Doctor of Philosophy Programme in Physics (International Programme)

หลักสูตร ปรัชญาดุษฎีบัณฑิต   สาขาวิชา ฟิสิกส์ (หลักสูตรนานาชาติ) (ภาคปกติ)

Faculty of Science   Department of Physics

คณะวิทยาศาสตร์   ภาควิชา ฟิสิกส์

Expected number of students to be accepted all year round : 20 Students

Admission Requirements

A candidate must:

1. Thai or foreign national without severe health difficulty.
2. hold a Bachelor's degree in Physics, Chemistry or Mathematics with a minimum grade point average of 3.50 or have a Master's degree in Physics, Chemistry, Mathematics, Geology, General Science, Engineering or related fields with a minimum grade point average of 3.50.
3. have a TOEFL score of at least 500, TOEFL computer-based score of 173, TOEFL Internet-based score of 61, or IELTS score of 5 .

   Those who do not have any of the test scores specified above will have to take the English Proficiency Examination of the Faculty of Graduate Studies on the specified examination day.

Exemptions from the above conditions may be made by the Programme Committee and the Dean of Faculty of Graduate Studies.

Curriculum Structure

credit	
For students with Master's degree	
Required Courses	6
Elective Courses not less than	6
Dissertation	36
For students with Bachelor's degree	
Required Courses	21
Elective Courses not less than	3
Dissertation	48

			credit
Required Courses			
For students with Bachelor's degree			
SCPY	502	Classical Mechanics	3(3-0-6)
SCPY	503	Quantum Mechanics	3(3-0-6)
SCPY	504	Thermodynamics and Statistical Physics	3(3-0-6)
SCPY	505	Mathematical Methods for Physicists	3(3-0-6)
SCPY	507	Classical Electrodynamics	3(3-0-6)
SCPY	508	Contemporary Physics	3(3-0-6)
SCPY	593	Seminar III	1(1-0-2)
SCPY	594	Seminar IV	1(1-0-2)
SCPY	595	Seminar V	1(1-0-2)
For students with Master's degree			
SCPY	508	Contemporary Physics	3(3-0-6)
SCPY	593	Seminar III	1(1-0-2)
SCPY	594	Seminar IV	1(1-0-2)
SCPY	595	Seminar V	1(1-0-2)
Elective Courses			
SCPY	511	Atomic and Molecular Physics	3(3-0-6)
SCPY	512	Celestial Mechanics	3(3-0-6)
SCPY	513	Computational Physics	3(3-0-6)
SCPY	515	Electrical Materials	3(3-0-6)
SCPY	516	Electronic Devices and Circuits	3(3-0-6)
SCPY	517	Fluid Mechanics	3(3-0-6)
SCPY	518	Numerical Analysis	3(3-0-6)
SCPY	519	Nuclear Physics	3(3-0-6)
SCPY	521	Physics of Semiconductor	3(3-0-6)
SCPY	522	Advanced Quantum Mechanics	3(3-0-6)
SCPY	523	Classical Field Theory	3(3-0-6)
SCPY	524	Fourier Optics	3(3-0-6)
SCPY	531	Cosmic Rays	3(3-0-6)
SCPY	543	Surface and Interface Physics	3(3-0-6)
SCPY	561	Fundamentals of Biophysics	3(3-0-6)
SCPY	562	Modeling and Simulation in Biophysics	3(3-0-6)
SCPY	570	Signal and Image Processing	3(3-0-6)
SCPY	571	Parallel Programming	3(3-0-6)
SCPY	572	Geophysical Prospecting: Theory and Applications	3(3-0-6)
SCPY	573	Geophysical Prospecting: Data Acquisition and Interpretation	3(3-0-6)
SCPY	619	Quantum Theory	3(3-0-6)
SCPY	620	Non-Perturbative Methods in Quantum Field Theory	3(3-0-6)

SCPY	621	Super symmetry in Field Theory and String	3(3-0-6)
SCPY	622	Quantum Optics	3(3-0-6)
SCPY	623	Quantum Information and calculation	3(3-0-6)
SCPY	624	Quantum keys and communication	3(3-0-6)
SCPY	625	Quantum Theory and Applied Quantum Information in Economy	3(3-0-6)
SCPY	626	Physics Education	3(3-0-6)
SCPY	627	Data Analysis in Physics Education	3(3-0-6)
SCPY	629	Special Topics in Physics Education	1(1-0-2)
SCPY	630	Physics of The Solid Earth	3(3-0-6)
SCPY	635	Geology for Physicists	3(3-0-6)
SCPY	636	Optoelectronics	3(3-0-6)
SCPY	637	Molecular Simulation	3(3-0-6)
SCPY	638	Molecular Quantum Mechanics	3(3-0-6)
SCPY	639	Quantum Field Theory	3(3-0-6)
SCPY	640	Theory of Many-Particle Systems	3(3-0-6)
SCPY	641	Astrophysics	3(3-0-6)
SCPY	642	Diffraction Technique	3(3-0-6)
SCPY	643	Thin Film Physics and Technology	3(3-0-6)
SCPY	644	Selected Topics in Thin Film and Surface Physics	3(3-0-6)
SCPY	645	Laser Theory	3(3-0-6)
SCPY	646	Fractals and Chaos	3(3-0-6)
SCPY	647	Nonlinear Waves	3(3-0-6)
SCPY	648	Computational Nonlinear Phenomena	3(3-0-6)
SCPY	649	Plasma Physics	3(3-0-6)
SCPY	650	Technologies and Applications	3(3-0-6)
SCPY	651	Semiconductor Devices	3(3-0-6)
SCPY	652	Superconductivity	3(3-0-6)
SCPY	653	Methods Special in Theoretical Superconductivity	3(3-0-6)
SCPY	654	Radio Astronomy	3(3-0-6)
SCPY	656	Selected Topics in Condensed Matter Physics	3(3-0-6)
SCPY	660	Special Topics in Laser Applications	3(3-0-6)
SCPY	661	Special Topics in Applied Physics I	3(3-0-6)
SCPY	662	Special Topics in Applied Physics II	3(3-0-6)
SCPY	663	Special Topics in Physics I	3(3-0-6)
SCPY	664	Special Topics in Physics II	3(3-0-6)
SCPY	665	Special Topics in Physics III	3(3-0-6)
SCPY	666	Special Topics in Nonlinear Phenomena	3(3-0-6)
SCPY	667	Special Topics in Astronomy	3(3-0-6)
SCPY	668	Contemporary Biophysics	3(3-0-6)
SCPY	670	Inverse Theory and Applications	3(3-0-6)
SCPY	671	Exploration Seismology	3(3-0-6)
SCPY	672	Geophysical Forward Modeling and Inversion	3(3-0-6)

SCPY 684 Selected Topics in Geophysics		3(3-0-6)
Dissertation		
SCPY 699 Dissertation		36(0-108-0)
SCPY 799 Dissertation		48(0-144-0)
* These May Change in Cases Where There are Suggestions for The Improvement he Curriculum		

Details of Scholarships

1. Scholarship of the 60th Year Supreme Reign of His Majesty King Bhumibol Adulyadej.
2. Science Achievement scholarship of Thailand. (ทุนเรียนดีวิทยาศาสตร์แห่งประเทศไทย)
3. Institutional Strengthening Program (ทุนเสริมสร้างนักวิทยาศาสตร์รุ่นใหม่)
4. Teaching Assistantship   Development (ทุนพัฒนาผู้ช่วยสอน)

Additional Information for Applicants

There are several research field of interest as can be seen on our website.

Application Process

Application is only available via online application at www.grad.mahidol.ac.th.

Required Documents

Prepare the following required documents to submit via online admission system or post :

- Two (2) recent photographs (1x1 inch in size)

- A copy of an applicant's degree certificate or a letter of graduation certification   2 copies
  (for an applicant with a degree completion)

- A letter certifying that an applicant is currently in the last semester prior to graduation   2 copies
  (for an applicant seeking for a degree)

- A detailed transcript of a degree (for an applicant with a degree completion)   2 copies

- A grade report with course names and grades received from the first to the current   2 copies
  semester prior to graduation

- A copy of identification card   2 copies

- A copy of house registration certification   2 copies

- A copy of proof of payment.

Submitting documents via online admission system.

- All documents must be in pdf format (maximum size 2 MB)
- Recent photograph must be in jpeg format only (maximum size 2 MB)

Job option after graduation

1. Research and academic positions in private sectors, government offices and universities.
2. Industrial segments in Applied Physics.
3. SME Businesses in Applied Physics.

Further information may be obtained from Director of Graduate Studies, Physics:

1. **Assoc. Prof. Dr. Weerachai Siripunvaraporn   (E-mail : weerachai.sir@mahidol.ac.th)**
    Room P.605, Physics Building, Floor 6,
    Department of Physics, Faculty of Science,
    Tel. : 0 2201 5770-1   Fax. : 0 2354 7159

2. **Asst. Prof. Dr. Charin Modchang   (E-mail : charin.mod@mahidol.ac.th)**
    Room P.605, Physics Building, Floor 6,
    Department of Physics, Faculty of Science,
    Tel. : 0 2201 5770-1   Fax. : 0 2354 7159

Program Coordinator

Miss Nipaporn Suwannawong   (E-mail : bum_9577@hotmail.com)
Room P.605, Physics Building, Floor 6,
Department of Physics, Faculty of Science,
Tel. : 0 2201 5770-1   Fax. : 0 2354 7159

<u>Note</u>   1. For more education information : **www.grad.mahidol.ac.th**

For more Information please contact The Student Admission Section.
Tel . 0 2441 4125 ext. 208-210 , 0 2441 9129, E-mail : gradthai@mahidol.ac.th

Letter of Recommendation

for Admission to the Physics Graduate Program, Mahidol University

Please complete the form and return it directly to: Head of Ph.D. program

Department of Physics, Faculty of Science
Mahidol University
272 Rama VI Rd., Ratchathewi
Bangkok 10400

Applicant's name: _____

_____

Part I: *Evaluator's information*

Title and name: _____

School or Business: _____

Address:_____

_____

Telephone number: _____

E-mail address: _____

Part II: *Please answer the following questions about the applicant.*

How do you know the applicant? _____

_____

How long have you known the applicant? _____

In terms of his or her academic ability, how does the applicant rank among other students in his or her group (e.g Top 10% of his or her class)?

_____

Part III: *What qualifies this applicant for the graduate program at Mahidol University?   Please explain. Please also give information about his or her past accomplishments, particularly in research.*

Evaluator's signature _____ Date _____

Note that   Letter of Recommendation and Statement of Purpose should be returned as soon as possible to the program. Please submit the evaluation forms with your application.

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