

## DIPLOMA IN CHEMISTRY PROGRAM

### OBJECTIVES

The Diploma in Chemistry program aims to provide the student with the minimum background in Chemistry to enable them to upgrade their competence in teaching college chemistry or to pursue masteral studies in Chemistry.

### ADMISSION REQUIREMENTS

Possession of a Bachelor's degree from any recognized institution of learning; completion of at least 20 units of college Chemistry including quantitative analysis and elementary organic chemistry, 10 units of college Physics and 15 units of college Mathematics, including differential and integral calculus; satisfactory performance in an entrance examination, to be administered by the Institute of Chemistry and in consultation with the National Institute of Physics and the Department of Mathematics.

All applications for admission to the program shall be screened and approved by the Institute of Chemistry.

### ADVANCED PLACEMENT EXAMINATIONS

Students may take advanced placement examinations, to be administered by the Institute of Chemistry, on any of the courses prescribed in the program. Satisfactory performance will waive enrollment in the pertinent courses.

### COURSE REQUIREMENTS

The course work covers one academic year, for a total of thirty to thirty two (30-32) chemistry units, as follows:

First Semester	
Chem 34 (Organic Chem II)	3
Chem 34.1 (Organic Chem II Lab)	2
Chem 123 (Adv. Anal. Chem)	3
Chem 153 (Phy. Chem I)	3
Chem 156 (Intro. to Quantum Chem.)	3
Chem 196 (Undergraduate Seminar)	<u>1</u>
	15
Second Semester	
Chem 123.1 (Adv. Anal. Chem Lab) OR	2 OR
Chem 125 (Chem. Instrumentation)	4
Chem 112 (Adv. Inorg. Chem)	3
Chem 145 (Biochemistry I)	3
Chem 146.1 (Biochemistry Lab)	2
Chem 154 (Phy. Chem II)	3
Chem 252 (Grad. Phy. Chem Lab)	<u>2</u>
	15 or 17

## MASTER OF SCIENCE IN CHEMISTRY PROGRAM (Thesis Option)

### OBJECTIVES

The Master of Science in Chemistry (Thesis Option) degree is designed to provide a comprehensive view of some of the major fields of interest in Chemistry and to develop the student's ability in conducting independent research in his chosen area of specialization. Graduates are prepared for scientific careers in academic or research institutions, and in industry, particularly in research and development.

### ADMISSION REQUIREMENTS

Possession of a B.S. degree obtained from a recognized institution of higher learning; completion of at least thirty five (35) units of college Chemistry; a high degree of intellectual capacity; and aptitude for graduate study in Chemistry.

### ADVANCED PLACEMENT EXAMINATIONS

The applicant shall be required to take advanced placement examinations, covering Biochemistry, Analytical, Inorganic, Organic, and Physical Chemistry. Students with unsatisfactory performance may be required to take the necessary remedial undergraduate courses without graduate credit.

### GENERAL REQUIREMENTS

1. Complete a minimum of twenty four (24) units of formal graduate courses
2. Complete two (2) units of Chemistry 290 seminar courses
3. Maintain a Cumulative Weighted Average Grade (CWAG) of 2.0 or better in graduate courses at the end of each academic year
4. Complete an M.S. thesis (6 units of Chemistry 300) based on an independent and original research
5. Successfully defend an M.S. thesis in a public thesis examination and the M.S. examination panel should unanimously approve the thesis
6. Submit at least six (6) bound and certified copies of the approved M.S. thesis

### COURSE REQUIREMENTS

Core Courses (15 – 17 units)	No of Units
Chem 211 (Systematic Inorganic Chemistry)	3
Chem 223 (Theoretical Analytical Chemistry) OR	3 OR
Chem 220 (Instrumental Methods of Analysis)	5
Chem 230 (Physical Organic Chemistry I)	3
Chem 240 (Advanced Biochemistry)	3
Chem 250 (Chemical Thermodynamics I)	3

*Cognate Subjects (9 units):* A cognate subject may be allowed only if it is highly relevant to the student's program of study which will be determined by the program adviser.

*Seminars:* At least two (2) units of the Chemistry 290 series, one (1) unit of which should be in the student's area of specialization.

## MASTER OF SCIENCE IN CHEMISTRY PROGRAM (Non-Thesis Option)

### OBJECTIVES

The Master of Science in Chemistry (Non-Thesis Option) degree is designed to focus on the needs of industry for technically competent chemists with advanced background in Chemistry; address the need to upgrade chemical and science education through faculty development; and equip students from industry or science education with advanced chemistry concepts and skills through the additional courses which include hands-on laboratory components in lieu of a thesis.

*ADMISSION REQUIREMENTS* – same as M.S. Chemistry (Thesis Option)

*ADVANCED PLACEMENT EXAMINATIONS* – same as M.S. Chemistry (Thesis Option)

### GENERAL REQUIREMENTS

1. Complete a minimum of thirty three (33) units of formal graduate courses
2. Complete two (2) units of Chemistry 290 seminar courses
3. Maintain a Cumulative Weighted Average (CWAG) of 2.0 or better in graduate courses at the end of each academic year
4. Pass the M.S. preliminary examination. The preliminary examination is a written examination that has to be taken by the student within one (1) year after completing the core courses.
5. Pass the comprehensive examination on a research proposal covering a recent development in Chemistry. The comprehensive examination is an oral examination that must be taken by the student after he/she passed the preliminary examination and completed all the course and seminar requirements for the degree.

### COURSE REQUIREMENTS

Core Courses (26 units)	No of Units
Chem 211 (Systematic Inorganic Chemistry)	3
Chem 213 (Physical Methods of Inorganic Chemistry)	3
Chem 220 (Instrumental Methods of Analysis)	5
Chem 230 (Physical Organic Chemistry I)	3
Chem 237 (Spectroscopic Methods in Organic Chem)	3
Chem 240 (Advanced Biochemistry)	3
Chem 250 (Chemical Thermodynamics I)	3
Chem 255 (Quantum Chemistry) OR	3 OR
Chem 257 (Chemical Kinetics)	3

*Cognate Subjects (7 units):* A cognate subject may be allowed only if it is highly relevant to the student's program of study, which will be determined by the program adviser.

*Seminars:* At least two (2) units of the Chemistry 290 series, one (1) unit of which should be in the student's area of specialization.

## MASTER OF SCIENCE IN CHEMICAL EDUCATION PROGRAM

### OBJECTIVES

The Master of Science in Chemical Education is a non-thesis masteral program that is geared for teachers of undergraduate chemistry. This program is specially designed for those who wish to specialize in chemical education.

### ADMISSION REQUIREMENTS

Possession of B.S. degree obtained from a recognized institution of higher learning; completion of at least thirty five (35) units of college chemistry; a high degree of intellectual capacity; and aptitude for graduate study in Chemistry.

### ADVANCED PLACEMENT EXAMINATIONS

The applicant shall be required to take advanced placement examinations, covering Biochemistry, Analytical, Inorganic, Organic, and Physical Chemistry. Students with unsatisfactory performance may be required to take the necessary remedial undergraduate courses without graduate credit.

### GENERAL REQUIREMENTS

1. Complete a minimum of thirty three (33) units of formal graduate courses
2. Complete two (2) units of Chemistry 290 seminar courses
3. Maintain a Cumulative Weighted Average Grade (CWAG) of 2.0 or better in graduate courses at the end of each academic year
4. Pass the M.S. preliminary examination. The preliminary examination is a written examination that has to be taken by the student within one (1) year after completing the core courses.
5. Pass the comprehensive examination. The comprehensive examination is an oral examination that must be taken by the student after he/she passed the preliminary examination and completed all the course and seminar requirements for the degree. The student is required to give a seminar on a topic covering a recent development in the discipline.

### COURSE REQUIREMENTS

Core Courses (24-26 units)	No of Units
Chem 211 (Systematic Inorganic Chemistry)	3
Chem 223 (Theoretical Analytical Chemistry) OR	3 OR
Chem 220 (Instrumental Methods of Analysis)	5
Chem 230 (Physical Organic Chemistry I)	3
Chem 240 (Advanced Biochemistry)	3
Chem 250 (Chemical Thermodynamics I)	3
Chem 252 (Graduate Physical Chemistry Laboratory)	2
Chem 288 (Chemistry Teaching Practicum)	2
Chem 289 (Special Problems in Chemical Education)	2
Educ 380 (Seminar in College Teaching)	2
Educ 381 (Workshop in College Teaching)	3

*Cognates* (9 units): may be chosen from any of the remaining graduate course offering or any relevant graduate courses in other disciplines such as Physics, Mathematics, Biology, and others.

## DOCTOR OF PHILOSOPHY IN CHEMISTRY PROGRAM

### OBJECTIVES

The program aims to provide advanced graduate training in chemistry which would allow successful students to carry out independent research, and pursue careers in academic, government, research and industrial institutions. These highly trained chemists are needed in the solution of various national developmental problems.

### ADMISSION REQUIREMENTS

Possession of a B.S. or M.S. degree obtained from a recognized institution of higher learning; completion of at least sixty (60) units of college chemistry; a high degree of intellectual capacity; and aptitude for graduate study in Chemistry.

*ADVANCED PLACEMENT EXAMINATIONS* – required for B.S. Chemistry applicants

### GENERAL REQUIREMENTS

1. Complete a minimum of twenty four (24) units of formal graduate courses for M.S. degree students and forty five (45) units for B.S. degree students
2. Complete two (2) units of Chemistry 390 seminar courses, one (1) unit of which should be in student's area of specialization
3. Maintain a Cumulative Weighted Average Grade (CWAG) of 1.75 or better in graduate courses at the end of each academic year
4. Pass the qualifying examination based on the core courses.
5. Pass the candidacy examination after completion of course work.
6. Complete a Ph.D. dissertation (12 units of Chemistry 400) based on an independent and original research
7. Participate in a college graduate colloquia
8. Successfully defend the Ph.D. dissertation in a public doctoral examination
9. Submit at least six (6) bound and certified copies of the approved Ph.D. dissertation and a dissertation pre-print

### COURSE REQUIREMENTS

Core Courses for B.S. Graduates (32 units) (* for M.S. Graduates)	
Chem 211 (Systematic Inorganic Chemistry)	3
*Chem 212 (Reaction Mech of Transition Metal Complexes) OR	3
*Chem 213 (Physical Methods of Inorganic Chemistry)	3
Chem 223 (Theoretical Analytical Chemistry)	3
*Chem 220 (Instrumental Methods of Analysis)	5
Chem 230 (Physical Organic Chemistry I)	3
*Chem 235 (Theoretical Organic Chemistry)	3
Chem 240 (Advanced Biochemistry)	3
*3 unit course in the Chem 240 series	3
Chem 250 (Chemical Thermodynamics I)	3
*Chem 255 (Quantum Chemistry) OR	3
*Chem 257 (Chemical Kinetics)	3

*Cognate Courses*- 7 units after the M.S. degree and 13 units after the B.S. degree



**INSTITUTE OF CHEMISTRY**  
**UNIVERSITY OF THE PHILIPPINES, DILIMAN**

# GRADUATE PROGRAMS

## DIPLOMA IN CHEMISTRY

## M.S. IN CHEMISTRY (THESIS OPTION)

## M.S. IN CHEMISTRY (NON-THESIS OPTION)

## M.S. IN CHEMICAL EDUCATION

## PH.D. IN CHEMISTRY

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