

**Regulation - *Stricto Sensu* graduate program collegiate
(N° 011/2018)**

Restructures the curricular organization of the chemistry graduate program (Masters and Doctorate)

CONSIDERING the program coordination committee solicitation present in the process no 550/2018;

CONSIDERING the competence assigned to the collegiate of the *stricto sensu* graduate programs, by the process no 11318/2016, which changed the regulations of the graduate chamber;

THE *STRICTO SENSU* GRADUATE PROGRAM COLLEGIATE, at a meeting on May 14, 2018, approved the following resolution:

Art. 1º The curricular organization of the graduate program in chemistry, master's and doctorate, is restructured.

Single paragraph. The program will have 4 (four) concentration areas: 1) Physical Chemistry, 2) Analytical Chemistry; 3) Inorganic Chemistry; 4) Organic Chemistry.

Art. 2º The master will have a minimum duration of 2 (two) academic periods (1 year) and a maximum of 4 (four) academic periods (2 years). The doctorate will have a minimum duration of 4 (four) academic periods (2 years) and a maximum of 8 (eight) academic periods (4 years).

Art. 3º To complete the master's and doctorate degrees, the student must complete the workload and credits as described in the paragraphs of this article, and credits from the master can be computed for the totalization of doctoral credits, after analysis by the coordinating committee.

§ 1º For Master, the student must complete at least 75 (seventy-five) credit points, corresponding to 1125 (One thousand one hundred and twenty-five) hours as follows:

a) 12 (twelve) credit points of main subjects, with one advanced subject, two General graduate Seminars (I and II) and one Teaching internship at undergraduate courses;

b) 12 (twelve) credit points of elective subjects and/or main subjects;

c) 51 (fifty-one) credit points of dissertations subjects;

§ 2° For Doctorate, the student must complete at least 124 (one hundred twenty-four) credit points, corresponding to 1860 (A thousand eight hundred and sixty) hours as follows:

a) 12 (twelve) credit points of main subjects, with one advanced subject, two General graduate Seminars (I and II) and one Teaching internship at undergraduate courses.

b) 12 (twelve) credit points of elective subjects and/or main subjects, being possible to compute until 50% of the credit points coursed on Masters

c) 100 (one hundred) credit points of thesis subjects

§ 3° Doctoral students who have completed a master's degree recognized by CAPES in the last 3 years, studied as a special student in the Doctorate in Chemistry subjects, may have credits in optional subjects, at the discretion of the program coordinating committee.

Art. 4° The development of the program will obey the following curricular organization:

A) MAIN SUBJECTS

2 QUI 410	Advanced Organic Chemistry	06	90
2 QUI 411	Advanced Physical Chemistry	06	90
2 QUI 412	Advanced Analytical Chemistry	06	90
2 QUI 413	Advanced Inorganic Chemistry	06	90
2 QUI 394	General Graduate Seminars I (Master)	02	30

2 QUI 395	General Graduate Seminars II (Master)	02	30
2 QUI 446	General Graduate Seminars III (Doctorate)	02	30
2 QUI 447	General Graduate Seminars IV (Doctorate)	02	30
2 QUI 448	Teaching internship at undergraduate courses I (Master)	02	30
2 QUI 449	Teaching internship at undergraduate courses II (Master)	02	30
2 QUI 450	Teaching internship at undergraduate courses III (Doctorate)	02	30
2 QUI 451	Teaching internship at undergraduate courses IV (Doctorate)	02	30

B) ELECTIVE SUBJECTS

2 QUI 206	Structural Determination in Organic Chemistry	04	60
2 QUI 207	Electrochemistry and Electroanalytical	04	60
2 QUI 208	Chromatographic Analysis Methods	04	60
2 QUI 414	Sample Treatment Methods	04	60
2 QUI 210	Spectroscopy	04	60

2 QUI 415	Optical Methods of Chemistry Analysis	04	60
2 QUI 213	Complexation in Aquatic Systems	04	60
2 QUI 214	Atmospheric Chemistry Analysis	04	60
2 QUI 215	Advanced Oxidation Process	04	60
2 QUI 216	Applied Photochemistry	04	60
2 QUI 217	Experiments Planning and Optimization	04	60
2 QUI 218	Multivariate Data Analysis Methods	04	60
2 QUI 219	Adsorption and Reactions on Solid Surfaces	04	60
2 QUI 220	Biosynthesis of Natural Products	04	60
2 QUI 221	Technological Applications of the Sol- Gel Process	04	60
2 QUI 222	Biomass and Biofuels	04	60
2QUI224to2QUI260	Special Topics in Chemistry	variable	--
2 QUI 409	Sorption Process Modeling	04	60
2 QUI 416	Advanced Techniques in Chromatography	04	60
2 QUI 417	Physical Chemistry of Surfaces	04	60

2 QUI 445	Scientific writing Methodology	04	60
2 QUI 452	Introduction to Polymers	04	60
2 QUI 453	Electroanalytical and Sensors	04	60
2 QUI 454	Electrochemistry and Corrosion	04	60
2 QUI 455	Organic Synthesis	04	60
2 QUI 456	Medicinal Chemistry	04	60
2 QUI 457	Activity Studies of Bioactive Molecules	04	60
2 QUI 458	Stereochemistry of Organic Compounds	04	60
2 QUI 459	Flow Injection Systems and Automation	04	60
2 QUI 460	Physical Chemistry Simulations	04	60
2 QUI 461	Synthesis and Characterization of Minerals	04	60
2 QUI 462	System Modeling and Optimization	04	60

C) Masters Dissertation

2 QUI 261	Dissertation I	06	90
2 QUI 262	Dissertation II	10	150

2 QUI 263	Dissertation III	15	225
2 QUI 264	Dissertation IV	20	300

D) Doctorate Thesis

2 QUI 273	Thesis I	10	150
2 QUI 274	Thesis II	10	150
2 QUI 275	Thesis III	10	150
2 QUI 276	Thesis IV	10	150
2 QUI 277	Thesis V	10	150
2 QUI 278	Thesis VI	15	225
2 QUI 279	Thesis VII	15	225
2 QUI 280	Thesis VIII	20	300

Art. 5º Applicants to the Graduate Program in Chemistry - Masters or doctorate courses - must possess a degree in Chemistry or related areas.

Art. 6º The selection of candidates will be in charge of the coordinating committee of the program, and the criteria will be established in the offer notice.

Art. 7º The evaluation of performance and the verification of frequency will obey the rules contained in the regulation of the *stricto sensu* graduate programs and the general regulations of the UEL

Art. 8º The syllabus of the subjects of the curricular organization are included in the attachments of this resolution

Art. 9º The Chemistry graduate program (master and doctorate) integrate the collegiate of the *stricto sensu* graduate programs and its academic control will be centralized in the pro-rectory of research and graduation.

Art. 10º The resolution takes effect on the date of its publication

UNIVERSIDADE ESTADUAL DE LONDRINA, May 14 2018

Professor Dr. Maria de Fátima Guimarães

Coordinator of the *Stricto Sensu* Graduation Programs Collegiate

Resolution attachment – *Stricto Sensu* collegiate N° 011/2018

2 QUI 410	Advanced Organic Chemistry	6 cr	90h
Structure, chemical bonding in organic components and their reactivity effects. Ionic reactions, free-radical reactions, and concerted reactions.			
2 QUI 411	Advanced Physical Chemistry	6 cr	90h
Physical and chemical equilibrium. Surface thermodynamic. Statistic thermodynamic. Molecular dynamic. Surface reactions. Reaction in solution. Photochemistry.			
2 QUI 412	Advanced Analytical Chemistry	6 cr	90h
Statistic methods. Analytical methods validation. Chemistry equilibrium. Ions in solution. Titration Theory.			
2 QUI 413	Advanced Inorganic Chemistry	6 cr	90h
Chemical bond models in inorganic chemistry. Chemistry of the main elements of the periodic table.			
2 QUI 445	Methodology and scientific writing	4 cr	60h
Scientific methods and characteristics of the scientific language in project elaboration and scientific propagation.			
2 QUI 394	Graduation general seminars I	2 cr	30h
Renovation, ampliation and extension of the chemistry knowledge involved in the graduation subjects. Scientific integration between students and teachers.			
2 QUI 395	Graduation general seminars II	2 cr	30h
Renovation, ampliation and extension of the chemistry knowledge involved in the graduation subjects. Scientific integration between students and teachers. Oral presentations of a specific topic in chemistry			
2 QUI 446	Graduation general seminars III	2 cr	30h
Renovation, ampliation and extension of the chemistry knowledge involved in the graduation subjects. Scientific integration between students and teachers.			
2 QUI 447	Graduation general seminars IV	2 cr	30h
Renovation, ampliation and extension of the chemistry knowledge involved in the graduation subjects. Scientific integration between students and teachers. Oral presentations of a specific topic in chemistry			
2 QUI 448	Teaching internship in undergraduate courses I	2 cr	30h

Participation in undergraduate classes, training of scientific initiation students and other related activities at the discretion and monitoring of the coordinating committee, with the supervision of the advisor and the presence of the professor responsible for the subject.

2 QUI 449 Teaching internship in undergraduate courses II 2 cr 30h

Participation in undergraduate classes, training of scientific initiation students and other related activities at the discretion and monitoring of the coordinating committee, with the supervision of the advisor and the presence of the professor responsible for the subject.

2 QUI 450 Teaching internship in undergraduate courses III 2 cr 30h

Participation in undergraduate classes, training of scientific initiation students and other related activities at the discretion and monitoring of the coordinating committee, with the supervision of the advisor and the presence of the professor responsible for the subject.

2 QUI 451 Teaching internship in undergraduate courses IV 2 cr 30h

Participation in undergraduate classes, training of scientific initiation students and other related activities at the discretion and monitoring of the coordinating committee, with the supervision of the advisor and the presence of the professor responsible for the subject.

2 QUI 206 Structural determination in organic chemistry 4 cr 60h

Use of infrared, mass and nuclear magnetic resonance spectrochemical methods of hydrogen and carbon (uni and bidimensional) in the structural determination of organic substances

2 QUI 207 Electrochemistry and Electroanalytical 4 cr 60

Double electric layer. Thermodynamic and kinetic of electronic transfer. Voltammetric techniques. Electroanalytical applications.

2 QUI 208 Methods of Chromatographic Analysis 4 cr 60h

- 2 QUI 261 Dissertation I** **6 cr 90h**
Presentation of a report about the activities developed during the first semester of the master's degree
- 2 QUI 261 Dissertation II** **10 cr 150h**
Presentation of a report about the activities developed during the second semester of the master's degree
- 2 QUI 261 Dissertation III** **15 cr 225h**
Presentation of a report about the activities developed during the third semester of the master's degree
- 2 QUI 261 Dissertation IV** **20 cr 300h**
Presentation of a report about the activities developed during the fourth semester of the master's degree
- 2 QUI 273 Thesis I** **10 cr 150h**
Presentation of a report about the activities developed during the first semester of the doctorate degree
- 2 QUI 273 Thesis II** **10 cr 150h**
Presentation of a report about the activities developed during the second semester of the doctorate degree
- 2 QUI 273 Thesis III** **10 cr 150h**
Presentation of a report about the activities developed during the third semester of the doctorate degree
- 2 QUI 273 Thesis IV** **10 cr 150h**
Presentation of a report about the activities developed during the fourth semester of the doctorate degree
- 2 QUI 273 Thesis V** **10 cr 150h**
Presentation of a report about the activities developed during the fifth semester of the doctorate degree
- 2 QUI 273 Thesis VI** **15 cr 225h**
Presentation of a report about the activities developed during the sixth semester of the doctorate degree
- 2 QUI 273 Thesis VI** **15 cr 225h**
Presentation of a report about the activities developed during the seventh semester of the doctorate degree

2 QUI 273 Thesis VI

20 cr 300h

Presentation of a report about the activities developed during the eighth semester of the doctorate degree