

Master & Doctor of Philosophy Programs in Physics

Research Fields

Computational Condensed Matter Physics

Experimental Condensed-Matter Physics

Microfluidic Physics

Plasma and Beam Physics

Laser Cooling and Trapping of Neutral Atoms

Atmospheric Physics

Astrophysics



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



Doctor of Philosophy Program in Physics (International Program)

Type 1.1 : Student with Master's degree

Degree Requirements	48	credits
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A. Thesis	48	credits
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207898 Doctoral Thesis	48	credits
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B. Academic activities

- 1) A student has to present a seminar in English on the topic related to his/her thesis once every semester for at least three semesters and students have to attend seminar every semester that the course is offered.
- 2) The whole or a part of the thesis must be published/accepted for publication in international journals with peer review indexed by ISI, Scopus, IEEE, PubMed or Web of Science for at least 2 papers (as the first author), where 2 of them must have ISI Impact factor and must be in journal with quartile scores of 1 or 2 in the research field.
- 3) A student must present at least one oral presentation on the topic related to his/her thesis at international meeting(s).
- 4) A student is required to exercise his/her teaching and/or laboratory skill by taking the role as a teaching assistant in an introductory physics laboratory course or a tutor for an undergraduate physics course.
- 5) A student has to report thesis progression to the Graduate School every semester through the approval of the Chairman of the Graduate Study Committee of the Faculty of Science.

C. Non-credit course

- 1) Graduate School's requirement: a foreign language
- 2) Program's requirement: A student who is deficient in basic background must register courses recommended by the graduate program administrative committee.

D. Qualifying examination

- 1) A student must complete a qualifying examination to evaluate his/her ability before presenting a thesis proposal.
- 2) An unsuccessful examinee must take a re-examination, for the last time, within the following regular semester.

E. Comprehensive examination

Having submitted a request form to the Graduate School, approved by thesis committee or major thesis advisor, a student must then complete a comprehensive examination.

Type 1.2 : Student with Bachelor's degree

Degree Requirements 72 credits

A. Thesis 72 credits

207897 Doctoral Thesis 72 credits

B. Academic activities

- 1) A student has to present a seminar in English on the topic related to his/her thesis once every semester for at least three semesters and students have to attend seminar every semester that the course is offered.
- 2) The whole or a part of the thesis must be published/accepted for publication in international journals with peer review indexed by ISI, Scopus, IEEE, PubMed or Web of Science for at least 3 papers (as the first author), where 2 of them must have ISI Impact factor and must be in journal with quartile scores of 1 or 2 in the research field.
- 3) A student must present at least one oral presentation on the topic related to his/her thesis at international meeting(s).
- 4) A student is required to exercise his/her teaching and/or laboratory skill by taking the role as a teaching assistant in an introductory physics laboratory course or a tutor for an undergraduate physics course.
- 5) A student has to report thesis progression to the Graduate School every semester through the approval of the Chairman of the Graduate Study Committee of the Faculty of Science.

C. Non-credit course

- 1) Graduate School's requirement : a foreign language
- 2) Program's requirement : A student who is deficient in basic background must register courses recommended by the graduate program administrative committee.

D. Qualifying examination

- 1) A student must complete a qualifying examination to evaluate his/ her ability before presenting a thesis proposal.
- 2) An unsuccessful examinee must take a re-examination, for the last time, within the following regular semester.
- 3) An unsuccessful examinee may transfer to Master's Degree studies with the approval of the Graduate Program Administrative Committee.

E. Comprehensive examination

Having submitted a request form to the Graduate School, approved by thesis committee or major thesis advisor, a student must then complete a comprehensive examination.

Type 2.1 : 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	12	credits
1.1.1 Required courses		none	
1.1.2 Elective courses	a minimum of	12	credits

Select any graduate courses in the field of thesis research interest from the following physics courses or other courses with an approval from the advisory committee. A minimum of 6 credits must be from 800 level courses.

If a student had never completed any graduate level course in Statistical Mechanics or equivalent he/she must take the following course : 207708 Thermodynamics and Statistical Mechanics.

If a student had never complete any graduate level course in mathematical physics or equivalent he/she must take the following course : 207711 Theoretical Methods in Physics.

207701	Theoretical Mechanics	3 credits
207703	Quantum Mechanics 1	3 credits
207704	Quantum Mechanics 2	3 credits
207705	Classical Electrodynamics 1	3 credits
207706	Classical Electrodynamics 2	3 credits
207708	Thermodynamics and Statistical Mechanics	3 credits
207711	Theoretical Methods in Physics	3 credits
207712	Research Conduction and Presentation in Physics	3 credits
207723	Computational Physics	3 credits
207724	Econophysics	3 credits
207727	Interactions of Ions with Matters	3 credits
207729	Microfluidics	3 credits
207741	Theory of Solid 1	3 credits
207742	Theory of Solid 2	3 credits
207743	X-Ray Crystallography 1	3 credits
207744	X-Ray Crystallography 2	3 credits
207745	Electronic Structure Theory and Calculations	3 credits

207761	Nuclear Physics 1	3 credits
207762	Nuclear Physics 2	3 credits
207765	Nuclear Technology and Applications	3 credits
207766	Nuclear Instruments and Methods	3 credits
207767	Beam Probe Characterization Techniques	3 credits
207768	Beam Physics	3 credits
207769	Accelerator Physics and Technology	3 credits
207775	Quantum Optics 1	3 credits
207776	Quantum Optics 2	3 credits
207777	Trapping and Cooling of Neutral Atoms	3 credits
207779	Quantum Field Theory	3 credits
207781	Astrophysics 1	3 credits
207782	Astrophysics 2	3 credits
207783	Physics of the Interstellar Medium	3 credits
207785	Cosmology	3 credits
207787	Observational Astronomy	3 credits
207794	Selected Topics in Physics	3 credits
207808	Statistical Mechanics	3 credits
207844	Physics of Semiconductor Devices	3 credits
207846	Selected Topics in Solids State Physics	3 credits
207862	Selected Topics in Nuclear Physics	3 credits
207868	Selected Topics in Plasma and Beam Physics	3 credits
207878	Selected Topics in Optical Problems	3 credits
207881	Elementary Particle Physics and Cosmology	3 credits
207882	Stellar Stability	3 credits
207888	Selected Topics in Astrophysics	3 credits
207891	Ph.D. Colloquium in Physics 1	2 credits
207892	Ph.D. Colloquium in Physics 2	2 credits

Note : Course in the field of specialization are courses in graduate level in Physics (207...), Applied Physics (217...), and Astronomy (226...).

1.2 Other courses	none
1.2.1 Required courses	none
1.2.2 Elective courses	none

2. Advanced undergraduate courses	none	
B. Thesis	36	credits
207899 Doctoral Thesis	36	credits

C. Non-credit course

- 1) Graduate School's requirement: a foreign language
- 2) Program's requirement: none

D. Academic activities

- 1) A student has to present a seminar in English on the topic related to his/her thesis once every semester for at least three semesters and students have to attend seminar every semester that the course is offered.
- 2) The whole or a part of the thesis must be published/accepted for publication in international journals with peer review indexed by ISI, Scopus, IEEE, PubMed or Web of Science for at least 2 papers (as the first author), where 1 of them must have ISI Impact factor and must be in journal with quartile scores of 1 or 2 in the research field.
- 3) A student must present at least one oral presentation on the topic related to his/her thesis at international meeting(s).
- 4) A student is required to exercise his/her teaching and/or laboratory skill by taking the role as a teaching assistant in an introductory physics laboratory course or a tutor for an undergraduate physics course.
- 5) A student has to report thesis progression to the Graduate School every semester through the approval of the Chairman of the Graduate Study Committee of the Faculty of Science.

E. Qualifying examination

- 1) A student must complete a qualifying examination to evaluate his/her ability before presenting a thesis proposal.
- 2) An unsuccessful examinee must take a re-examination, for the last time, within the following regular semester.

F. Comprehensive examination

Having submitted a request form to the Graduate School, approved by thesis committee or major thesis advisor, a student must then complete a comprehensive examination.

Type 2.2 : Student with Bachelor's degree

Degree Requirements	a minimum of	75	credits
A. Course work	a minimum of	27	credits
1. Graduate Courses	a minimum of	27	credits
1.1 Field of specialization	a minimum of	27	credits
1.1.1 Required courses		21	credits
207701	Theoretical Mechanics		3 credits
207703	Quantum Mechanics 1		3 credits

207704	Quantum Mechanics 2	3 credits
207705	Classical Electrodynamics 1	3 credits
207706	Classical Electrodynamics 2	3 credits
207708	Thermodynamics and Statistical Mechanics	3 credits
207711	Theoretical Methods in Physics	3 credits

1.1.2 Elective courses a minimum of 6 credits

Select any graduate courses in the field of thesis research interest from the following physics courses or other courses with an approval from the advisory committee. A minimum of 3 credits must be from 800 level courses.

207712	Research Conduction and Presentation in Physics	3 credits
207723	Computational Physics	3 credits
207724	Econophysics	3 credits
207727	Interactions of Ions with Matters	3 credits
207729	Microfluidics	3 credits
207741	Theory of Solid 1	3 credits
207742	Theory of Solid 2	3 credits
207743	X-Ray Crystallography 1	3 credits
207744	X-Ray Crystallography 2	3 credits
207745	Electronic Structure Theory and Calculations	3 credits
207761	Nuclear Physics 1	3 credits
207762	Nuclear Physics 2	3 credits
207765	Nuclear Technology and Applications	3 credits
207766	Nuclear Instruments and Methods	3 credits
207767	Beam Probe Characterization Techniques	3 credits
207768	Beam Physics	3 credits
207769	Accelerator Physics and Technology	3 credits
207775	Quantum Optics 1	3 credits
207776	Quantum Optics 2	3 credits
207777	Trapping and Cooling of Neutral Atoms	3 credits
207779	Quantum Field Theory	3 credits
207781	Astrophysics 1	3 credits
207782	Astrophysics 2	3 credits
207783	Physics of the Interstellar Medium	3 credits
207785	Cosmology	3 credits

207787	Observational Astronomy	3 credits
207794	Selected Topics in Physics	3 credits
207808	Statistical Mechanics	3 credits
207844	Physics of Semiconductor Devices	3 credits
207846	Selected Topics in Solids State Physics	3 credits
207862	Selected Topics in Nuclear Physics	3 credits
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207881	Elementary Particle Physics and Cosmology	3 credits
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207888	Selected Topics in Astrophysics	3 credits
207891	Ph.D. Colloquium in Physics 1	2 credits
207892	Ph.D. Colloquium in Physics 2	2 credits

Note : Course in the field of specialization are courses in graduate level in Physics (207...), Applied Physics (217...), and Astronomy (226...).

1.2 Other courses	none
1.2.1 Required courses	none
1.2.2 Elective courses	none
2. Advanced undergraduate courses	none
B. Thesis	48 credits
207898 Doctoral Thesis	48 credits

C. Non-credit course

- 1) Graduate School's requirement: a foreign language
- 2) Program's requirement: none

D. Academic activities

- 1) A student has to present a seminar in English on the topic related to his/her thesis once every semester for at least three semesters and students have to attend seminar every semester that the course is offered.
- 2) The whole or a part of the thesis must be published/accepted for publication in international journals with peer review indexed by ISI, Scopus, IEEE, PubMed or Web of Science for at least 2 papers (as the first author), where 2 of them must have ISI Impact factor and must be in journal with quartile scores of 1 or 2 in the research field.

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