

# FACULTY OF SCIENCE

## DEPARTMENT OF PHYSICS

### PHYSICS WITH ADVANCED RESEARCH

#### Master of Physics in Physics with Advanced Research

*These regulations are to be read in conjunction with [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#).*

#### Credit Transfer and Recognition of Prior Learning

1. See [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#).
2. In addition, direct entry to year 4 of the programme may be granted to applicants who possess:
  - i. a first cycle Bologna degree in Physics meeting an approved standard of performance with regard to level of study and academic attainment; or
  - ii. a qualification deemed by the Head of Department (or nominee) to be equivalent to (i) above; and
  - iii. an approved standard of performance in a recognised test in English as a foreign language.
3. Such applicants will be deemed to possess 360 credits.

#### Place of Study

4. The optional Industrial Placement, normally taken during the summer vacation following third year, is expected to be completed off campus.

#### Curriculum (Full-time study)

5. All students shall undertake an approved curriculum as follows:

#### First Year

All full-time students shall undertake modules amounting to 120 credits as follows:

#### Compulsory Modules

Module Code	Module Title	Level	Credits
PH180	Experimental Physics	1	20
PH181	Mathematics for Physics 1A	1	20
PH182	Mathematics for Physics 1B	1	20
PH183	Mechanics and Waves	1	20
PH184	Quantum Physics and Electromagnetism	1	20
PH185	Computational and Physics Skills	1	20

## **Second Year**

All full-time students shall undertake modules amounting to 120 credits as follows:

### **Compulsory Modules**

<b>Module Code</b>	<b>Module Title</b>	<b>Level</b>	<b>Credits</b>
PH280	Experimental Physics	2	20
PH281	Mathematics for Physics 2A	2	20
PH282	Mathematics for Physics 2B	2	20
PH283	Mechanics and Waves	2	20
PH284	Quantum Physics and Electromagnetism	2	20
PH285	Computational and Physics Skills	2	20

## **Third Year**

All full-time students shall undertake modules amounting to 120 credits as follows:

### **Compulsory Modules**

<b>Module Code</b>	<b>Module Title</b>	<b>Level</b>	<b>Credits</b>
PH384	Quantum Physics and Electromagnetism	3	20
PH386	Condensed Matter Physics	3	20
PH387	Gasses, Liquids and Thermodynamics	3	20
PH389	Mathematical Physics	3	20
	Elective Module(s)		40

### **Optional Modules**

40 credits chosen from optional modules as may be approved by the Adviser of Study. One of the optional modules must be either PH380 or PH390.

Not all optional modules on this list will necessarily be available in each academic year. Please check your programme handbook for confirmation of which optional modules will run.

## **Fourth Year**

All full-time students shall undertake modules amounting to 120 credits as follows:

### **Compulsory Modules**

Module Code	Module Title	Level	Credits
PH498	Physics with Research Specialisation*	4	120

\*PH498 Physics with Research Specialisation comprises of PH450 Project (40 credits) and PH551 Physics Skills (20 credits) along with 60 credits of Optional Modules.

### **Optional Modules**

Not all optional modules on this list will necessarily be available in each academic year. Please check your programme handbook for confirmation of which optional modules will run.

Module Code	Module Title	Level	Credits
PH452	Topics in Physics	4	20
PH453	Topics in Solid State Physics	4	20
PH454	Topics in Nanoscience	4	20
PH455	Topics in Photonics	4	20
PH456	Topics in Computational and Complex Systems in Physics	4	20
PH457	Topics in Theoretical Physics	4	20
PH459	Topics in Atomic, Molecular and Nuclear Physics	4	20
PH462	Topics in Quantum Physics	4	20
PH465	Industrial Project*	4	20
Other such modules as approved by the Advisor of Study			

\*Students may, with the approval of the Advisor of Study, also undertake this module during the summer vacation following Fourth Year.

### **Fifth Year**

All full-time students shall undertake modules amounting to 160 credits as follows:

#### **Compulsory Module**

Module Code	Module Title	Level	Credits
PH598	Physics*	5	160

\*PH598 Physics comprises of PH570 Project (100 credits) along with 60 credits of Optional Modules.

### **Optional Modules**

Not all optional modules on this list will necessarily be available in each academic year. Please check your programme handbook for confirmation of which optional modules will run.

Module Code	Module Title	Level	Credits
PH551	Research Skills	5	20
PH552	Advanced Topics in Physics	5	20
PH553	Advanced Topics in Solid State Physics	5	20
PH554	Advanced Topics in Nanoscience	5	20
PH556	Advanced Topics in Complex Systems	5	20
PH559	Advanced Topics in Nuclear Physics	5	20
PH560	Advanced Topics in Electromagnetism and Plasma Physics	5	20
PH562	Advanced Topics in Quantum Optics	5	20
PH504	Advanced Topics in Quantum Physics – Quantum Technologies	5	20
PH5XX	Advanced Topics in Computational Physics	5	20
Other such modules as approved by the Advisor of Study			

### Curriculum (Part-time study)

- Students studying on a part-time basis will normally take modules amounting to 60 credits in each year.

### Progress

- To progress to the second year of the programme, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.](#)
- To progress to the third year of the programme, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.](#)
- To progress to the fourth year of the programme, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.](#)
- To progress to the fifth year of the programme, see [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.](#)

### Progress (Part-time study)

- See [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.](#)

### Final Assessment and Classification

12. The final classification for the degree of MPhys in Physics with Advanced Research will normally be based on the first assessed attempt at compulsory and specified optional modules at Levels 4 and 5.
13. The degree in MPhys in Physics with Advanced Research will be classified in accordance with the [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#).

#### **Award**

14. **MPhys in Physics with Advanced Research:** Notwithstanding the [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#), in order to qualify for the award of the degree of MPhys in Physics with Advanced Research, a candidate must have accumulated no fewer than 640 credits from the programme curriculum together with a pass in PH570 Project.

#### **Transfer**

15. See [General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level](#).