

DURATION

Master of Science – Mixed Mode and Coursework
(Medical Physics, Solid State Physics, Applied Geophysics and Radiation Science)
Full-time: Min. 2 semesters / Max. 4 semesters

Master of Science – Mixed Mode
(International Dual Degree Programme [(Master of Engineering in Electrical and Microsystems Engineering) and (Master of Science in Solid State Physics)])
Full-time: Min. 4 semesters / Max. 10 semesters

Master of Science (MSc) – Research
Full-time: Min. 2 semesters / Max. 6 semesters
Part-time: Min. 4 semesters / Max. 12 semesters

Doctor of Philosophy (PhD) – Research
Full-time: Min. 4 semesters / Max. 10 semesters
Part-time: Min. 6 semesters / Max. 15 semesters

Medium of Instruction: English.

FACILITIES

The School of Physics houses many scientific facilities and laboratories to support ongoing research activities. Some of these are:

- ❖ Computer and CAI laboratory
- ❖ Energy Research Laboratory
- ❖ Engineering Physics Laboratory
- ❖ Geophysics Laboratory
- ❖ Medical Physics Laboratory
- ❖ Nano-Optoelectronics Research & Technology Laboratory (NOR Lab)
- ❖ Radiation Biophysics Laboratory
- ❖ Solid State Laboratory
- ❖ Thermal Management Research Laboratory
- ❖ X-Ray Crystallography Laboratory
- ❖ Microprocessor laboratory
- ❖ Workshop for Engineering Physics

We also have a smart partnership with the Institute of Nano-Optoelectronics Research and Technology (INOR) focusing on the shared research facilities and collaborations.



INTERNATIONAL STUDY PROGRAM

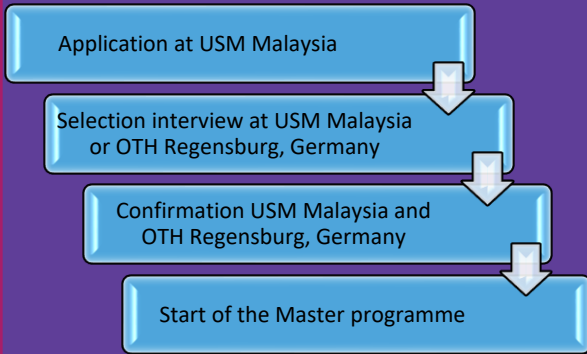
International Dual Degree Programme [(Master of Engineering in Electrical and Microsystems Engineering) and (Master of Science in Solid State Physics)]

Our new Master's degree programme places a strong focus on electronics and semiconductor technology. It provides a solid theoretical background as well as a minimum of 6 months internship in one of our international partner companies (e.g. Osram, Infineon Technologies, Continental Automotive Corporation) in Malaysia or Germany. Besides the classic master's programme, there is the possibility of a dual degree. This dual degree programme offers you the opportunity to obtain a Master degree from Malaysia (USM, Penang) in combination with an accredited European Master's degree (M. Eng in Electrical and Microsystems Engineering) from OTH Regensburg (Germany) simultaneously. The course is structured to enable students to work independently, efficiently and responsibly using scientific methods and problem-solving techniques. Aside from conveying technical expertise, the course is designed to build personalities and leadership knowledge and skills. Graduates will be equally proficient in performing technical tasks and leadership roles.

Lectures in Malaysia of Germany:
Min. 24 months (min. of 12 months in Germany) / Max 8 semesters

Master thesis in Malaysia of Germany (usually in a company):
Min. 6 months

APPLICATION PROCESS



PUSAT PENGAJIAN SAINS FIZIK

SCHOOL OF PHYSICS



POSTGRADUATE PROGRAMME

UNIVERSITI SAINS MALAYSIA



UNIVERSITI SAINS MALAYSIA
PUSAT PENGAJIAN
FIZIK

Preface

At the School of Physics, Transformative Learning and Teaching based on 21st-century delivery have been inculcated through futuristic learning spaces as well as the use of the latest digital technology to create immersive learning based on experience.

Currently, four postgraduate programmes are being offered namely, Master of Science degree by coursework that is M.Sc. (Solid State Physics) and M.Sc. (Medical Physics), Master of Science degree by mixed mode that is M.Sc. (Applied Geophysics) and M.Sc. (Radiation Science) and M.Sc. And Ph.D by research. At par with the development of USM as APEX University, the School of Physics has developed its research activities.

The delivery method combines online learning and teaching materials and opportunities to interact online with traditional place-based lecture/tutorial/practical methods. Instructional videos are also uploaded into e-learning, micro-credential development and introduction to software to enhance student competencies.

POSTGRADUATE STUDY

Master of Science – Coursework

- ❖ Solid State Physics
- ❖ Medical Physics

Master of Science – Mixed mode

- ❖ Applied Geophysics
- ❖ Radiation Science
- ❖ International Dual Degree Programme [(Master of Engineering in Electrical and Microsystems Engineering) and (Master of Science in Solid State Physics)]



Master of Science and Doctor of Philosophy – Research

Research Areas:

- ❖ Theoretical and Computational Physics
- ❖ Condensed Matter Physics and X-ray Crystallography
- ❖ Applied and Engineering Physics
- ❖ Energy Studies
- ❖ Geophysics, Astronomy and Atmospheric Science
- ❖ Medical Physics and Radiation Science

THINKDIFFERENT

Master of Science (Physics) and Doctor of Philosophy

This programme includes research on various fields. The fields offered are as followed:

1. **THEORETICAL AND COMPUTATIONAL PHYSICS**
 - Computational Condensed Matter Physics
 - Linear and Nonlinear Optics
 - High Energy Physics
 - Astrophysics
2. **CONDENSED MATTER PHYSICS AND X-RAY CRYSTALLOGRAPHY**
 - Materials Fabrication and Characterization for Electronics, Optoelectronics, Photonics and Biomedicine
 - Photonic Materials and Devices
 - Modelling and Simulation of Condensed Matter Devices
 - X-ray Structure Determination and Characterization (Organic/Organometallic Compounds, Non-linear Optical Materials, Natural Products)
3. **APPLIED AND ENGINEERING PHYSICS**
 - Semiconductor Fabrication (Thin Film, Epitaxy and Nanostructure)
 - Sensors and Actuators
 - Digital Image Processing (Land Cover Mapping, Water and Air Quality Monitoring)
 - Optical and Remote Sensing Technology
 - Photonic Devices, System and Applications
 - Thermal Processes in Device and Packaging
4. **ENERGY STUDIES**
 - Photovoltaic Materials & Devices (PVMD)
 - Solar Thermal, Bioenergy Fuel Cell & Batteries
 - Thermal Processes in Device and Packaging
 - Computer Simulation & Modelling of Solar Energy
5. **GEOPHYSICS, ASTRONOMY AND ATMOSPHERIC SCIENCE**
 - Engineering and Environmental Geophysics
 - Remote Sensing Applications
 - Petroleum Geoscience: Sedimentary Geology and Reservoir Characteristic
 - Nearshore and Coastal Oceanography
 - Meteorology
 - Radioastronomy
6. **MEDICAL PHYSICS AND RADIATION SCIENCE**
 - Biophysics
 - Medical Instrumentation
 - Radiation Dosimetry
 - Radiation Protection
 - Radiation Physics

RESEARCH GROUP LEADER

1. **THEORETICAL AND COMPUTATIONAL PHYSICS**
Assoc. Prof. Dr. Yoon Tiem Leong
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2. **CONDENSED MATTER PHYSICS AND X-RAY CRYSTALLOGRAPHY**
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5. **GEOPHYSICS, ASTRONOMY AND ATMOSPHERIC SCIENCE**
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6. **MEDICAL PHYSICS AND RADIATION SCIENCE**
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nzahirah@usm.my

HOW TO APPLY

Apply directly via online through USM website:

<http://onlineips.usm.my/admission/>



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<https://fizik.usm.my/>