Master & Doctor of Philosophy Programs in Chemistry

Research Fields

Organic Chemistry
Organic Synthesis and Catalysis
Surface, Coating and Catalysis
Biosensors
Inorganic Chemistry
Functional Materials
Flow Based Analytical Systems
Analytical Chemistry
Protein and Enzyme Technology
Fermentation Technology
Molecular Biology
Bioactive Compounds from Natural Resources
Physical Chemistry
Polymer Chemsitry
Computational Chemistry
Coordination Polymer/Metal Organic Frameworks
Material Chemistry
Environmental Science
Food Chemistry
Biomedical and Biopharmaceutical
Green Biotechnology

For more information,
please visit the following website.
www.chem.science.cmu.ac.th

Doctor of Philosophy Program in Chemistry

Type 1.1 : For student with Master's Degree

Degree Requirements **48 credits**

A. Thesis

203898 Doctoral Thesis 48 credits

B. Academic Activities

1. A student has to attend seminar every semester throughout the program.
2. A student must present his/her work from his/her doctoral thesis at least once in a well-acknowledged international conference.
3. There must be at least two articles which are relevant to a student's thesis published or accepted for publication in well-acknowledged international journals, one of which must be indexed in either ISI, Scopus, Web of Science or Pubmed database with the student as the first author, **or** supplanted by a patent or a petty patent which is already granted with a patent or petty patent number.
4. A thesis progress report with an approval of the Chairman of the Graduate Study Committee must be submitted to the Graduate School every semester.

C. Non-credit Courses

1. Requirement of the Graduate School A foreign language
2. Requirement of the program The following courses must be enrolled and granted the Satisfory (S) grade.
   - 203753 (Scientific Reading and Writing in Chemistry)
   - 203754 (Statistics and Computer Programs for Chemical Research)
   - 203791 (Graduate Seminar in Chemistry 1)
   - 203792 (Graduate Seminar in Chemistry 2)
   - 203891 (Graduate Seminar in Chemistry 3)

D. Qualifying Exmination

1. A student must pass a qualifying examination which is conducted in English to evaluate his/her competency prior to proceeding with a thesis proposal.
2. A student may re-take a qualifying examination if he/she fails the first time, but it must be completed within the following regular semester.
3. If a student is not qualified conforming to a qualifying examination, he/she may be transferred to Master's Degree upon an approval of the Graduate Program Administrative Committee.

Type 1.2 : For student with Bachelor's Degree

Degree Requirements **72 credits**

A. Thesis

203897 Doctoral Thesis 72 credits

B. Academic Activities

1. A student has to attend seminar every semester throughout the program.
2. A student must present his/her work from his/her doctoral thesis at least once in a well-acknowledged international conference.
3. There must be at least 3 articles which are relevant to a student's thesis published or accepted for publication in well-acknowledged international journals, 2 of which must be indexed in either ISI, Scopus, Web of Science or Pubmed database with the student as the first author, **or** supplanted by a patent or a petty patent.
4. A thesis progress report with an approval of the Chairman of the Graduate Study Committee must be submitted to the Graduate School every semester.

C. Non-credit Courses

1. Requirement of the Graduate School A foreign language
2. Requirement of the program The following courses must be enrolled and granted the Satisfory (S) grade.
   - 203753 (Scientific Reading and Writing in Chemistry)
   - 203754 (Statistics and Computer Programs for Chemical Research)
   - 203791 (Graduate Seminar in Chemistry 1)
   - 203792 (Graduate Seminar in Chemistry 2)
   - 203891 (Graduate Seminar in Chemistry 3)
   - 203892 (Graduate Seminar in Chemistry 4)

D. Qualifying Exmination

1. A student must pass a qualifying examination which is conducted in English to evaluate his/her competency prior to proceeding with a thesis proposal.
2. A student may re-take a qualifying examination if he/she fails the first time, but it must be completed within the following regular semester.
3. If a student is not qualified conforming to a qualifying examination, he/she may be transferred to Master's Degree upon an approval of the Graduate Program Administrative Committee.

Type 2.1 : For student with Master's Degree

Degree Requirements	**a minimum of**	**48**	**credits**
A. Course work	a minimum of	12	credits
1. Graduate Courses	a minimum of	12	credits
1.1 Field of Specialization	a minimum of	8	credits
1.1.1 Required courses		2	credits

203891	Graduate Seminar in Chemistry 3	1	credit
203892	Graduate Seminar in Chemistry 4	1	credit

1.1.2 Elective courses a minimum of 6 credits

Elective courses are the courses enlisted below and any other graduate courses in chemistry (203) which have been approved by the thesis advisory committee.

203701	Combinatorial Chemistry	2	credits
203704	Natural Products Chemistry	2	credits
203705	Phytochemical Analysis	2	credits
203707	The Uses of Organic Raw Materials	3	credits
203708	Advanced Organic Synthesis	3	credits
203709	Advanced Organic Spectroscopy	3	credits
203712	Chemical Bonding	3	credits
203713	Inorganic Reactions and Mechanisms	3	credits
203714	Comprehensive Inorganic Chemistry	3	credits
203715	Spectroscopic Methods in Inorganic Chemistry	3	credits
203716	Descriptive Crystal Chemistry	3	credits
203719	Chemistry of Inorganic Materials	3	credits
203721	Chemical Thermodynamics	3	credits
203722	Chemical Kinetics	3	credits
203723	Electrochemistry	2	credits
203725	Colloid and Surface Chemistry	3	credits
203726	Nuclear and Radiochemistry	2	credits
203732	Electroanalysis	3	credits
203734	Chemical Analysis by Chromatographic Methods	3	credits
203735	Analysis of Foods and Nutraceuticals	3	credits
203736	Essence in Analytical Chemistry	3	credits
203739	Advanced Chemical Analysis	3	credits
203741	Plant Biochemistry	3	credits
203743	Enzymology	3	credits
203745	Protein Chemistry	3	credits
203749	Research Methods in Biochemistry	4	credits
203750	Environmental Analytical Chemistry	2	credits
203751	Computational Chemistry	3	credits

203752	Electronics of Analytical Instruments for Chemistry	3	credits
203753	Scientific Reading and Writing in Chemistry	2	credits
203754	Statistics and Computer Programs for Chemical Research	2	credits
203775	Polymer Characterisation and Properties	3	credits
203803	Stereochemistry and Asymmetric Synthesis	2	credits
203804	Chemistry of Heterocyclic Compounds	2	credits
203805	Green Chemistry	2	credits
203806	Organotransition Metals in Organic Synthesis	2	credits
203807	Physical Organic Chemistry	3	credits
203812	Coordination Chemistry	3	credits
203814	Organometallic Chemistry	3	credits
203821	Quantum Chemistry	3	credits
203824	Chemical Crystallography	3	credits
203825	Molecular Phenomena in Polymer Science	3	credits
203826	Statistical Thermodynamics	2	credits
203827	Molecular Spectroscopy	2	credits
203828	Polymer Synthesis and Characterisation	3	credits
203829	Polymer Properties and Testing	3	credits
203831	Chemometrics	2	credits
203833	Advanced Analytical Spectroscopy	3	credits
203835	Chemical Analysis Involving Radioactivity	3	credits
203838	Analytical Techniques for Surface and Structural Characterization	2	credits
203841	Biochemical Aspects of Nutrition	3	credits
203842	Biochemistry of Membranes	3	credits
203844	Biochemistry of Nucleic Acids	3	credits
203851	Environmental Toxicology and Residue Analysis	3	credits
203879	Selected Topics in Chemistry	2	credits
203889	Selected Topics in Chemistry	3	credits
1.2 Other courses (if any)		a maximum of 4	credits
1.2.1 Required courses		none	
1.2.2 Elective courses (if any)		a maximum of 4	credits

Elective courses are any graduate courses beside chemistry, and relevant to a student's thesis research. with approval of the graduate program administrative committee.

Note: if a student does not want to choose any other elective course, a student may choose any course from elective courses (1.1.2).

2. Advanced Undergraduate Courses none

B. Thesis

203899 Doctoral Thesis 36 credits

C. Non-credit Courses

1. Graduate School requirement a foreign language
2. Program requirement none

D. Academic activities

1. A student has to submit his/her study plan with an approval of his/her his/her Thesis Advisory Committee to the Graduate Program Administrative Committee within the first semester of her enrollment.
2. A student has to attend seminar every semester throughout the program.
3. A student must present his/her work from his/her doctoral thesis at least once in a well-acknowledged international conference.
4. There must be at least 1 article relevant to a student's thesis published or accepted for publication in an international journal indexed in either ISI, Scopus, Web of Science or Pubmed database with the student as the first author, **or** supplanted by a patent or a petty patent.

E. Qualifying Examination

1. A student must pass a qualifying examination which is conducted in English to evaluate his/her competency prior to proceeding with a thesis proposal.
2. A student may re-take a qualifying examination if he/she fails the first time, but it must be completed within the following regular semester.
3. If a student is not qualified conforming to a qualifying examination, he/she may be transferred to Master's Degree upon an approval of the Graduate Program Administrative Committee.

Type 2.2 : For student with Bachelor's Degree

Degree Requirements	**a minimum of**	**72**	**credits**
A. Coursework	a minimum of	24	credits

1. Graduate Courses a minimum of 24 credits

1.1 Field of specialization a minimum of 18 credits

1.1.1 Required courses 4 credits

203791 Graduate Seminar in Chemistry 1 1 credit

203792 Graduate Seminar in Chemistry 2 1 credit

203891 Graduate Seminar in Chemistry 3 1 credit 203892 Graduate Seminar in Chemistry 4 1 credit

1.1.2 Compulsory elective courses a minimum of 6 credits

A student must select courses from the following list:

203708	Advanced Organic Synthesis	3	credits
203714	Comprehensive Inorganic Chemistry	3	credits
203721	Chemical Thermodynamics	3	credits
203736	Essence in Analytical Chemistry	3	credits
203739	Advanced Chemical Analysis	3	credits
203743	Enzymology	3	credits
203749	Research Methods in Biochemistry	4	credits
203807	Physical Organic Chemistry	3	credits
203812	Coordination Chemistry	3	credits
203821	Quantum Chemistry	3	credits

1.1.3 Elective courses a minimum of 8 credits

Elective courses are any graduate courses from the list below, or those enlisted in session 1.1.2, or any other graduate courses in chemistry (203) with approval of the thesis advisory committee.

203701	Combinatorial Chemistry	2	credits
203704	Natural Products Chemistry	2	credits
203705	Phytochemical Analysis	2	credits
203707	The Uses of Organic Raw Materials	3	credits
203709	Advanced Organic Spectroscopy	3	credits
203712	Chemical Bonding	3	credits
203713	Inorganic Reactions and Mechanisms	3	credits
203715	Spectrosocpic Methods in Inorganic Chemistry	3	credits
203716	Descriptive Crystal Chemistry	3	credits
203719	Chemistry of Inorganic Materials	3	credits
203722	Chemical Kinetics	3	credits

203723	Electrochemistry	2	credits
203725	Colloid and Surface Chemistry	3	credits
203726	Nuclear and Radiochemistry	2	credits
203732	Electroanalysis	3	credits
203734	Chemical Analysis by Chromatographic Methods	3	credits
203735	Analysis of Foods and Nutraceuticals	3	credits
203741	Plant Biochemistry	3	credits
203745	Protein Chemistry	3	credits
203750	Environmental Analytical Chemistry	2	credits
203751	Computational Chemistry	3	credits
203752	Electronics of Analytical Instruments for Chemistry	3	credits
203753	Scientific Reading and Writing in Chemistry	2	credits
203754	Statistics and Computer Programs for Chemical Research	2	credits
203775	Polymer Characterisation and Properties	3	credits
203803	Stereochemistry and Asymmetric Synthesis	2	credits
203804	Chemistry of Heterocyclic Compounds	2	credits
203805	Green Chemistry	2	credits
203806	Organotransition Metals in Organic Synthesis	2	credits
203814	Organometallic Chemistry	3	credits
203824	Chemical Crystallography	3	credits
203825	Molecular Phenomena in Polymer Science	3	credits
203826	Statistical Thermodynamics	2	credits
203827	Molecular Spectroscopy	2	credits
203828	Polymer Synthesis and Characterisation	3	credits
203829	Polymer Properties and Testing	3	credits
203831	Chemometrics	2	credits
203833	Advanced Analytical Spectroscopy	3	credits
203835	Chemical Analysis Involving Radioactivity	3	credits
203838	Analytical Techniques for Surface and Structural Characterization	2	credits
203841	Biochemical Aspects of Nutrition	3	credits

203842	Biochemistry of Membranes	3	credits
203844	Biochemistry of Nucleic Acids	3	credits
203851	Environmental Toxicology and Residue Analysis	3	credits
203879	Selected Topics in Chemistry	2	credits
203889	Selected Topics in Chemistry	3	credits

1.2 Other courses (if any) a maximum of 6 credits

1.2.1 Required courses none

1.2.2 Elective courses (if any) a maximum of 6 credits

Elective courses are any graduate courses beside chemistry, and relevant to a student's thesis research. with an approval of the graduate program administrative committee.

Note: if a student does not want to choose any other elective course, a student may choose any course from compulsory (1.1.2) and/or elective courses (1.1.3).

2. Advanced Undergraduate Courses none

B. Thesis

203898	Doctoral Thesis	48	credits

C. Non-credit Courses

1. Graduate School requirement a foreign language
2. Program requirement none

D. Academic activities

1. A student has to submit his/her study plan with an approval of his/her Thesis Advisory Committee to the Graduate Program Administrative Committee within the first semester of her enrollment.
2. A student has to attend seminar every semester throughout the program.
3. A student must present his/her work from his/her doctoral thesis at least once in a well-acknowledged international conference.
4. There must be at least 2 articles which are relevant to a student's thesis published or accepted for publication in well-acknowledged international journals, 1 of which must be indexed in either ISI, Scopus, Web of Science or Pubmed database with the student as the first author, **or** supplanted by a patent or a petty patent.

E. Qualifying Examination

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3. If a student is not qualified conforming to a qualifying examination, he/she may be transferred to Master's Degree upon an approval of the Graduate Program Administrative Committee