

DOCTOR OF PHYSICS



King Mongkut's University of Technology Thonburi

HISTORY OF THE PROGRAM

Department of Physics, KMUTT, has been established since 1952 and aims to provide a high-level education and to develop change agents who deeply understand broad range of physics and will become future leaders in their own fields. To achieve these ultimate goals, the department has offered Ph.D. program in Physics since 1991. Teaching and research here are focused on fundamental physics and on the practical application of these concepts to technology and innovation. Through studies and research, students come to understand fundamental physics and also master in their own field of specialty. Moreover they also have opportunity to collaborate and do research with industrial partners and researchers from several institutes (NECTEC, NSTDA, TINT, etc.) This provides a unique and stimulating intellectual environment for graduate study.

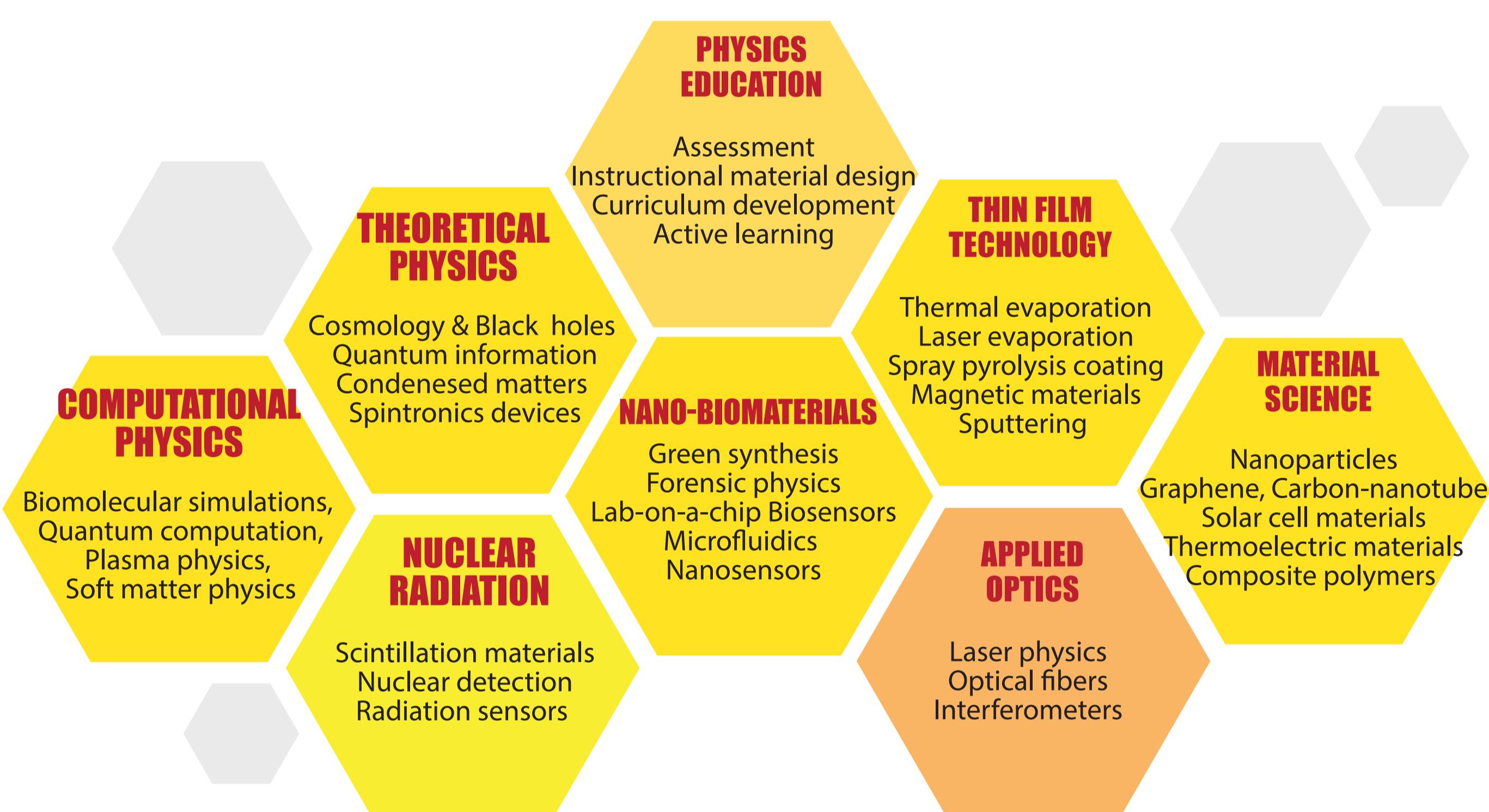


Program Detail

- This graduate program which was revised for 2022 academic year is offered by Department of Physics, KMUTT.
- The courses are delivered in both Thai and English.
- Full-time registration is required
- The program uses a two semester system per academic year.
- First semester: August - December
- Second semester: January - May
- After graduation, students may pursue careers in various fields such as science, academia, or industry.
- The applicant must hold a master degree in physics or related fields, and has good English communication skill.



Research Fields



Learning Outcomes

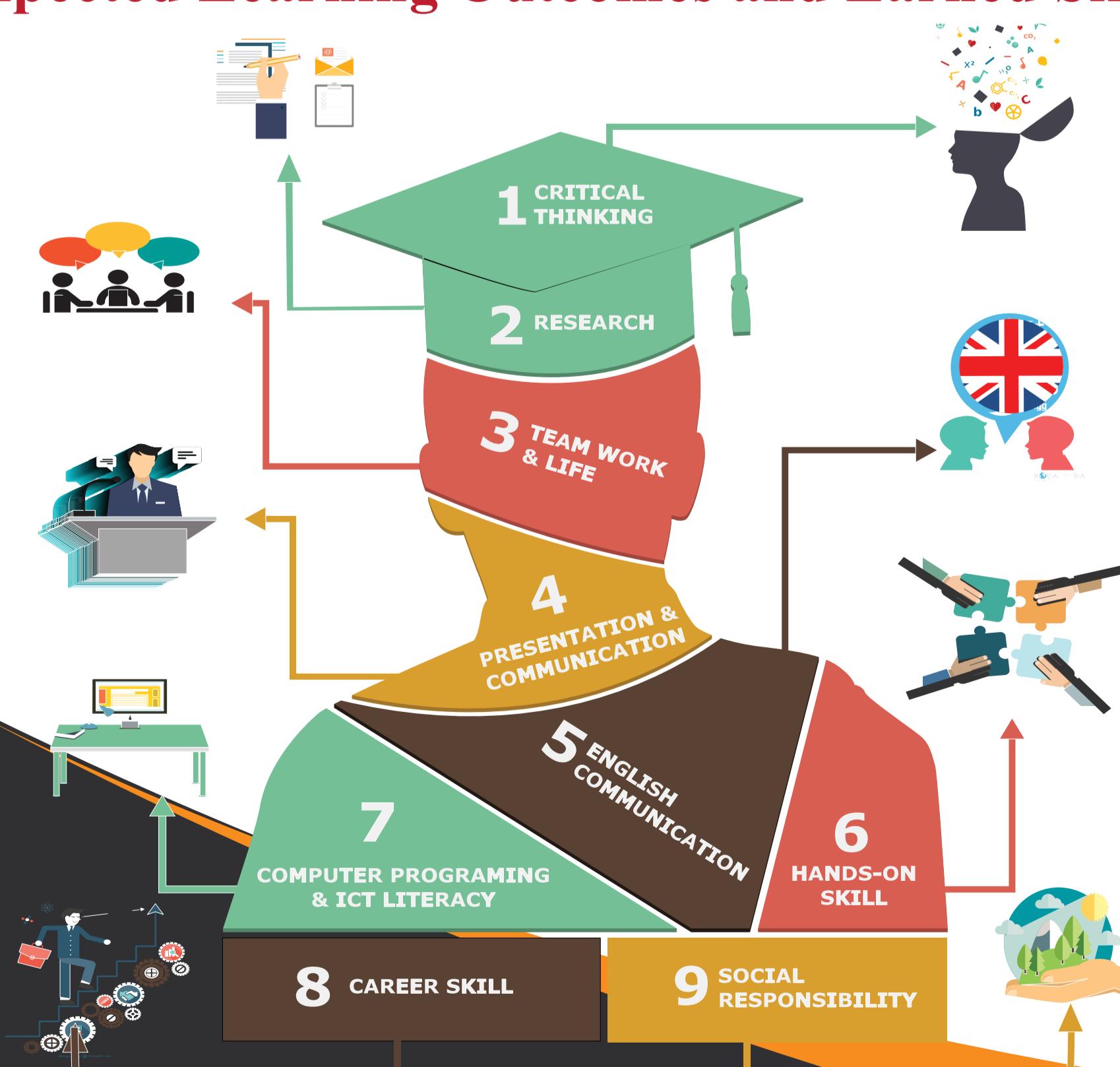
Program Learning Outcomes

PLO1: Students can apply both theoretical and experimental physics knowledge to produce exceptional physics research or innovation.

PLO2: Students conduct their research with professional ethics.

PLO3: Students are able to gather and analyse research data using advanced methodology, and efficiently present their original idea.

Expected Learning Outcomes and Earned Skills



Stage Learning Outcomes

Developing strong fundamental knowledge and having professional ethics



Curriculum

The program offers three tracks: 1) Physics 2) Physics Education and 3) Materials Physics & Nanotechnology.

Two study plans are provided: 1) courseworks and dissertation 2) dissertation w/o coursework. The total credits of both plans are 48 credits, and most students can accomplish within 3 years.

PLAN 1.1

- Students learn few courseworks and do research.
- Compulsory course 3 credits (Contemporary physics)
- Elective courses 9 credits (choosing from the following list based on student's interest)
- Seminar I & II (no credit)
- Dissertation 36 credits

PLAN 2.1

- Students take the dissertation for 48 credits, and seminar I & II.
- No required coursework.
- Focus on research and be expert.

ELECTIVE COURSES

1. Fundamental Physics and Computations

- Advanced Electromagnetic Theory
- Advanced Nuclear Physics
- Magnetohydrodynamics
- High Performance Computing

2. Quantum Physics

- Advanced Quantum Mechanics
- Quantum Electronics Devices
- Advanced Quantum Information and Quantum Computation

3. Condensed Matters

- Advanced Solid-State Physics
- Luminescence and Scintillation in Solid State Materials
- Theory of Superconductivity
- Theory of Soft matters
- Thin film technology for the Future

4. Optics

- Quantum Optics
- Laser in Medical Physics

5. Nanotechnology

- Carbon-based Nanomaterials
- Advanced Nanomaterials
- Advanced Characterization of Nanomaterials
- Electrospinning and Nanofibrous Material
- Electrochemical Application in Nanomaterials
- Nano-Biomaterials

6. Physics Education

- Physics Education
- Physics Concepts and Misconception
- Data Analysis in Physics Education
- Communication in Science and Technology
- Technology and Multimedia Learning for Teacher in Digital Era

