FACULTY OF SCIENCE

DEPARTMENT OF PHYSICS

PHYSICS

Master of Physics in Physics
Master of Physics in Physics with Industrial Placement
Master of Physics in Physics with International Placement
Master of Physics in Physics with Specialisation in …
Bachelor of Science with Honours in Physics
Bachelor of Science with Honours in Physics with Teaching
Bachelor of Science with Honours in Physics with Teaching (International)
Bachelor of Science with Honours in Physics with Industrial Placement
Bachelor of Science with Honours in Physics with International Placement
Bachelor of Science in Physics
Diploma of Higher Education in Physics
Certificate of Higher Education in Physics

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 Industrial Placement or International Placement will normally be expected to be completed off campus.

Curriculum (Full-time study)

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

Module Code	Module Title	Level	Credits
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

Module Code	Module Title	Level	Credits
PH384	Quantum Physics and Electromagnetism	3	20
PH386	Condensed Matter Physics	3	20
PH387	Gases, Liquids and Thermodynamics	3	20
PH380	Experimental Physics I*	3	40
PH390	Experimental Physics II*	3	20

*Either PH380 Experimental Physics I or PH390 Experimental Physics II

Optional Modules

A student must select credits from the list below to bring the credit total to at least 120. 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
PH385	Communicating Physics	3	20
PH388	Computational Physics	3	20
PH389	Mathematical Physics	3	20
PH465	Industrial Project*	4	20

*May be undertaken during the summer vacation following Third Year with the approval of the Advisor of Study.

Fourth Year

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

MPhys, MPhys with Specialisation and BSc (Hons) Physics

Compulsory Modules

Module Code	Module Title	Level	Credits
PH499	Physics*	4	120
PH384	Quantum Physics and Electromagnetism**	3	20

*Includes PH450 Project (40 credits)
**If not taken in a previous year

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
PH423	Complex and Nonlinear Systems	4	20

PH457	Topics in Theoretical Physics	4	20
PH459	Topics in Atomic, Molecular and Nuclear Physics	4	20
PH422	Topics in Quantum Physics	4	20
PH421	Applied High Performance Computing	4	20
PH465	Industrial Project*	4	20
Other such modules as approved by the Advisor of Study			

*If not already taken, PH465 Industrial Project may be taken during the summer vacation following Fourth Year with the approval of the Advisor of Study.

MPhys and BSc (Hons) Physics with Industrial Placement

Compulsory Modules

Module Code	Module Title	Level	Credits
PH496	Industrial Placement	4	120
PH491	External Placement Project*	4	120
PH492	External Placement Project*	4	60

*PH496 Industrial Placement is comprised of either PH491 External Placement Project or PH492 External Placement Project and 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
PH423	Complex and Nonlinear Systems	4	20
PH457	Topics in Theoretical Physics	4	20
PH459	Topics in Atomic, Molecular and Nuclear Physics	4	20
PH422	Topics in Quantum Physics	4	20

PH421	Applied High Performance Computing	4	20
PH465	Industrial Project*	4	20
Other such modules as approved by the Advisor of Study			

* If not already taken, PH465 Industrial Project may be taken during the summer vacation following Fourth Year with the approval of the Advisor of Study.

MPhys and BSc (Hons) Physics with International Placement

Compulsory Module

Module Code	Module Title	Level	Credits
PH497	International Placement	4	120
PH491	External Placement Project*	4	120
EX409	External Study*	4	60
EX410	External Study*	4	60
PH492	External Placement Project*	4	60

*PH497 is comprised of either PH491 External Placement Project; EX409 and EX410 External Study; or PH492 External Placement Project and 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
PH423	Complex and Nonlinear Systems	4	20
PH457	Topics in Theoretical Physics	4	20
PH459	Topics in Atomic, Molecular and Nuclear Physics	4	20
PH422	Topics in Quantum Physics	4	20
PH421	Applied High Performance Computing	4	20

PH465	Industrial Project*	4	20
Other such modules as approved by the Advisor of Study			

*If not already taken, PH465 Industrial Project may be taken during the summer vacation following Fourth Year with the approval of the Advisor of Study.

BSc (Hons) Physics with Teaching

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

Compulsory Modules

Module Code	Module Title	Level	Credits
X7457	Educational Studies: Professional Values 1	4	20
X7459	Professional Learning Through Enquiry 1	4	20
X7460	Professional Skills: Professional Practice 1	4	40
X7487	Professional Skills: Curriculum and Pedagogy Physics 1	4	40

BSc (Hons) Physics with Teaching (International)

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

Compulsory Modules

Module Code	Module Title	Level	Credits
X7457	Educational Studies: Professional Values 1	4	20
X7459	Professional Learning Through Enquiry 1	4	20
X7487	Professional Skills: Curriculum and Pedagogy Physics 1	4	40
X7496	Placement Learning: Community	4	20
X7497	Learning on Placement	4	20

Fifth Year

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

MPhys, MPhys with Specialisation

Compulsory Modules

Module Code	Module Title	Level	Credits
PH599	Physics*	5	120

*Includes PH550 Project (40 credits) and PH551 Research Skills (20 credits)

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			

MPhys with Industrial Placement

Compulsory Modules

Module Code	Module Title	Level	Credits
PH596	Industrial Placement*	5	120

*PH 596 Industrial Placement comprises of either PH591 External Placement Project (120 credits) or PH592 External Placement Project (60 credits) and 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			

MPhys with International Placement

Compulsory Modules

Module Code	Module Title	Level	Credits
PH597	International Placement*	5	120

*PH597 International Placement comprises of either PH591 External Placement Project (120 credits); PH592 External Placement Project (60 credits) and 60 credits of Optional Modules; or EX506 and EX516 External Study (60 credits each).

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)

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

Progress

6. To progress to the second year of the programme, see General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.

7. To progress to the third year of the programme, see General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.

8. To progress to the fourth year of the programme, see General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level. In addition, students on the BSc Physics with Teaching Degree must meet the requirements for entering Initial Teacher Education.

9. 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)

10. See General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.

Final Assessment and Classification

11. The final classification for the degree of MPhys will normally be based on the first assessed attempt at compulsory and specified optional modules at Levels 4 and 5.

12. The final classification for the degree of BSc (Hons) will normally be based on the first assessed attempt at compulsory and specified optional modules at Levels 3 and 4.

Award

13. **MPhys**: In addition to the requirements of the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level, a student must also pass the module PH550 Project.

14. **MPhys with Specialisation in** …: In addition to the requirements of 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 Specialisation in a given topic a candidate must have undertaken must have undertaken 40 credits at Level 4 and 40 credits at Level 5 in subjects related to the specialisation together with PH450 Project and PH550 Project in an area related to the specialisation. A student must also pass PH550.

15. **MPhys with Industrial Placement**: In order to qualify for the award of the degree of MPhys in Physics with Industrial Placement the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply and must include either PH497 or PH598 and a student must also pass either PH591 External Placement Project or PH592 External Placement Project.

16. **MPhys with International Placement**: In order to qualify for the award of the degree of MPhys in Physics with International Placement the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply and must include either PH497 International Placement or PH597 International Placement and a student must also pass either PH591 External Placement Project or PH592 External Placement Project.

17. **BSc with Honours**: In order to qualify for the award of the degree of BSc with Honours in Physics, see General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.

18. **BSc with Honours in Physics with Industrial Placement**: In order to qualify for the award of the degree of BSc with Honours in Physics with Industrial Placement the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply, and must include PH496 Industrial Placement.

19. **BSc with Honours in Physics with International Placement**: In order to qualify for the award of the degree of BSc with Honours in Physics with Industrial Placement the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall and must include PH498.

20. **BSc with Honours Physics with Teaching**: In order to qualify for the award of the degree of BSc with Honours in Physics with Teaching a candidate must have accumulated no fewer than 480 credits from the programme curriculum. Notwithstanding the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level, these must include the credits for all the compulsory Level 4 Education modules taken individually.

21. **BSc in Physics**: In order to qualify for the award of the degree of BSc in Physics, see General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.

22. **Diploma of Higher Education**: In order to qualify for the award of a Diploma of Higher Education in Physics, see General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.

23. **Certificate of Higher Education**: In order to qualify for the award of a Certificate of Higher Education in Physics, see General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.

Transfer

24. See General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.

FACULTY OF SCIENCE

DEPARTMENT OF PHYSICS

PHYSICS

Graduate Diploma in Physics

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

Admission

1. The General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply.

Duration of Study

2. The General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply.

Mode of Study

3. The programmes are available by full-time and part-time study

Curriculum

4. All students shall undertake an approved curriculum of no fewer than 120 credits as follows:

Compulsory Modules

Module Code	Module Title	Level	Credits
PH499	Physics*	4	120

*PH499 Physics comprises of PH450 Project (40 credits) and PH451 Physics Skills (20 credits)

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
PH423	Complex and Nonlinear Systems	4	20

PH457	Topics in Theoretical Physics	4	20
PH459	Topics in Atomic, Molecular and Nuclear Physics	4	20
PH422	Topics in Quantum Physics	4	20
PH421	Applied High Performance Computing	4	20
Or other such modules as approved by the Advisor of Study			

Examination, Progress and Final Assessment

5. Candidates are required to pass examinations and to perform to the satisfaction of the Board of Examiners.

Award

6. **Graduate Diploma**: In order to qualify for the award of Graduate Diploma in Physics, a candidate must have performed to the satisfaction of the Board of Examiners and have accumulated no fewer than 120 credits with at least 100 credits from Level 4 or above of which 40 must have been awarded in respect of PH450 Project.

FACULTY OF SCIENCE

DEPARTMENT OF PHYSICS

PHYSICS

Graduate Diploma in Physics (Conversion Programme)

These regulations are to be read in conjunction with the General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level.

Admission

1. Students will be admitted with a qualification deemed appropriate by the Head of Department or nominee.

Duration of Study

2. The General Academic Regulations – Undergraduate, Integrated Master and Professional Graduate Degree Programme Level shall apply.

Mode of Study

3. The programmes are available by full-time only

Curriculum

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

Compulsory Modules

Module Code	Module Title	Level	Credits
PH384	Quantum Physics and Electromagnetism	3	20
PH386	Condensed Matter Physics	3	20
PH387	Gases, Liquids and Thermodynamics	3	20
PH380	Experimental Physics I*	3	40
PH390	Experimental Physics II*	3	20

*Either PH380 Experimental Physics I or PH390 Experimental Physics II

Optional Modules

A student must select credits from the list below to bring the credit total to at least 120.

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
PH385	Communicating Physics	3	20

PH388	Computational Physics	3	20
PH389	Mathematical Physics	3	20
PH465	Industrial Project*	4	20

*May be undertaken during the summer vacation following Third Year with the approval of the Advisor of Study.

Examination, Progress and Final Assessment

5. Candidates are required to pass examinations and to perform to the satisfaction of the Board of Examiners.

6. Candidates who fail to satisfy the Board of Examiners in any taught module shall be permitted one further attempt to pass the relevant module(s) normally in the same academic year.

Award

7. **Graduate Diploma**: In order to qualify for the award of Graduate Diploma in Physics (Conversion Programme), a candidate must have performed to the satisfaction of the Board of Examiners and have accumulated no fewer than 120 credits at Level 3 or above.