



**THE INSTITUTE FOR  
FUNDAMENTAL STUDY**



## THE INSTITUTE FOR FUNDAMENTAL STUDY

The Institute for Fundamental Study, “The Tah Poe Academia Institute,” (IF, formerly the TPTP) is a research institute established as the 21<sup>st</sup> Faculty of Naresuan University, Thailand. IF’s academic mission is to provide research and academic programs in Theoretical Physics and other related disciplines.

IF’s official inauguration was announced on the 14<sup>th</sup> of March 2011, retroactive from the 30<sup>th</sup> of January 2011, by the Naresuan University Council. IF’s origin as TPTP can be traced back to the 1<sup>st</sup> of January 1994 as the Student’s Forum for Theoretical Physics (SFTP) at Chiang Mai University. The SFTP was reformed to the Tah Poe Group of Theoretical Physics (TPTP) at Naresuan University on the 18<sup>th</sup> of August 1996. In 2006, the group was renamed the Tah Poe Academia Institute for Theoretical Physics (also called TPTP) until its official inauguration as IF in 2011.

IF research focuses on theoretical physics, general relativity (GR), theoretical cosmology, quantum field theory (QFT), and theoretical high energy physics beyond the standard model of particle physics with future planning of study in the physics of economic and social systems. IF’s two research groups are CGL: Laboratory of Cosmology and Gravity (a cosmology node of the Thailand National Center of Excellence in Physics) and QFHEP: Quantum Field Theory and High Energy Physics Research. Both groups have acquired a high-international research profile with more than 16 research articles/year published in highly respected world-class scholarly journals. IF provides three academic programs, one of which is at the Master’s level, aiming to strengthen and to improve the standard of physics teaching and research in the Asian region.

# Master of Science Program in Theoretical Physics

## Research Focus

- Theoretical Structure
- Classical Dynamics
- Quantum Dynamics
- Classical Thermodynamics

## Structure of the Program

### 1. Credit Requirements \*

Requirements	Option 1.2
Coursework	24
- Core Courses	22
- Electives	2
Required Non-credit Courses	4
Thesis	12
<b>Total</b>	<b>36</b>

\* Minimum credits required

### 2. Core Courses

Requirements	Option 1.2	
	Course No.	Cr.
Mathematical Methods of Physics	897501	2
Equilibrium Thermodynamics	897511	3
Equilibrium Statistical Mechanics and Kinetic Theory	897513	3
Vibrations and Waves	897521	3
Dynamical System	897531	2
Classical Dynamics	897561	3

Requirements	Option 1.2	
	Course No.	Cr.
Classical Field Theory	897563	3
Non-Relativistic Quantum Mechanics	897565	3
<b>Total</b>	<b>8</b>	<b>22</b>

### 3. Electives

Requirements	Option 1.2	
	Course No.	Cr.
Green's Functions and Propagation	897503	2
Numerical Methods in Physics	897505	2
Fluid Dynamics	897522	2
Introduction to Cosmology	897571	2
<b>Total</b>	<b>≥1</b>	<b>≥2</b>

### 4. Required Non-credit Courses

Requirements	Option 1.2	
	Course No.	Cr.
Research Methodology in Science and Technology	897509	3
Seminar 1	897599	1
<b>Total</b>	<b>2</b>	<b>4</b>

### 5. Thesis Credit Requirements

Requirements	Option 1.2	
	Course No.	Cr.
Thesis 1, Option 1.2	897591	6
Thesis 2, Option 1.2	897592	6
<b>Total</b>	<b>2</b>	<b>12</b>