of routine work in an academic or industrial environment; it must contribute to the student's doctoral dissertation research. It should also promote to the development of a new research collaboration for our Ph.D. program or strengthen one. Consequently, the student, host, and research advisor should schedule regular meetings to discuss the student's research progress, and plan the presentation and publication of the research.

After returning from the Internship, students must present a progress report, make a presentation in the Graduate Seminar or in a regional or national scientific conference such as the A.C.S, Meeting and receive a formal evaluation from the Internship supervisor or host. Upon approval of the report, the President of the student's Graduate Studies committee will complete the corresponding internship report form to the Chemistry Department Graduate Program Office, to notify the completion of this requirement. We will appreciate you complete the following letter to confirm your commitment to accept the abovementioned student at your research facilities to fulfill his/her practicum requirement.

Regards,

President Student's Graduate Studies Committee

Student's Host Professor



Date: _____

Dear Graduate Program Coordinator,

It is with much enthusiasm that I, _____, _____,
_____ accept the participation of: _____ as our
graduate intern for the period of _____ to _____ at our
research laboratories. The objectives of this internship are:

I am confident that this research experience will significantly contribute to enhance the student research and dissertation research experience.

Cordially,

Student's Host Professor

Vo. Bo. _____

UPRM Student's Major Professor

Host Institution Name



Internship ("Practicum")
Evaluation from Host
Institution
Department of Chemistry

Internship ("Practicum") Evaluation from Host Institution

Date: _____

Dear Graduate Program Coordinator,

It is with much enthusiasm that I, _____, _____,
at _____, certify that: _____ has completed his
research internship experience for the period from _____. The student submitted
a formal report of his research activities which has been evaluated as follows:

1. Goals that were set out to accomplish during the internship period

Comments:

2. Goals that where accomplished

Comments:

3. Goals that were not accomplished. Why not?

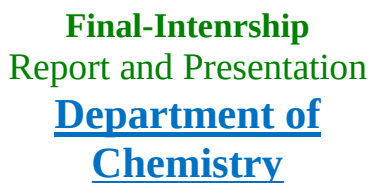
Comments:

4. Additional objectives meet beyond the stated goals

Comments:

Evaluation Ratings					
	1 = Poor	2 = Fair	3 = Satisfactory	4 = Good	5 = Excellent
Job Knowledge	☐	☐	☐	☐	☐
<i>Comments</i>					
Work Quality	☐	☐	☐	☐	☐
<i>Comments</i>					
Attendance/Punctuality	☐	☐	☐	☐	☐
<i>Comments</i>					
Initiative	☐	☐	☐	☐	☐
<i>Comments</i>					
Communication/Listening Skills	☐	☐	☐	☐	☐
<i>Comments</i>					
Dependability	☐	☐	☐	☐	☐
<i>Comments</i>					
Overall Rating (<i>average the rating numbers above</i>)	☐ 1=Poor ☐ 2= Fair ☐ 3 = Satisfactory ☐ 4 = Good ☐ 5 = Excellent				
Host Review					
<i>By signing this form, you confirm that you the information assessment made above are correct.</i>					
Student's Host Professor Name		Signature		Date	
Confirmation of receipt					
<i>By signing this form, you confirm that you have received this review. Signing this form does not necessarily indicate that you agree with this evaluation.</i>					
UPRM Student's Major Professor Name		Signature		Date	

A detailed report of the abovementioned activities will also be submitted by the student to his graduate committee upon his arrival to UPRM.





Evaluation to request oral examination (Ph.D)

The president and members of the graduate committee of _____,
I.D.# _____, hereby certify that the student has completed all the
requirements to request his dissertation oral exam. The committee have approved the following peer-
reviewed articles to be considered in compliance with the Doctoral Program in Applied Chemistry
requirement of two publications prior requesting his final examination:

Citations in ACS format:

1.

2.

Copies of these articles with the confirmation of the peer-review process (when needed) are included with
this document.

☐ A list of additional articles approved by this committee and their corresponding copies are also
included.

Approved by Committee:

Vo. Bo.

Director, Chemistry Department

Date

Date

Date

Date

Date

Date

Date

Universidad de Puerto Rico
Recinto Universitario de Mayagüez
OFICINA DE ESTUDIOS GRADUADOS

FORMULARIO DAAEG-006

Rev. Marzo 2011

SOLICITUD DE ADMISIÓN AL EXAMEN ORAL DE DISERTACIÓN, TESIS O INFORME DE PROYECTO

1. APELLIDOS, NOMBRE	2. DEPARTAMENTO	3. GRADO: MA ME MS PHD MBA
4. DIRECCIÓN POSTAL: 5. TELÉFONOS: RESIDENCIA: EMPLEO/CELULAR: 6. CORREO ELECTRÓNICO: 7. NÚMERO DE ESTUDIANTE:		8. FECHA DEL EXAMEN DÍA: HORA LUGAR:
9. TÍTULO DE LA DISERTACIÓN, TESIS, INFORME DE PROYECTO		

10. Los miembros del comité graduado certifican mediante su firma que el documento está listo para presentarse a examen.

MIEMBROS DEL COMITÉ GRADUADO	FIRMAS	CORREO ELECTRÓNICO	FECHA
Presidente:			

11. Publicaciones Aceptadas. Sólo para estudiantes del programa doctoral de Química Aplicada. Certifico que el estudiante ha publicado un mínimo de dos artículos en revistas revisadas por Pares. En trabajo externo al RUM (Practicum) indique laboratorio y título de la presentación.

REVISTAS	LABORATORIO	TÍTULO/FECHA	FIRMA CONSEJERO

12. FIRMA DEL DIRECTOR DE DEPARTAMENTO Fecha:	13. FIRMA DEL ESTUDIANTE Fecha:
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