Undergraduate Handbook *LITE*

2017-2018

Handy guide to the Undergraduate Degree Programmes in the School of Physics and Astronomy

Full Text Handbook:
http://www.physics.manchester.ac.uk/study/undergraduate/undergraduatehandbook/

School of Physics and Astronomy

Contents

Section 1: Who's who? School Teaching and Learning Academic Team

Senior Academic Team	Name	Email
Head of School	Prof. S. Freeman	sean.freeman@manchester.ac.uk
Director of Teaching and Learning	Prof. T. O'Brien	tim.obrien@manchester.ac.uk
Deputy Director of Teaching and Learning	Dr. M. Hughes	mark.hughes@manchester.ac.uk
Chief Examiner	Dr. S. Kay	scott.kay@manchester.ac.uk
Year Tutors		
First Year	Dr. M. Hughes	mark.hughes@manchester.ac.uk
Second Year	Dr. P. Campbell	paul.campbell-3@manchester.ac.uk
Third Year	Prof. M. Birse	mike.birse@manchester.ac.uk
Fourth Year	Dr. P. Weltevrede	patrick.weltevrede@manchester.ac.uk
Year Examiners		
First Year	Dr. R. Appleby	robert.appleby@manchester.ac.uk
Second Year	Dr. I. Vera Marun	ivan.veramarun@manchester.ac.uk
Third Year and Fourth Year	Dr. S. Kay	scott.kay@manchester.ac.uk
Programme Directors		
Physics	Prof. T. O'Brien	tim.obrien@manchester.ac.uk
Physics with Astrophysics	Dr. P. Weltevrede	patrick.weltevrede@manchester.ac.uk
Physics with Study in Europe	Dr. T. Galla	tobias.galla@manchester.ac.uk
Physics with Theoretical Physics	Dr. M. Godfrey	michael.j.godfrey@manchester.ac.uk
Physics with Philosophy	Dr. A. Markwick	andrew.markwick@manchester.ac.uk
Mathematics and Physics	Dr. M. Dasgupta	mrinal.dasgupta@manchester.ac.uk
Lab Tutors		
Chair of Lab Committee	Dr. N. Jackson	neal.jackson@manchester.ac.uk
First Year	Dr. M. Lloyd	myfanwy.lloyd@manchester.ac.uk
Second Year	Dr. P. Walmsley	paul.walmsley@manchester.ac.uk
Third Year	Dr. P. Parkinson	patrick.parkinson@manchester.ac.uk
Fourth Year	Dr. P. Weltevrede	patrick.weltevrede@manchester.ac.uk
Other Key Roles		
Academic Exchange Advisor	Dr. Y. Peters	yvonne.peters@manchester.ac.uk
Study in Europe Co-ordinator	Dr. T. Galla	tobias.galla@manchester.ac.uk
Senior Advisor	Prof. A. Juel	anne.juel@manchester.ac.uk
BSc Programme Director	Dr. J. Evans	justin.evans@manchester.ac.uk
Chair of Student Reps.	A. Newell	antonia.newell@student.manchester.ac.uk

Section 2: Who's who? School Teaching and Learning Support Team

ROLE	NAME	EMAIL	TELEPHONE
Head of School Administration	Sarah Mulholland	sarah.mulholland@manchester.ac.uk	0161 275 4205
Head of School Administration	Sam Ryder (from October 2017)	samantha.ryder@manchester.ac.uk	0161 275 4205
Student Experience Manager	Sally Brown	sally.brown-2@manchester.ac.uk	0161 275 7314
Undergraduate Manager	Suzanne Nightingale	suzanne.nightingale@manchester.ac.uk	0161 275 4090
Undergraduate Administrator (Exams & Assessment)	Karen Rogers	karen.rogers@manchester.ac.uk	0161 275 4101
Undergraduate Administrator (Programme Support & Timetabling)	Sarah Cole	sarah.cole@manchester.ac.uk	0161 275 4083
Teaching and Learning Administrator (PGT & UG)	Simon Abbott	simon.abbott@manchester.ac.uk	0161 275 1246
Student Support and Welfare Officer	Geraldine Garrabet	geraldine.garrabet@manchester.ac.uk	0161 275 4100
Student Support Administrator	Helen Collins	helen.collins@manchester.ac.uk	0161 275 4081
Student Experience Officer	Sue Huzar	sue.huzar@manchester.ac.uk	0161 306 6464
Graduate Intern Teaching and Learning (General Enquiries)	Stephanie Lai	hongcheng.lai@manchester.ac.uk	0161 275 1053

For general school enquiries including; room bookings, unofficial transcript processing, programme changes and course unit selection
physics@manchester.ac.uk / 0161 275 1053

Email for Mitigating Circumstances supporting evidence and queries
physics.support@manchester.ac.uk

*The **School Teaching and Learning Office** is located in Room 1.61, Braddick Library, First Floor, Schuster Building and is open from 9.00 a.m. to 5.00 p.m. Monday – Friday. Here you will be able to access information and advice on all undergraduate teaching/support issues.*

Other People…

Role	Why?	Year
Personal Tutor	You will be assigned a Personal tutor on entry to your programme who will also act as your Physics tutor during the first year. You will meet weekly for tutorials. Thereafter you will meet with your Personal tutor at key times of the year to discuss option choices and exam results. You can contact your Personal tutor at any time during your course.	1-4
Physics Tutor	The Physics tutor will be your Personal tutor in year 1 as described above. In year 2 you will attend weekly academic tutorials with another member of staff.	1-2
Maths Tutor	In year 1 you will also have weekly tutorials with a Maths tutor.	1
Lab Tutor	Year Laboratory tutors are responsible for the laboratory teaching and assessment in each year of the degree programme.	1-3

Section 3: Important Dates for the Academic Year 2017-2018

Academic Year by Teaching Weeks 2017-18 [PDF]

SEMESTER	EVENT	START DATE	END DATE
ONE	**Welcome Week 2017-2018 [Registration]**	*18th September 2017*	*22nd September 2017*
ONE	**Teaching commences (SEM1)**	*25th September 2017*	*15th December 2017*
ONE	**Deadline for registering options**	*17th July 2017*	*6th October 2017*
ONE	**Independent Study Week (YRs 1-3)**	*30th October 2017*	*3rd November 2017*
ONE	**Vacation**	*18th December 2017*	*14th January 2018*
ONE	**Exam Period**	*15th January 2018*	*26th January 2018*
TWO	**Teaching Commences (SEM2)**	*29th January 2018*	*23rd March 2018*
TWO	**Deadline for registering options**	*17th July 2017*	*9th February 2018*
TWO	**Vacation**	*26th March 2018*	*15th April 2018*
TWO	**Teaching recommences (SEM2)**	*16th April 2018*	*11th May 2018*
TWO	**Exam period**	*16th May 2018*	*6th June 2018*
	RE-Examination period	*20th August 2018*	*31st August 2018*
ONE 2018-2019	**Welcome Week 2018-2019 [Registration]**	*17th September 2018*	*21st September 2018*

Section 4: The Academic Year

The academic year is divided into two semesters each consisting of 12 weeks of teaching followed by a revision and examination period. Students take 120 credits in each academic year (or 125 in the case of some Mathematics and Physics students). A typical course unit with 10 credit points consists of about 22 lectures or 10 to 12 whole day laboratory sessions.

- You should attend all lectures, laboratory classes, workshops, tutorials and examples classes associated with your programme, and the core and optional course units you have selected.
- Each Year Tutor may designate attendance at certain classes as compulsory, and attendance at these classes will be recorded and monitored via the Student CRT System.

Students who cannot attend scheduled tutorials and laboratory classes *must* inform the relevant member of staff at the earliest opportunity and complete a short term absence form which can be found on the below link.
https://online.manchester.ac.uk/bbcswebdav/pid-4018203-dt-content-rid-16754902_1/orgs/I3039-COMMUNITY-EPS-PHYS-UG-COMMON-ROOM-1/Short%20Term%20Absence%20Form.pdf?target=blank

Lectures and Attendance

Lectures are not compulsory or monitored for attendance. However you are strongly encouraged to attend lectures in order to get the maximum benefit from your course of study.

Tutorials and Attendance

Attendance at weekly tutorials is monitored and compulsory in 1st and 2nd year. 5% of your assessment is based on attendance at tutorials. Tutorials consolidate the material provided in lectures and provide you with a weekly opportunity to ask questions and receive feedback on your current understanding of the course.

Lab and Attendance

Attendance at all your scheduled laboratory classes is compulsory, and you are required to complete experiments and submit reports as specified by the Year Laboratory Tutor. In all years, failure to reach the pass mark overall in lab (40%) means that you may not graduate or progress to the next year. There are no lab resits, so a failure in lab constitutes the end of your studies in the school. ***At the beginning of your course you must complete the Health and Safety module PHYS11000 on Blackboard LINK. This is a mandatory requirement and you will not be able to access lab without completing it.***

Workshops & Examples Classes

Workshops and examples classes (in third year) are a great way to work through problem solving in groups or individually. They offer an opportunity to develop the ability to express physics problems in mathematical language. You will also receive feedback on your current understanding of the material.

Exams and Attendance

- Attendance at all examinations is compulsory.
- Any student who misses an exam for any reason should contact the Teaching and Learning Office immediately.
- Any student who fails to attend all written papers in any examination period without good cause will be deemed to have withdrawn from the course.

Please note that if you are studying in the UK on a Tier 4 visa, you may be subject to additional attendance checks in order to comply with the terms of your visa.

Section 5: Degree Programmes Available

Physics	*BSc (Hons) or MPhys (Hons)*
Physics with Astrophysics	*BSc (Hons) or MPhys (Hons)*
Physics with Philosophy	*BSc (Hons) or MPhys (Hons)*
Physics with Study in Europe	*MPhys (Hons) only*
Physics with Theoretical Physics	*BSc (Hons) or MPhys (Hons)*
Mathematics and Physics	*BSc (Hons) or MMath&Phys (Hons)*

Jodrell Bank’s Lovell Telescope at sunset (Credit: Professor Tim O’Brien)

Section 6: Structure of Degree Programmes by Year and Semester

The following pages outline the compulsory and optional elements for each programme for each year of study for all the degree programmes for the current academic year. This structure may be modified in future academic years as a part of a process of curriculum review and development.

Continuing students should choose their options by early August, having consulted their personal tutor before leaving Manchester in June. First year students' options are chosen in consultation with their personal tutor at the start of the year. Changes must be agreed with the personal tutor no later than 2 weeks after the start of the appropriate semester. You are also required to enter your options on the student system, by the end of the second teaching week. Please ensure that these are the same as those you have agreed with your personal tutor. Variations involving the compulsory elements of a programme are only allowed in exceptional circumstances and must be agreed with your year tutor.

Please note that students must check with the host school if external options are running.

First Year – Semester 1

MPhys/BSc Programmes (These are the same in Y1 and Y2).
Students take 60 credits per semester [1] as specified below. All courses are 10 credits unless otherwise indicated.
Courses marked with (M) require a higher than average aptitude for maths.

Programme	PHYS10071	PHYS10101	PHYS10121	PHYS10191	Lab. 10180	Lab. 10280	Additional Core	Option
Physics	✓	✓	✓	✓	✓	×	×	See List
Physics with Astrophysics	✓	✓	✓	✓	✓	×	×	See List
Physics with Study in Europe	✓	✓	✓	✓	✓	×	Language Course[2]	×
Physics with Theoretical Physics	✓	✓	✓	✓	×	✓ not 10180E	PHYS10471(M)	×
Physics with Philosophy	✓	✓	✓	×	×	✓ not 10180E, incl 10181B & 10181L	PHIL10021 (20 credits)	×
Mathematics and Physics	×	✓	✓	×	×	✓ not 10180E, incl 10181B & 10181L	MATH10111 (15 credits) MATH10121 (20 credits)	×

Physics Core Courses	
PHYS10071	Mathematics 1
PHYS10101	Dynamics
PHYS10121	Quantum Physics and Relativity
PHYS10191	Introduction to Astrophysics and Cosmology
PHYS10180	First Year Laboratory (Double unit S1 & S2, 20 credits)
PHYS10280	First Year Laboratory *Single unit S1 only 10 credits)
	Including:
PHYS10181B	Computing and Data Analysis
PHYS10180E	Digital Electronics
PHYS10181F	Special Topics in Physics
PHYS10181L	Light and Optics (Philosophy and Mathematics and Physics)

Additional Core	
PHYS10471(M)	Random Processes in Physics
MATH10111	Foundations of Pure Mathematics (15 credits)
MATH10121	Calculus and Vectors (20 credits)
PHIL10021	Introduction to Ethics (20 credits)

Additional Programme Information

1. **Mathematics and Physics**: Students take 65 credits in semester 1 and 55 credits in semester 2.
2. **Physics with Study in Europe**: Students take a language course appropriate in level to their initial knowledge of the language. LEAP courses are 10 credits in S1 and 10 credits in S2. Students in Physics with Study in Europe who begin with limited language skills may have to do extra work to reach the appropriate level by the end of first year. Students who have already reached the appropriate standard will be excused the language course and will be required to choose alternative course units.

S1 Options List

Students with an option choose 1 course from the following and are responsible for checking that they fulfil any course pre-requisites and that any external options don't clash with other courses.

Physics Option List 1	
PHYS10461	Physics in Everyday Life
PHYS10471(M)	Random Processes in Physics

External Option List 1E	
EART10111	Planet Earth: Its Climate, History and Processes
ECON10221	Microeconomics 1
HSTM10221	Science and the Modern World

LEAP
Study of a foreign language as a double option (studied in semester 1 and 2) may be taken by first year students on the Physics programme (http://www.ulc.manchester.ac.uk/languages/leap/)

BMAP
Business and Management Options (http://courseunits.humanities.manchester.ac.uk/Undergraduate/Manchester-Business-School)

Tutorials and Workshops
All students (except Mathematics and Physics) have 2 tutorials, plus a 2 hour workshop, each week in both semesters. Physics with Philosophy students will be told about tutorial arrangements in Philosophy by the School of Social Sciences. Mathematics and Physics students attend 1 physics tutorial each week, and 1 hour of workshop in semester 2.

First Year – Semester 2

MPhys/BSc Programmes (These are the same in Y1 and Y2).
Students take 60 credits per semester as specified below. All courses are 10 credits unless otherwise indicated.
Courses marked with (M) require a higher than average aptitude for maths.

Programme	PHYS10302	PHYS10342	PHYS10352	PHYS10372	Lab.	Additional Core	Option
Physics	✓	✓	✓	✓	✓	×	See List
Physics with Astrophysics	✓	✓	✓	✓	✓	PHYS10672(M) or PHYS10692	×
Physics with Study in Europe	✓	✓	✓	✓	✓	Language Course	×
Physics with Theoretical Physics	✓	✓	✓	✓	×	PHYS10672(M)	See List
Physics with Philosophy	✓	✓	✓	✓	×	PHIL10622 (20 credits)	×
Mathematics and Physics[1]	✓	✓	✓	×	×	MATH10212 (15 credits) MATH11222	×

Physics Core Courses	
PHYS10302	Vibrations and Waves
PHYS10342	Electricity and Magnetism
PHYS10352	Properties of Matter
PHYS10372	Mathematics 2
PHYS10180	First Year Laboratory, including:
PHYS10180E	Digital Electronics
PHYS10182C	Circuits

Additional Core	
PHYS10672(M)	Advanced Dynamics
PHYS10692	Physics of the Solar System
MATH10212	Linear Algebra (15 credits)
MATH11222	Calculus & Applications
PHIL10622	Introduction to Metaphysics and Epistemology (20 credits)

Additional Programme Information

1. **Mathematics and Physics**: See programme information in semester 1.

S2 Options List

Students with an option choose 1 course from the following and are responsible for checking that they fulfil any course pre-requisites and that any external options don't clash with other courses.

Physics Option List 2	
PHYS10622	Physics of Energy Sources
PHYS10672(M)	Advanced Dynamics
PHYS10692	Physics of the Solar System
PHYS10792	Statistical Methods

External Option List 2E	
EART10272	Introduction to Planetary Science
ECON10252	Macroeconomics 1

LEAP
Taking a foreign language will be advised by the Language Teaching Centre of their lecture/ tutorial arrangements in semester 2 (http://www.ulc.manchester.ac.uk/languages/leap/)

BMAP
Business and Management options, (http://courseunits.humanities.manchester.ac.uk/Undergraduate/Manchester-Business-School)

Tutorials and Workshops (Refer to semester 1)

Vacation Essay (part of PHYS20811/20821 Professional Development)
All students are required to write a physics essay during the summer vacation to be handed in at the start of the first teaching week of their second year. Titles will be circulated by the year tutor after Easter.

Second Year – Semester 3

MPhys/BSc Programmes (These are the same in Y1 and Y2).
Students take 60 credits per semester as specified below. All courses are 10 credits unless otherwise indicated. Please note that PHYS20811/20821 is compulsory for all programmes. It is not credit-weighted, but the mark counts towards the year mark, and your degree result.
Courses marked with (M) require a higher than average aptitude for maths.

Programme	PHYS20101	PHYS20141	PHYS20161	PHYS20171	PHYS20811 /20821 (0 Credits)	Lab. 20180	Lab. 20280	Additional Core	Option
Physics	✓	✓	✓	✓	✓	✓	×	×	See List
Physics with Astrophysics	✓	✓	✓	✓	✓	✓	×	PHYS20491	×
Physics with Study in Europe	✓	✓	✓	✓	✓	*[1]	×	PHYS20401(M) Language Course[1]	×
Physics with Theoretical Physics	✓	✓	✓	✓	✓	×	✓ Not PHYS20181E	PHYS20401(M)	×
Physics with Philosophy	✓	✓	×	✓	✓	×	✓ Not PHYS20181E	PHIL20261 (20 credits), PHYS20280	×
Mathematics and Physics	✓	✓	×	×	✓	×	* Not PHYS20181E	MATH20111, MATH20401 (20 credits)	PHYS20280 or MATH20201[2]

Note * indicates a choice of courses to be made.

Physics Core Courses	
PHYS20101	Introduction to Quantum Mechanics
PHYS20141	Electromagnetism
PHYS20161	Introduction to Programming for Physicists
PHYS20171	Mathematics of Waves and Fields
PHYS20180	Second Year Laboratory (Double unit S3 & S4, 20 credits)
PHYS20181E	Amplifiers and Feedback
PHYS20280	Second Year Laboratory (S3 only, 10 credits)
PHYS20811	Professional Development (0 credits)

Additional Core and Options	
PHYS20401(M)	Lagrangian Dynamics
PHYS20491	Galaxies
MATH20111	Real Analysis
MATH20201	Algebraic Structures 1
MATH20401	Partial Differential Equations and Vector Calculus (20 credits)
PHIL20261	Philosophy of Science (20 credits)

Additional Programme Information

1. **Physics with Study in Europe:** Students who have already reached a satisfactory level in their language in 1st year and who are not doing a language course will do lab; otherwise a language course is taken instead.
2. **Mathematics and Physics:** Students usually take EITHER MATH20201, MATH20212 and PHYS20280 (S4) OR PHYS20280 (S3), MATH20122 and MATH20502. If after taking MATH20201, the follow-up course is considered inadvisable by the student and their personal tutor, MATH20122 may be substituted. Other deviations from the recommended maths courses may be allowed for BSc candidates only, after consultation with their year tutor. However they should note that they have a second opportunity to take some year 2 options in year 3, but if they don't take the recommended courses in 2nd year they may find that they have a very restricted choice in 3rd year.

S3 Options List

Students with an option choose 1 from the following and are responsible for checking that they fulfil any course pre-requisites and that any external options don't clash with other courses.

Physics Option List 3	
PHYS20401(M)	Lagrangian Dynamics
PHYS20491	Galaxies
EART20281	Atmospheric Physics & Weather

External Option List 3E	
EART10111	Planet Earth: Its Climate, History and Processes
ECON10221	Microeconomics 1
ECON20101	Environmental Economics 11A
HSTM10221	Science and the Modern World
MCEL10001	Exploring Enterprise
MCEL30001	Tools and Techniques for Enterprise

LEAP
Study of a foreign language as a double option (studied in S3 and S4) may be taken by honours Physics students (http://www.ulc.manchester.ac.uk/languages/leap/)

University College
Options offered through the University College may be taken (http://www.college.manchester.ac.uk/courses/)

BMAP
Business and Management Options
(http://courseunits.humanities.manchester.ac.uk/Undergraduate/Manchester-Business-School)

Tutorials
All students attend one physics tutorial each week in both semesters. Physics with Study in Europe students also attend Physics in a Foreign Language tutorials as part of their programme in the second year. Physics with Philosophy students will be told about tutorial arrangements in Philosophy by the School of Social Sciences.

Second Year – Semester 4

MPhys/BSc Programmes (These are the same in Y1 and Y2).
Students take 60 credits per semester as specified below. All courses are 10 credits unless otherwise indicated.
Courses marked with (M) require a higher than average aptitude for maths.

Programme	PHYS20252	PHYS20312	PHYS20352	Lab.	Additional Core	Option
Physics	✓	✓	✓	✓	×	2 from List
Physics with Astrophysics	✓	✓	✓	✓	PHYS20692	1 from List
Physics with Study in Europe	✓	✓	✓	✓	Language Course, PHYS20672(M)	×[1]
Physics with Theoretical Physics	✓	✓	✓	×	PHYS20672(M), PHYS20872	1 from List[2]
Physics with Philosophy	✓	✓	✓	×	PHIL20212 (20 credits)	MATH20302 or HSTM20282
Mathematics and Physics	✓	✓	✓	*	MATH20142	MATH20122 and MATH20502, or MATH20212 and PHYS20280[3]

Note * indicates a choice of courses to be made.

Physics Core Courses	
PHYS20252	Fundamentals of Solid State Physics
PHYS20312	Wave Optics
PHYS20352	Thermal and Statistical Physics
PHYS20180	Second Year Laboratory (Double Unit S3 & S4, 20 credits)
PHYS20280	Second Year Laboratory (S4 only, 10 credits)

*Please note that PHIL20212 clashes with PHYS20312.

Additional Core and Options	
HSTM20282	The Information Age
PHYS20672(M)	Complex Variables and Integral Transforms
PHYS20692	Astrophysical Processes
PHYS20872	Theory Computing Project
MATH20122	Metric Spaces
MATH20142	Complex Analysis
MATH20212	Algebraic Structures II
MATH20302	Introduction to Logic
MATH20502	Fluid Mechanics
PHIL20212*	Locke, Berkeley, Hume (20 credits)

Additional Programme Information

1. **Physics with Study in Europe**: If students do not need to take a language course then they have an option.
2. **Physics with Theoretical Physics**: May not take PHYS20762.
3. **Mathematics and Physics**: See S3 notes.
4. **Examples Classes for Year Abroad Students:** All students planning to spend year 3 abroad (including Physics with Study in Europe) must attend additional maths examples classes in S4, and approval to go on the year abroad will depend on satisfactory attendance, and completion of associated coursework.

S4 Options List

Students with an option or options choose from the following courses and are responsible for checking that they fulfil any course pre-requisites and that any external options don't clash with other courses. Not more than 20 credits of level 1 options may be taken in second year.

Physics Option List 4	
PHYS10622	Physics of Energy Sources
PHYS10672(M)	Advanced Dynamics
PHYS10692	Physics of the Solar System
PHYS10792	Statistical Methods
PHYS20612	Introduction to Photonics
PHYS20672(M)	Complex Variables and Integral Transforms
PHYS20692	Astrophysical Processes
PHYS20762	Computational Physics

External Option List 4E	
EART10262	Earth Resources
ECON10252	Macroeconomics 1
HSTM20282	The Information Age
MATH20222(M)	Introduction to Geometry
MATH20302(M)	Introduction to Logic
MATH20502(M)	Fluid Mechanics
MATH20912(M)	Introduction to Financial Mathematics
MCEL10002	Entrepreneurial Skills B

BMAP
Business and Management Options (http://courseunits.humanities.manchester.ac.uk/Undergraduate/Manchester-Business-School)

University College
Options offered through the University College may be taken (http://www.college.manchester.ac.uk/courses/)

General Physics Paper
All students sit a General Physics Paper (PHYS20040/20240) in May/ June as part of the assessment for second year. The questions are based on the core physics units in Year 1 and in semester 3. Your tutor can help you to prepare for this paper.

Tutorials (Refer to Y2 semester 3)

Vacation Essay (PHYS30811)
All students are required to write a Physics essay during the summer vacation.

BSc Third Year – Semester 5

Students take 60 credits per semester as specified below. All courses are 10 credits unless otherwise indicated.
Courses marked with (M) require a higher than average aptitude for maths. [Courses marked (M) or (A) may count towards the MPhys fourth year requirements for Physics with Theoretical Physics or Astrophysics respectively, see MPhys 4th year syllabus]

Programme	PHYS30101 or PHYS30201(M)	PHYS30121	PHYS30151	Lab or [2] Dissertation	Option [1] or Additional core
Physics	✓	✓	✓	✓✓	1 from list 5 or 5(2) or 5E(2) or 5E(3)
Physics with Astrophysics	✓	✓	✓	✓✓	PHYS20401 or PHYS30511
Physics with Theoretical Physics	PHYS30201(M)	✓	✓	✓ ✓ (Lab & Dissertation)	PHYS30471(M) or MATH35001(M) or PHYS30441(M)
Physics with Philosophy	PHYS30101	✓	✓	✓ (Lab)	1 Philosophy Option (20 credits)
Mathematics and Physics	PHYS30101 or PHYS30201(M) or PHYS30441(M)	✓	✓	×	PHYS20161, 20 credits of Mathematics Options [3]

[1] You may not take more than 30 credits of external options, nor more than 20 credits of level 2 options, in year 3.
[2] **Laboratory**. Each ✓ indicates 10 credits, either a 6 week lab experiment (PHYS30180/30280) or a BSc Dissertation project (PHYS30880). In semester 5 and semester 6 Physics and Physics with Astrophysics students do two lab experiments and a BSc Dissertation. The timing will depend on the dissertation chosen.
[3] Maths options for Maths/Physics students can be found at: http://www.physics.manchester.ac.uk/study/undergraduate/undergraduate-courses/matphysjoint

Physics Core Courses	
PHYS30101	Applications of Quantum Physics or
PHYS30201(M)	Mathematical Fundamentals of Quantum Mechanics
PHYS30121	Introduction to Nuclear and Particle Physics
PHYS30151	Thermal Physics of Bose and Fermi Gases
PHYS30180	Third Year Laboratory (Double Unit 20 credits)
PHYS30280	Third Year Laboratory
PHYS30811	2nd Vacation Essay (3 credits)
PHYS30880	BSc Dissertation

Additional Core and Options	
PHYS20161	Introduction to Programming for Physicists
PHYS20401	Lagrangian Dynamics
PHYS30441(M)	Electrodynamics
PHYS30471(M)	Introduction to Nonlinear Physics
PHYS30511	Nuclear Fusion and Astrophysical Plasmas
MATH35001(M)	Viscous Fluid Flow

S5 Options List

Students with an option or options choose from the following courses and are responsible for checking that they fulfil any course pre-requisites. Students can take courses with a one hour clash as agreed by the Year Tutor. Please fill out the following form which needs to be signed by the Year Tutor https://online.manchester.ac.uk/bbcswebdav/pid-5363502-dt-content-rid-16754973_1/orgs/I3039-COMMUNITY-EPS-PHYS-UG-COMMON-ROOM-1/Clash_Approval_Draft%2017-18%281%29.pdf?target=blank

Physics Options List 5:	
PHYS30141	Electromagnetic Radiation
PHYS30441(M)	Electrodynamics
PHYS30471(M)	Introduction to Nonlinear Physics
PHYS30511(A)	Nuclear Fusion and Astrophysical Plasmas
PHYS30611	Lasers and Photonics
EART30351	Meteorology and Atmospheric Physics
MATH35001(M)	Viscous Fluid Flow

Physics Options from Y2 List 5 (2):	
PHYS20401(M)	Lagrangian Dynamics

External Option List (level 3) 5E (3):	
MATH34001	Applied Complex Analysis (May not be taken if PHYS20672 has been taken)
MCEL30001	Tools and Techniques for Enterprise

External Option List (level 2) 5E (2):	
ECON20341	Business Economics 1A

LEAP
Study of a foreign language as a double option (studied in S5 and S6) may be taken, but the course should normally be Level 2 or above (http://www.ulc.manchester.ac.uk/languages/leap/)

University College
Options offered through the University College may be taken (http://www.college.manchester.ac.uk/courses/)

Example Classes
In semester 5 all students attend two examples classes each week to cover core courses. Attendance at these classes is monitored.

BSc Third Year – Semester 6

Students take 60 credits per semester. All courses are 10 credits unless otherwise indicated.
Courses marked with (M) require a higher than average aptitude for maths. [Courses marked (M) or (A) may count towards the MPhys fourth year requirements for Physics with Theoretical Physics or Astrophysics respectively, see MPhys 4th year syllabus]

Programme	Lab or Dissertation	Core	Options [1]
Physics	✓	1 from list 6C	4 from list 6C or 6 or 6E(2) or 6E(3)
Physics with Astrophysics	✓	PHYS30392, PHYS40692	3 from list 6C or 6 or 6E(2) or 6E(3)
Physics with Theoretical Physics	×	PHYS30672(M), 1 from list 6C	4 from list 6C or 6 or 6E(2) or 6E(3)
Physics with Philosophy	Dissertation	1 Philosophy Option (20 credits), PHYS41702 1 from list 6C	1 from list 6C or 6
Mathematics and Physics	PHYS30880 or MATH30022	1 from (list 6C or PHYS40202(M))	30 credits of Mathematics Options [3], 1 from (list 6C or 6, or 6E(2), or 6E(3), or PHYS30280)

Notes:
[1] You may not take more than 30 credits of external options, nor more than 20 credits of level 2 options, in year 3.
[2] **Laboratory**. Each ✓ indicates 10 credits, either a 6 week lab experiment (PHYS30180/30280) or a 6 week BSc project (PHYS30880). In semester 5 and semester 6 Physics and Physics with Astrophysics students do two lab experiments and a BSc Dissertation. The timing will depend on the dissertation chosen.
[3] Maths options for Maths/Physics students can be found at: http://www.physics.manchester.ac.uk/study/undergraduate/undergraduate-courses/matphysjoint
[4] Physics students must have taken PHYS20672 as pre-requisite for MATH41022.

Physics Core Courses	
PHYS30180	Third Year Laboratory (wks 1-6 or 7-12) (S5 & S6 20 credits)
PHYS30280	Third Year Laboratory (wks 1-6 or 7-12)
PHYS30880	BSc Dissertation

Additional Core and Options	
PHYS30392(A)	Cosmology
PHYS30672(M)	Mathematical Methods for Physics
PHYS40202(M)	Advanced Quantum Mechanics
PHYS40692(A)	Stars and Stellar Evolution
PHYS41702	Physics and Reality
MATH30022	Project

S6 Options List

Students with an option or options choose from the following courses and are responsible for checking that they fulfil any course pre-requisites. Students can take courses with a one hour clash as agreed by the Year Tutor. Please fill out the following form which needs to be signed by the Year Tutor https://online.manchester.ac.uk/bbcswebdav/pid-5363502-dt-content-rid-16754973_1/orgs/I3039-COMMUNITY-EPS-PHYS-UG-COMMON-ROOM-1/Clash_Approval_Draft%2017-18%281%29.pdf?target=blank

Core for MPhys; list 6C:	
PHYS40222	Particle Physics
PHYS40322	Nuclear Physics
PHYS40352	Solid State Physics
PHYS30392(A)	Cosmology

Physics Option List 6:	
PHYS30632	Physics of Medical Imaging
PHYS30672(M)	Mathematical Methods for Physics
PHYS30732	Physics of Living Processes
PHYS30762	Object-Oriented Programming in C++
PHYS31692(A)	Exoplanets
PHYS40202(M)	Advanced Quantum Mechanics
PHYS40422	Applied Nuclear Physics
PHYS40692(A)	Stars and Stellar Evolution
PHYS40712	Semiconductor Quantum Structures
PHYS41702	Physics and Reality
EART30362	Climate and Energy
MATHS35012(M)	Wave Motion

External Option List 6E (2):	
ECON20342	Business Economics 1B
HSTM20282	The Information Age
MATH20302(M)	Introduction to Logic

External Option List 6E (3):	
COMP39112	Quantum Computing
EART30232	Comparative Planetology
HSTM31212	The Nuclear Age
MATH41022(M)	Analytic Number Theory[4]
MATH39032(M)	Mathematical Modelling in Finance
MCEL30002	Tools and Techniques for Enterprise
MCEL30012	Advanced Technology Enterprise (follow-on from MCEL30001)
MCEL30022	Interdisciplinary Sustainable Development

LEAP
Study of a foreign language as a double option (in S5 & S6) may be taken, but the course should normally be Level 2 or above (http://www.ulc.manchester.ac.uk/languages/leap/)

University College
Options offered through the University College may be taken (http://www.college.manchester.ac.uk/courses/)

General Physics Paper
All students sit a General Physics Paper (PHYS30010/30210) in May/ June as part of the final examinations. The questions are based on the core physics units in Year 1, Year 2 and semester 5.

Examples Classes
In semester 6 students attend two examples classes each week, one covering core courses and one covering general physics. Attendance at these classes is monitored.

MPhys Third Year – Semester 5

Students take 60 credits as specified below. All courses are 10 credits unless otherwise indicated.
Courses marked with (M) require a higher than average aptitude for maths. [Courses marked (M) or (A) may count towards the MPhys fourth year requirements for Physics with Theoretical Physics or Astrophysics respectively, see MPhys 4th year syllabus]

Programme		PHYS30101 or PHYS30201(M)	PHYS30121	PHYS30151	PHYS30141 or PHYS30441(M)	Lab	Option [1] or Additional core
Physics		✓	✓	✓	✓	✓	1 from list 5 or 5(2)or 5E(2) or 5E(3)
Physics with Astrophysics		✓	✓	✓	✓	✓	PHYS20401 or PHYS30511
Physics with Theoretical Physics		PHYS30201(M)	✓	✓	PHYS30441(M)	✓	PHYS30471(M) or MATH35001(M)
Physics with Philosophy		PHYS30101	✓	✓	✓	×	1 Philosophy Option (20 credits)
Mathematics and Physics[3]	**Strand A**	PHYS30101 or PHYS30201(M) or PHYS30441(M)	✓	✓	[see col 1]	×	PHYS20161, 20 credits of Mathematics Options
	Strand B	PHYS30201(M)	✓	✓	PHYS30441(M)	×	20 credits of Mathematics Options

Notes:

[1] You may not take more than 30 credits of external options, nor more than 20 credits of level 2 options, in year 3.

[2] **Quantum Fast Stream:** (PHYS40481 (M) and PHYS40682 (M)). In order to study theoretical particle physics in year 4, it is necessary to take PHYS30201 (M), PHYS30441 (M), PHYS40222 and PHYS40202 (M) in year 3.

[3] **Mathematics and Physics** students who wish to follow the Quantum Fast Stream (see note [2] above) follow Strand B in S5 and S6. All others follow Strand A in both semesters. Maths options for Maths/Physics students can be found at: http://www.physics.manchester.ac.uk/study/undergraduate/undergraduate-courses/matphysjoint

[4] **Physics with Study in Europe** students study abroad during their third year. Students are required to produce a year abroad report.

Physics Core Courses	
PHYS30101	Applications of Quantum Physics
PHYS30201(M)	Mathematical Fundamentals of Quantum Mechanics
PHYS30121	Introduction to Nuclear and Particle Physics
PHYS30141	Electromagnetic Radiation
PHYS30151	Thermal Physics of Bose and Fermi Gases
PHYS30180	Third Year Laboratory (wks 1-6 or 7-12) (Double Option S5 & S6, 20 credits)
PHYS30280	Third Year Laboratory (wks 1-6 or 7-12)
PHYS30441(M)	Electrodynamics
PHYS30811	2nd vacation essay (3 credits)

Additional Core and Options	
PHYS20161	Introduction to Programming for Physicists
PHYS20401	Lagrangian Dynamics
PHYS30471(M)	Introduction to Nonlinear Physics
PHYS30511(A)	Nuclear Fusion and Astrophysical Plasmas
MATH35001(M)	Viscous Fluid Flow

S5 Options List

Students with an option or options choose from the following courses and are responsible for checking that they fulfil any course pre-requisites. Students can take courses with a one hour clash as agreed by the Year Tutor. Please fill out the following form which needs to be signed by the Year Tutor https://online.manchester.ac.uk/bbcswebdav/pid-5363502-dt-content-rid-16754973_1/orgs/I3039-COMMUNITY-EPS-PHYS-UG-COMMON-ROOM-1/Clash_Approval_Draft%2017-18%281%29.pdf?target=blank

Physics Options List 5:	
PHYS30141	Electromagnetic Radiation
PHYS30441(M)	Electrodynamics
PHYS30471(M)	Introduction to Nonlinear Physics
PHYS30511(A)	Nuclear Fusion and Astrophysical Plasmas
PHYS30611	Lasers and Photonics
EART30351	Meteorology and Atmospheric Physics
MATH35001(M)	Viscous Fluid Flow

Physics Options from Y2 List 5 (2):	
PHYS20401(M)	Lagrangian Dynamics

External Option List (level 3) 5E (3):	
MATH34001	Applied Complex Analysis (May not be taken if PHYS20672 has been taken)
MCEL30001	Tools and Techniques for Enterprise

External Option List (level 2) 5E (2):	
ECON20341	Business Economics 1A

LEAP
Study of a foreign language as a double option (studied in S5 and S6) may be taken, but the course should normally be Level 2 or above (http://www.ulc.manchester.ac.uk/languages/leap/)

University College
Options offered through the University College may be taken (http://www.college.manchester.ac.uk/courses/)

Example Classes
In semester 5 all students attend two examples classes each week to cover core courses. Attendance at these classes is monitored.

MPhys Third Year – Semester 6

Students take 60 credits per semester. All courses are 10 credits unless otherwise indicated. Courses marked with (M) require a higher than average aptitude for maths. [Courses marked (M) or (A) may count towards the MPhys fourth year requirements for Physics with Theoretical Physics or Astrophysics respectively, see MPhys 4th year syllabus]

Programme		Lab	Core	Options [1]
Physics		✓	All (4) from list 6C	1 from list 6 or 6E(2) or 6E(3)
Physics with Astrophysics		✓	PHYS30392, PHYS40692 + 2 from list 6C	1 from list 6C or 6 or 6E(2) or 6E(3)
Physics with Theoretical Physics		×	PHYS40202(M), PHYS30672(M), PHYS40352 + 2 from list 6C	1 from list 6C or 6 or 6E(2) or 6E(3)
Physics with Philosophy		✓	1 Philosophy Option (20 credits), PHYS41702 + 2 from list 6C	×
Mathematics and Physics[3]	**Strand A**	* (see Core)	3 from (list 6C or PHYS40202(M) or Lab)	30 credits of Mathematics Options (3 x 10 level 3, or 2 x 15 level 4)
	Strand B	×	MATH36032, PHYS40202(M) and PHYS40222	30 credits of Mathematics Options (3 x 10 level 3, or 2 x 15 level 4)

Notes:
[1] See S5 note [1]
[2] Physics students must have taken PHYS20672 as pre-requisite for MATH41022.
[3] **Mathematics and Physics:** See S5 note [3]. Note that by the end of year 4, you must have taken at least 120 credits of level 4 course units. Any level 4 credits taken in year 3 count towards that total, and to give you some choice of level 3 options in year 4, you are advised to take at least 20 credits of level 4 course units in S6.
[4] **Provisional MPhys:** Any student whose MPhys registration is provisional and whose programme is changed to BSc in February, should take the BSc Dissertation (PHYS30880) in weeks 7-12 of S6, in place of one S6 physics or outside option course unit.

Physics Core Courses	
PHYS30180	Third Year Laboratory (wks 1-6 or 7-12) (S5 & S6 20 credits)
PHYS30280	Third Year Laboratory (wks 1-6 or 7-12)
PHYS30392(A)	Cosmology
PHYS40222	Particle Physics
PHYS40322	Nuclear Physics
PHYS40352	Solid State Physics

Additional Core and Options	
PHYS30672(M)	Mathematical Methods for Physics
PHYS40202(M)	Advanced Quantum Mechanics
PHYS40692(A)	Stars and Stellar Evolution
PHYS41702	Physics and Reality
MATH36032	Problem Solving by Computer

S6 Options List

Students with an option or options choose from the following courses and are responsible for checking that they fulfil any course pre-requisites. Students can take courses with a one hour clash. Please fill out the following form which needs to be signed by the Year Tutor https://online.manchester.ac.uk/bbcswebdav/pid-5363502-dt-content-rid-16754973_1/orgs/I3039-COMMUNITY-EPS-PHYS-UG-COMMON-ROOM-1/Clash_Approval_Draft%2017-18%281%29.pdf?target=blank

Core for MPhys; list 6C	
PHYS40222	Particle Physics
PHYS40322	Nuclear Physics
PHYS40352	Solid State Physics
PHYS30392(A)	Cosmology

Physics Option List 6:	
PHYS30632	Physics of Medical Imaging
PHYS30672(M)	Mathematical Methods for Physics
PHYS30732	Physics of Living Processes
PHYS30762	Object-Oriented Programming in C++
PHYS31692(A)	Exoplanets
PHYS40202(M)	Advanced Quantum Mechanics
PHYS40422	Applied Nuclear Physics
PHYS40692(A)	Stars and Stellar Evolution
PHYS40712	Semiconductor Quantum Structures
PHYS41702	Physics and Reality
EART30362	Climate and Energy
MATH35012(M)	Wave Motion

External Option List 6E (2):	
ECON20090	Operational Research 1 (S5 & S6)
ECON20342	Business Economics 1B
HSTM20282	The Information Age
MATH20302(M)	Introduction to Logic

External Option List 6E (3):	
COMP39112	Quantum Computing
EART30232	Comparative Planetology
HSTM31212	The Nuclear Age
MATH41022(M)	Analytic Number Theory[2]
MATH39032(M)	Mathematical Modelling of Finance
MCEL30002	Tools and Techniques for Enterprise
MCEL30012	Advanced Technology Enterprise (follow-on from MCEL 30001)
MCEL30022	Interdisciplinary Sustainable Development

LEAP
Study of a foreign language as a double option (studied in S5 and S6) may be taken, but the course should normally be Level 2 or above (http://www.ulc.manchester.ac.uk/languages/leap/)

University College
Options offered through the University College may be taken (http://www.college.manchester.ac.uk/courses/)

General Physics Paper
All students sit a General Physics Paper (PHYS30010/30210) in May/ June as part of the final examinations. The questions are based on the core physics units in Year 1, Year 2 and semester 5.

Examples Classes
In semester 6 students attend two examples classes each week, one covering core courses and one covering general physics. Attendance at these classes is monitored.

MPhys Programmes Fourth Year – Semesters 7 and 8

Options

Year 4 options are in lists 7, 7E, 8 and 8E below. Options may also be chosen from lists 5, 5E(3), 6C, 6 and 6E(3), with the following constraints:

1. *You must take at least 120 credits at level 4 in years 3 and 4 together;*
2. *You may not take more than 30 credits of options from the external (E) lists in year 4.*

Physics, Physics with Astrophysics and Physics with Theoretical Physics

Students do 60 credits per semester. All students do PHYS40181/2 (MPhys project, 20 credits) in each semester, leaving 40 credits of options in S7 and S8. To qualify for Physics with Astrophysics or with Theoretical Physics, at least 30 credits must be taken in year 4 marked with (A) or (M) for Astrophysics and Theoretical Physics respectively (may include designated projects). Students who have spent year 3 abroad must take at least 90 credits of level 4 courses in year 4.

Physics with Study in Europe

Students do 60 credits per semester. The following are the usual rules, but they may be varied in exceptional circumstances by agreement with the Programme Director. In S7 students take PHYS40580 (level 4 (3rd year) lab, 10 credits) and in S8 PHYS40182 (MPhys Project, 20 credits), leaving 50 and 40 credits of options in semesters 7 and 8 respectively. As far as possible, gaps in third year core (usually Solid State and/or Particle and Nuclear Physics) must be covered. At least 90 credits of level 4 material must be taken in year 4.

Physics with Philosophy

Students do courses to a total credit rating of 120 or 125 for the year. Subject to that constraint, 55, 60 or 65 credits may be taken in each of S7 and S8. Students do either an MPhys Project (PHYS40181 or PHYS40182 (20 credits)) or a Philosophy Extended Essay (PHIL40000) (10 credits) in each of S7 and S8, e.g., if PHYS40181 is taken in S7 then the extended essay must be taken in S8. In addition to project work Physics with Philosophy students choose one of the following:

(a) 2 units of level 6 Philosophy (30 credits) or 1 level 6 and 1 level 3 module (35 credits) and 6 units of Physics (60 credits)

(b) 2 units of level 6 Philosophy (30 credits), one unit of mathematical logic (15 credits) and 5 units of Physics (50 credits)

(c) 1 unit of level 6 Philosophy (15 credits), 2 units of mathematical logic (30 credits) and 5 units of Physics (50 credits)

Mathematics and Physics

Students do courses to a total credit rating of 120 or 125 for the year. Subject to that constraint, 55, 60 or 65 credits may be taken in each of S7 and S8. At least 50 credits in Physics and 50 credits in Mathematics over the course of the year must be taken, including MATH40011 *or* MATH40022 (Mathematics Project, 15 credits) and PHYS40181 *or* PHYS40182 (MPhys Project, 20 credits). (The two projects should be taken in different semesters). The remaining options are chosen from the lists 5, 6C, 6, 7 and 8, and Mathematics course units. PHYS30672(M) (Mathematical Methods in Physics) cannot be taken.

Option List 7:	
PHYS40411	Frontiers of Solid State Physics
PHYS40421	Nuclear Structure and Exotic Nuclei
PHYS40451	Superconductors and Superfluids
PHYS40481(M)	Quantum Field Theory
PHYS40521	Frontiers of Particle Physics 1
PHYS40571(M)	Advanced Statistical Physics
PHYS40591(A)	Radio Astronomy
PHYS40631	Laser Photomedicine
PHYS40771(M,A)	Gravitation
PHYS46111	Frontiers of Laser Physics

Option List 8:	
PHYS40612	Frontiers of Photon Science
PHYS40622	Nuclear Forces & Reactions
PHYS40652	Physics of Fluids
PHYS40682(M)	Gauge Theories
PHYS40722	Frontiers of Particle Physics 2
PHYS40732	Biomaterials Physics
PHYS40752	Soft Matter Physics
PHYS40772(M,A)	Early Universe
PHYS40992(A)	Galaxy Formation

Option List 7E:	
MCEL30011	Advanced Technology Enterprise (level 4)
MCEL30051	Enterprise Strategy and Marketing
HSTM33201	Climate Change and Society (level 3)

Option List 8E:	
MCEL30012	Advanced Technology Enterprise (level 4)
MACE31642	Reactor Systems (PHYS40422 is a pre-requisite for Physics students) (level 3)

Year 4 options are in lists 7, 7E, 8 and 8E. Options may also be chosen from lists 5, 5E (3), 6C, 6 and 6E (3), with the following constraints:

1. **You must take at least 120 credits at level 4 in years 3 and 4 together;**
2. **You may not take more than 30 credits of options from the external (E) lists in year 4.**

Section 7: Student Support & Welfare

"The sooner we know of any problems, the sooner we can help you."

Géraldine Garrabet, our Student Support and Welfare Officer

It's good to talk…

If you experience any personal problems during your studies, please consider talking in confidence to Géraldine Garrabet, our Student Support and Welfare Officer. Géraldine and the Student Support team are based in the Teaching and Learning Office (The Braddick Library, room 1.61)

- If you would like to make an appointment, please email physics.support@manchester.ac.uk

If needed, Géraldine can put you in touch with other support services such as the Counselling Service and the Disability Advisory and Support Service (DASS).

You are also encouraged to make contact with your Personal Tutor. However, we would recommend that you speak with the Student Support Team in the first instance as they will be able to advise and guide you through your options and support.

- Should your problem be academic related and your Personal Tutor is not available, please contact either your Physics Tutor or the Year Tutor.
- For issues relating to choosing courses, the right person to contact is the Year Tutor.

Disability Advisory and Support Service (DASS)

DASS is based on the second floor of University Place and provides help and advice for students with specific learning difficulties, disabilities, sensory impairments, mental health difficulties and medical conditions.

Further information on DASS can be found here:
Web: http://www.dso.manchester.ac.uk/
Email: dass@manchester.ac.uk
Tel: 0161 275 7512

Section 8: Mitigating Circumstances; when something stops you doing your best

Unfortunately you may suffer from some illness or misfortune that adversely affects your ability to complete an assessment or the results they obtain for an assessment. The University has a Mitigating Circumstances process to support you during these difficult times.

What are mitigating circumstances?

Grounds for mitigation are unpreventable or unforeseeable circumstances that could have, or did have, a significant adverse effect on the academic performance of a student.

Possible mitigating circumstances include:

- significant illness or injury
- the death or critical/significant illness of a close family member/dependent
- significant family crises or major financial problems leading to acute stress
- absence for public service, e.g., jury service.

Circumstances that will ***NOT*** normally be regarded as grounds for mitigation include:

- holidays, moving house and events that were planned or could reasonably have been expected
- assessments that are scheduled close together
- misreading the timetable or misunderstanding the requirements for assessments
- inadequate planning and time management
- failure, loss or theft of a computer or printer that prevents submission of work on time (students should back up work regularly and not leave completion so late that they cannot find another computer or printer)
- consequences of paid employment (except in some special cases for part-time students)
- exam stress or panic attacks not diagnosed as illness or supported by medical evidence
- disruption in an examination room during the course of an assessment which has not been recorded by the invigilators
- extra-curricular activities.

Events may arise during pregnancy that may constitute mitigating circumstances, and these need to be judged on an individual basis.

If your problems are chronic and/or ongoing and relate to an illness or disability, you should register with DASS rather than submitting mitigating circumstances applications. Bear in mind that if your problems are continuing, the panel will look for reassurance that you are able to manage them in the future.

The Mitigating Circumstances form should be completed by any student who experiences unpreventable or unforeseeable circumstances that could have a significant adverse effect on their academic performance either in progression to the following year or their final degree classification. Such requests will be considered by the School's Mitigating Circumstances Committee.

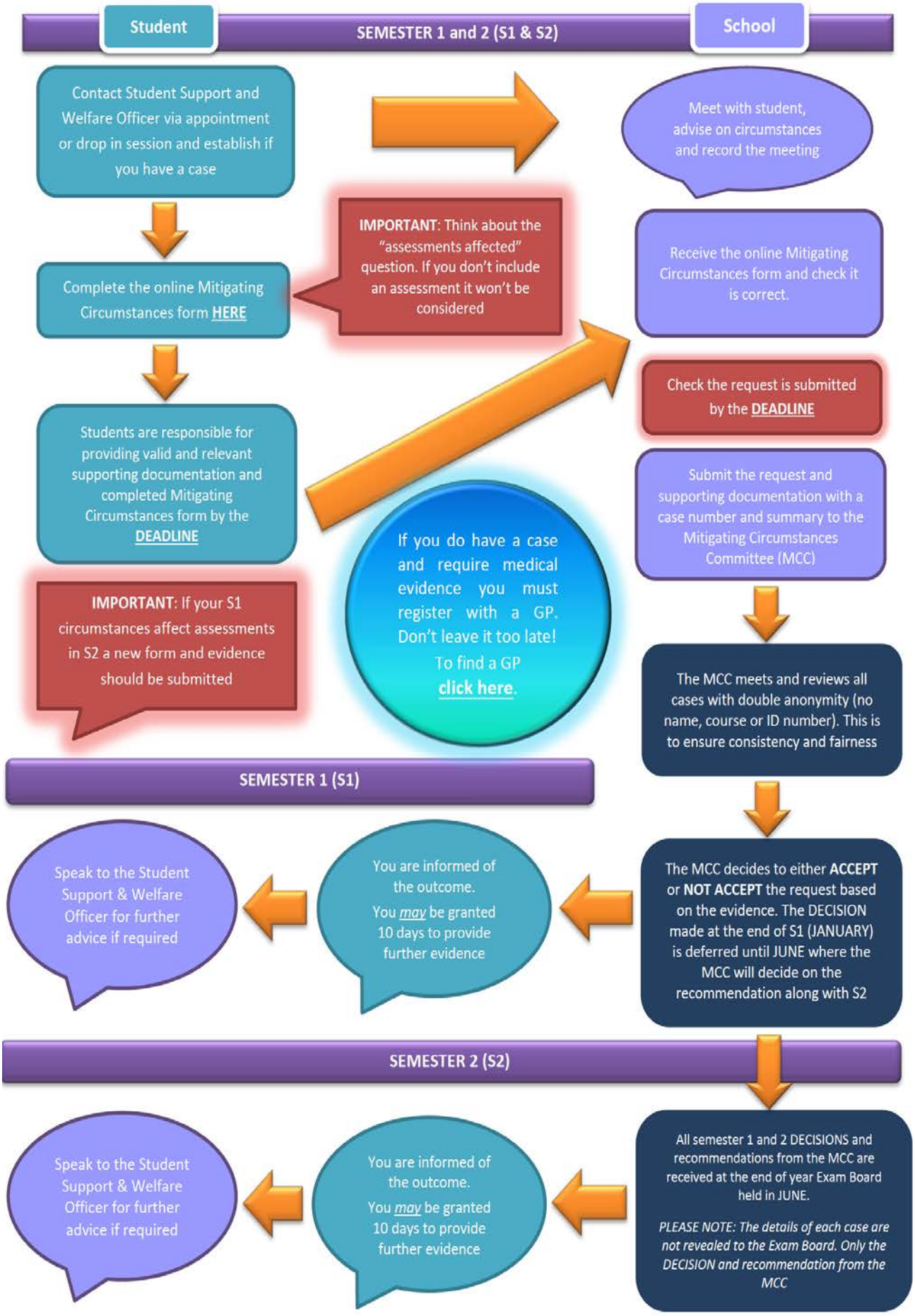
Because of the importance of independent evidence, it is strongly recommended that you register with a local GP when you arrive in Manchester, even if you are an international student and plan to return home for treatment.

It is vitally important that you submit your application as early as possible, and it must be supported by evidence.

Guidance on finding and registering with a local GP can be found on the NHS webpage (http://www.nhs.uk/Service-Search/GP/LocationSearch/4)

We strongly recommend that you read through the following advice before submitting your form. The form can be completed online at
https://apps.mhs.manchester.ac.uk/surveys/TakeSurvey.aspx?PageNumber=1&SurveyID=742M8m25&Preview=true
ALL supporting evidence and documentation should be submitted via e-mail to physics.support@manchester.ac.uk

Mitigating Circumstances Flow Chart – School of Physics and Astronomy



PLEASE NOTE: Mitigating Circumstances for students registered with DASS follow a different process, which can be discussed with the Student Support & Welfare Officer on request.

Short-Term Absence

- In the event of an absence from the department, a late submission of work, or a missed examination, students should download and complete a Short Term Absence Form and submit it to the Teaching and Learning Office.
- If you are absent from the University, due to illness, for up to 7 days you must contact the Teaching and Learning Office as soon as possible and self-certify your illness by completing the Short Term Absence Form.

The form can be downloaded at https://online.manchester.ac.uk/bbcswebdav/pid-4018203-dt-content-rid-16754902_1/orgs/I3039-COMMUNITY-EPS-PHYS-UG-COMMON-ROOM-1/Short%20Term%20Absence%20Form.pdf?target=blank **and submitted to the Teaching and Learning Office in person or via e-mail to** physics.support@manchester.ac.uk

Interruption of Study

- The expectation is that a degree course is taken over three or four consecutive years and interruptions are only in exceptional circumstances.
- A student who has exceptional circumstances which make it impossible to continue studying, should apply to take temporary leave of absence (an interruption) from their studies.
- Interruptions normally last for 12 months.
- An interruption may also be requested to take advantage of an opportunity, such as a placement or intern position.
- There is no automatic right to interrupt. Students who wish to explore this option should contact the Student Support Team in the first instance.
- An application to interrupt must be made **before** the proposed leave of absence.
- Applications should be submitted to physics.support@manchester.ac.uk along with sufficient evidence.
- Applications for interruption are considered by the School Interruptions Committee.
- Where a student is granted an interruption for medical reasons, before resuming their studies they must supply a note from a healthcare professional stating that they are fit to return.

The form can be downloaded
https://apps.mhs.manchester.ac.uk/surveys/TakeSurvey.aspx?PageNumber=1&SurveyID=742M8m25&Preview=true HERE and submitted to the Teaching and Learning Office in person or via e-mail to physics.support@manchester.ac.uk

Extensions

If you wish to request an extension to a deadline please complete this form
https://apps.mhs.manchester.ac.uk/surveys//TakeSurvey.aspx?SurveyID=ll3I6p5M

Section 9: Student Experience

"Student Experience covers all aspects of student life from recruitment to graduation and the "journey" in between." **Sue Huzar, Student Experience Officer**

Sue Huzar with the Student Reps at the Students' Union Awards evening 2017

The main areas where we offer support are summarised below:

PASS (Peer Assisted Study Sessions)
These are informal group discussions for all first years to discuss both course material and social aspects of university life. PASS Leaders (second or third year students) are assigned to each group to mediate discussion and offer advice and input. For further information please visit the PASS website http://www.peersupport.manchester.ac.uk/

Careers
Working with the Faculty Careers office, we arrange 1-1 appointments with a Careers Consultant to provide advice on CV writing, interview techniques, personal statements and job applications. We run joint events such as 'Meet the Professionals', Careers Fairs and joint Careers and Alumni events.

Employability
As a student studying with the School of Physics and Astronomy, we encourage you to build skills in order to develop your employability. These can include but are not limited to the following;

- Transferable skills and soft skills; technical writing, presenting and networking.
- Outreach and public engagement with Schools and Colleges http://www.physics.manchester.ac.uk/outreach/
- Masters and PhD study at Manchester; take advantage of the funding opportunities http://www.physics.manchester.ac.uk/study/postgraduate/funding/ as well as PG Loans for both Masters and PhD study.
- Summer and Professional Placement opportunities for students http://www.physics.manchester.ac.uk/industry/recruitment-and-employability/
- Change into a Star with Stellify http://www.manchester.ac.uk/study/experience/stellify/ access to societies, internships, volunteering and start up business ideas.

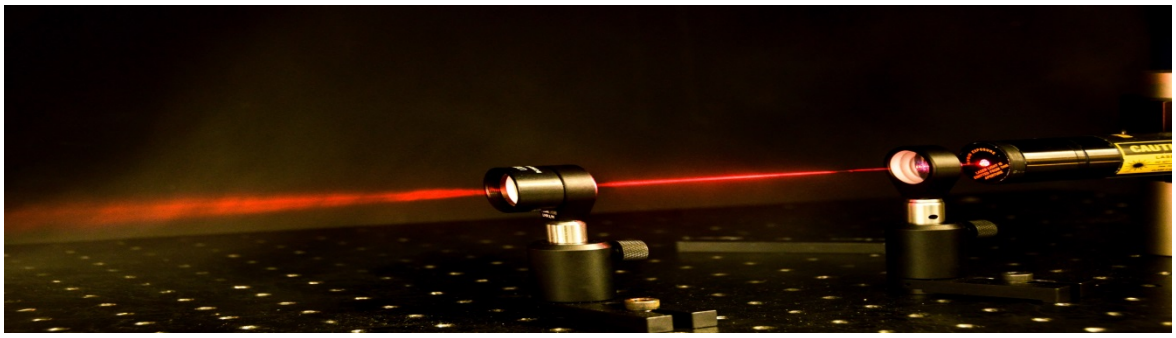
Student Engagement and Interaction
To enhance student engagement and interaction, we hold a wide range of events associated with the UG/PG student journey including, Welcome Week, Inductions, Wellbeing events for the Exams period and Graduation celebration events. To keep our students informed of events, job opportunities, placements, funding and careers activities, we circulate a weekly news email to all students.

Wellbeing
To ensure our students get the best student experience whilst here in the School of Physics & Astronomy, we arrange "relaxation events" during the exam periods to help alleviate stress and provide some "down time" for our students. Such events are proven to help with physical health, performance at study and general quality of life.

Student Reps
To ensure the student voice is heard and appropriate feedback obtained, we hold informal monthly meetings with the Undergraduate and Postgraduate reps who are elected across all years. Student reps also sit on a number of Teaching Committees which are held to facilitate communications between staff and students.

Student feedback is also provided via student surveys online and we encourage you to take part in these when you are invited to do so.

Section 10: Resources



Main Library

The University Library's website (http://www.manchester.ac.uk/library)

- Open 24 hours a day throughout the year.
- Situated at the end of Burlington Street.

Braddick Library

- Open 09:30-13:00 Monday-Friday during term time.
- Located within the School on the first floor of the Schuster Building.
- The Braddick Library supplements the Main Library's provision, and includes a Recommended Book Collection containing recommended reading for courses, a Teaching Collection of books and reference works, and a self-service photocopying facility.

Blackboard - https://online.manchester.ac.uk

Blackboard is the University-wide virtual learning environment. Each course unit has a Blackboard site with information about the course. In addition the UG Virtual Common Room in Blackboard contains links to past exam papers, lecture timetables, example sheets and their model answers.

School Intranet

Students may find the School intranet useful for general information about the School and departments. This is due to be launched in October 2017.

Dr. Judith McGovern, Physics Help Desk

Physics Help Desk

Help with problems in most areas of Physics and Mathematics is available in the Braddick Library for two hours each week, and times are available on Blackboard.

Section 11: Teaching and Learning

Change of Option Units

Please note, if you would like to change your option unit, this must be agreed by week 2 of the semester. You will only be allowed to change your option unit with exceptional academic reason after week 2, by completing the 'Change of Option' form which should be signed off by your Year : https://online.manchester.ac.uk/bbcswebdav/pid-4018204-dt-content-rid-16754965_1/orgs/I3039-COMMUNITY-EPS-PHYS-UG-COMMON-ROOM-1/ChangeofOption%2017-18%20Draft.pdf

Please note, students should register for a total of 120 credits per year or 125 credits in the case of some Mathematics and Physics and Physics with Philosophy students.

Registration for Examinations

IMPORTANT Please note: If you do not register for your course options by the Exams Office deadline your units will not appear on your exam timetable and you will not be officially registered for those exams. This will result in a separate invigilation and exam room being required and set up by the School. This will incur an administrative fee of £75.00. Deadlines will be circulated by email. *

****If you can prove that you have encountered technical issues (screen shot etc.), this will be considered.***

Late Penalty

Students should take note of the deadline set for the submission of a report, essay or other continuously assessed work. They should see the appropriate member of staff if they are uncertain about the deadline or if there are special circumstances which prevent them from meeting the deadline.

The penalty for late submission is as follows.

Work submitted after the deadline will be marked but the mark awarded will reduce progressively for each day, or part thereof by which the work is late. The mark awarded will reduce by 10 marks per day for 5 days (assuming a 0-100 marking scale), after which a mark of zero will be awarded. Loss of marks is applied after conversion to a percentage; thus a piece of work graded at 60% which is up to one day late will be awarded 50%.

Unless specified to the contrary, this will apply to coursework for any unit with a component of continuous assessment. This includes lab reports, vacation essays, BSc dissertations and MPhys projects. Currently the only exceptions are lab interviews, PHYS20161 Introduction to Programming for Physicists and the "Mastering Physics" element of PHYS10101 Dynamics.

Exam Moderation Process

- The School undertakes a rigorous moderation process to ensure the high standard of our examination papers is maintained.
- The process is overseen by the Chief Examiner alongside the First and Second Year Examiners. The Chief Examiner is responsible for Years 3 and 4.
- The lecturer of each Course Unit is the Examiner and is thus responsible for setting and marking the exam that is taken by students registered on their course.

Pre-exam Moderation

Before examinations, the following steps take place in preparation of our exam papers:

1. The Examiner writes the exam paper and produce a set of model answers. Questions are set in accordance with the learning outcomes defined in the syllabus for the Course Unit.

2. Exam moderation panels are convened. In Years 1 & 2, these are chaired by the relevant Year Examiner and involve all relevant Examiners. In Years 3 & 4, exam sub-panels are formed with courses grouped by subject area. One of the Examiners acts as convenor.
3. The panel chairs/convenors arrange for exam papers to be checked by another academic staff member on the same panel. At this stage, checking is performed blind (i.e. without model answers) wherever possible. The checked paper is then corrected by the Examiner.
4. Following the checking process, each exam panel meets and all papers are read through and discussed in detail. Any problems or errors that are found at this stage are corrected by the Examiner before changes can be approved by the panel chair/convenor.
5. Exam papers are sent to the School's External Examiners for a third round of checking. Any additional corrections must then be approved by the Year/Chief Examiner before a final version of the paper is produced.

Post-exam Moderation

During and following the exam period, all scripts are marked and the marks for each Course Unit analysed. At all stages, the data are dealt with anonymously:

1. Exam papers are marked in accordance with the model answers. Examiners carefully check each page has been seen and the marks summed correctly, a process that is repeated by a member of the Teaching and Learning Support Team.
2. The marks for each Course Unit are sent to the Year/Chief Examiner who then analyse the mark distribution in comparison with those for other Course Units (for the same student cohort) and results from previous years. They report their findings to the relevant Exam Panel (see below).
3. Exam panels, one per year group (Years 1, 2, 3&4), meet and discuss the results of the marks analysis for each Course Unit in turn. Panel members include all relevant Examiners as well as members of the School with key Teaching and Learning roles. Occasionally, anomalies in the mark distributions are identified, in which case the panel will discuss and recommend the course of action to be taken by the Examination Board. This recommendation may involve re-scaling the marks for a course up or down by an amount deemed appropriate by the panel.
4. Following the Semester 1 process, *preliminary* marks are produced and released to students. These are subject to ratification by the Examination Board in June, together with the marks from Semester 2, before final marks are released. The External Examiners attend the final Examination Board meeting, assist us in determining the outcome of final-year students whose degree marks are borderline, and provide input to the overall process. Details of referred/deferred First and Second Year assessments are also produced at this stage, for re-examination in August.
5. Following the re-sit examination period, the Examination Board meets for one more time to decide on the outcome of students who had re-sit examinations.

Change of Programme

Because the core is common, students on 'Physics with' programmes have the option of transferring to the 'Physics' programme at the start of any year. Similarly, students in 'Physics' who follow the relevant option pathway may transfer to a 'Physics with' programme at the start of any year with permission from the Programme Director. In addition, transfers between 'Physics' and 'Physics with Astrophysics' are normally possible at the start of the second semester in any year. The transfer to 'Physics with Philosophy' is only permitted in the first six weeks of Semester 1 of first year. If you would like to change degree programme, you should email karen.rogers@manchester.ac.uk.

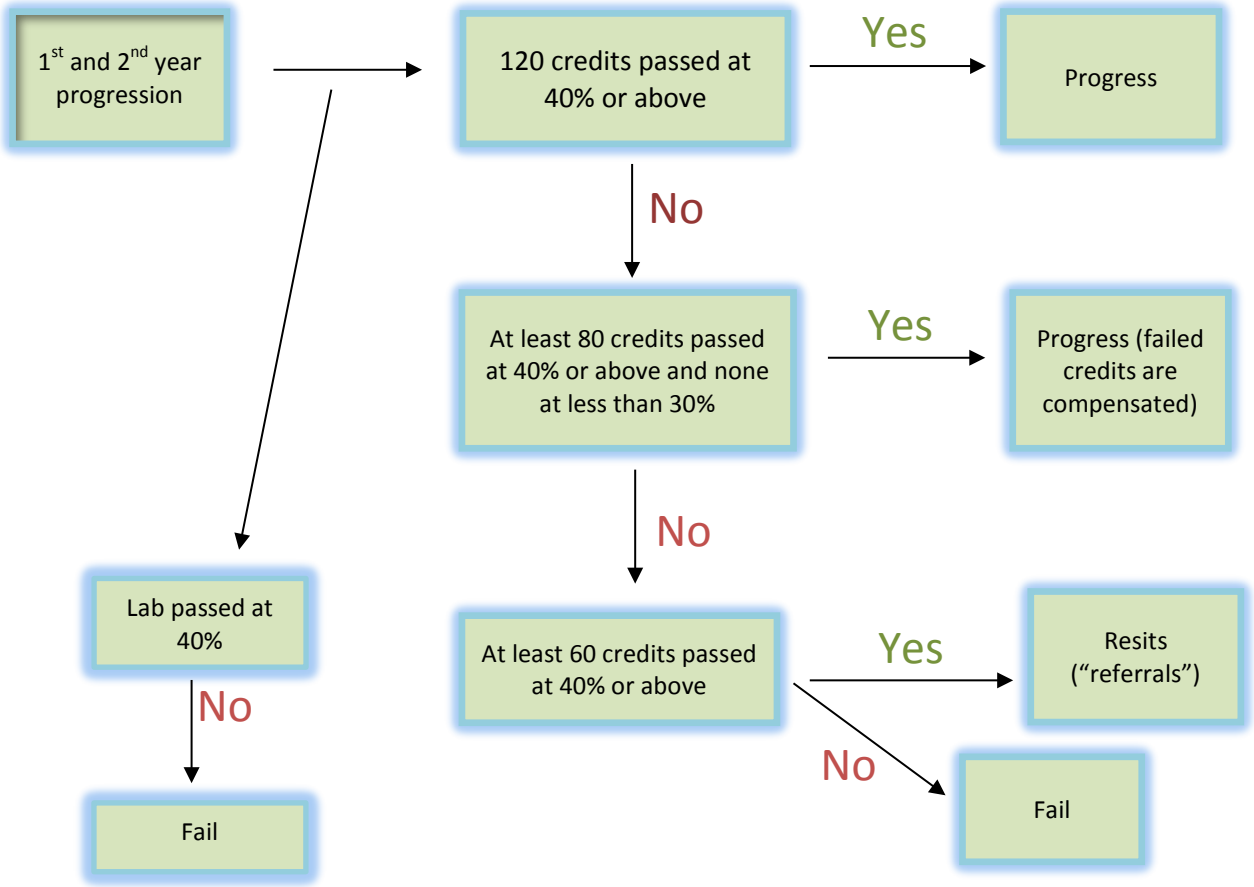
Transfer from the 'Mathematics and Physics' joint honours programme into 'Mathematics' is normally possible at the start of the second year, and into 'Physics' at the start of the second or third year, subject to the normal progression criteria (see below).

If you are a Tier 4 international student and wish to change your programme please refer to this guidance https://online.manchester.ac.uk/webapps/blackboard/execute/content/file?cmd=view&mode=designer&content_id=_5363511_1&course_id=_36111_1 ***for guidance.***

Progression

Progression in 1st/2nd year

- You have to pass laboratory with a mark of 40% or above to pass the year. If you do not pass laboratory, you will be withdrawn.
- You have to pass a minimum of 60 credits at the first attempt in each year (including lab) to be allowed resits. If you do not pass 60 credits and have no accepted mitigating circumstances, you will be withdrawn.
- Up to 40 credits of marks below 40% but above 30% can be compensated and you do not have to resit.
- If you have more than 40 credits in the compensation zone, or any marks less than 30%, you have to resit all failed core courses and any options less than 30%.



1st year mark calculation

The year mark is the credit-weighted average over 120 credits. If you have resits, these are capped at 30% and it is the capped resit mark, or the first attempt mark if higher, which contributes to the year mark.

2nd year mark calculation

Professional Development (PHYS20811/20821) is worth the equivalent of 9 credits. The standard General Paper (PHYS20040) is worth the equivalent of 10 credits and the short version (PHYS20240) taken by Maths/Physics, Physics with Philosophy and direct entrants is worth the equivalent of 6 credits. All marks are combined into a year average using these credit weightings.

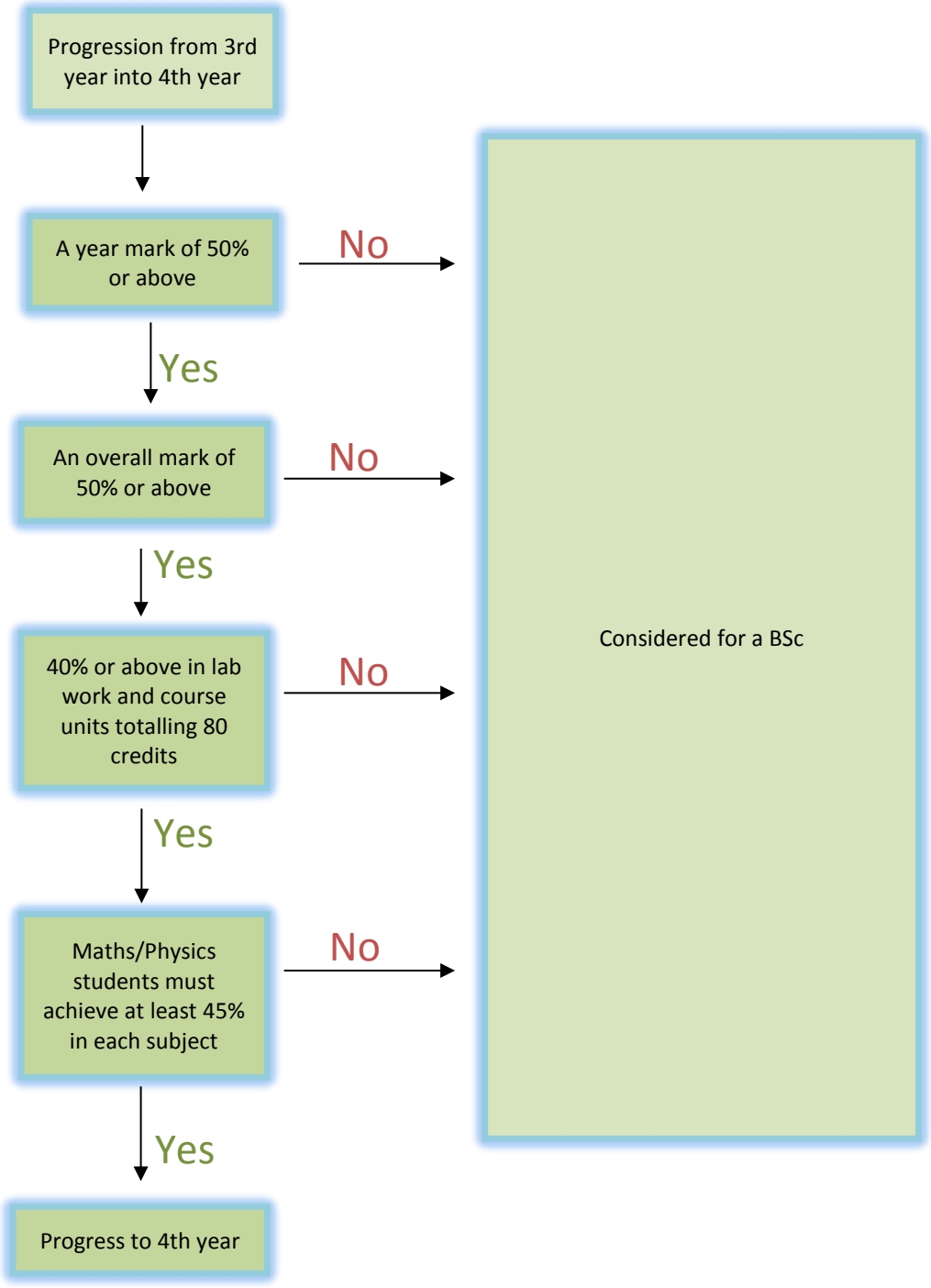
- You have to achieve a year mark of 55% or above to progress on the MPhys.
- If you achieve a mark of below 55% but above 53%, you can provisionally register on the MPhys with a review based on your Semester 5 exam results.
- If you get less than 53%, you have to change to the BSc.
- Physics with Study in Europe students must achieve a year average of 60% or above to go abroad.

Progression in 3rd/4th Year

There are no resits for third and fourth year examinations, but there is also no minimum compensatable mark.

You can progress to the final year of the MPhys if you have:

- a year mark of 50% or above, *and*
- an overall mark of 50% or above, *and*
- 40% or above in lab work and other course units totalling 80 credits.
- Maths/Physics students must also achieve at least 45% in each subject.



#3rd year mark calculation

The standard General Paper (PHYS30010) is worth the equivalent of 10 credits and the short version (PHYS30210) taken by Maths/Physics, Physics with Philosophy and direct entrants is worth the equivalent of 6 credits. The 2nd Vacation Essay (PHYS30811) is worth the equivalent of 3 credits. All marks are combined into a year average using these credit weightings.

4th year mark calculation

The year mark is the credit-weighted average over 120 or 125 credits.

Degree Classifications and Borderlines

BSc degree

A BSc student will be awarded a first, 2.1 or 2.2 degree if they have:

- an overall mark in the appropriate range:
- 70.0% or above for first class honours
- 60.0% or above for upper second class honours
- 50.0% or above for lower second class honours *and,*
- 40% or above in final year course units totalling at least 80 credits including lab and the dissertation

A BSc student will be awarded a third class degree if they have:

- an overall mark between 40.0-49.9% *and*
- 40% or above in final year course units totalling at least 60 credits, including lab work and the dissertation.

A student who has 40% or above in final year course units totalling 60 credits but less than 80, will be awarded a class of degree one lower than indicated by their overall mark (e.g. 60.0-69.9%, but with 60 or 70 credits passed is awarded a 2.2).

A student who fails to meet the criteria above may be awarded an Ordinary degree.

MPhys/MMathPhys degree

An MPhys student will be awarded a first, 2.1 or 2.2 degree if they have:

- an overall mark in the appropriate range:
- 70.0% or above for first class honours
- 60.0% or above for upper second class honours
- 50.0% or above for lower second class honours *and,*
- 40% or above in final year course units totalling at least 80 credits including project work

Students not satisfying the above criteria will be awarded a BSc on the basis of their marks in the first three years. Students on the BSc and MPhys who narrowly fail to meet the criteria for a degree class may undergo a mark review and viva voce examination.

Borderlines

The "boundary zone" is up to 2% below the lower bound for each degree class listed above. However, the third class boundary zone is up to 3% below (i.e 37.0% -39.9%). The examiners consider marginal cases as follows:

For a student who obtains an overall mark in the boundary zone for a class and obtains the required number of credits for the final year with a mark not less than 40.0% or for a student whose degree class has been reduced because of insufficient credits passed at 40%, there will be a process in up to four stages:

STAGE / METHOD	YEAR	CLASSIFICATION/PROGRESSION	CREDITS/CRITERIA
Stage 1/METHOD A	3	BSc classification or progression to year 4	If students have gained marks for 80 or more credits in year 3 at or above the level required
Stage 1/METHOD A	4	MPhys or MMath&Phys classification	If students have gained marks for 75 or more credits in year 4 at or above the level required; then they will be awarded that class. If not,

			proceed to stage 2.
Stage 2/METHOD B	3,4	BSc classification or MPhys or MMath&Phys classification	1) 70 credits for the year at or above the level required, *and* 2) marks for final year project work, or dissertation, at or above the level required, *and* 3) A year average mark which is higher than the overall mark, then the external examiners have agreed that they will be recommended to be awarded that class. If not, proceed to stage 3.
Stage 3 (review of assessed work)	3,4	BSc classification or MPhys or MMath&Phys classification	The external examiners will review exam scripts, project reports etc. If they find evidence of the student's performance according to the relevant class descriptor described above, they may recommend to the exam board to award that class. If not, proceed to stage 4.
Stage 4 (viva voce examination	3,4	BSc classification or MPhys or MMath&Phys classification	The external examiners will interview the student, and if they find evidence of the student's performance according to the relevant class descriptor described above, they may recommend to the exam board to award that class.

Borderline Interviews

A similar procedure will be applied to students who narrowly fail to satisfy the criteria for progression to the fourth year of MPhys or MMath&Phys. Therefore, **all** third and fourth year students may be called for an interview, and the dates of the interview will be notified in advance. **Failure to attend when invited for interview is likely to result in a recommendation for the lower class of degree, or for non-progression, as appropriate.**

School of Physics and Astronomy Scholarships and Prizes

Every year, the School of Physics and Astronomy makes a number of awards to students, subject to the availability of funds and of suitable recipients.

Feedback - Instances of feedback by year/semester: (This is a minimum)

YEAR/SEMESTER	tutorial work	Lab Reports	On-line tests	Essays and other written work	Other	Total
YR 1/SEM 1	10x4 [1]	2	1	1 [2]	4 [3]	**48**
YR1/SEM 2	10x4 [1]	2	0	1 [4]	4 [3]	**47**
YR 2/SEM 1	10x4 [1]	2	0	0	2 [3]	**44**
YR 2/SEM 2	10x4 [1]	2	0	1 [5]	2 [3]	**45**
YR 3/SEM 1 (Bachelors)	10x2 [6]	2	0	1 [7]	2 [3]	**25**
YR 3/SEM2 (Bachelors)	10x2 [6]	2	0	1 [7]	2 [3]	**25**
YR 3/SEM 1 (Masters)	10x2 [6]	2	0	1 [8]	2 [3]	**25**
YR 3/SEM 2 (Masters)	10x2 [6]	2	0	1 [8]	2 [3]	**25**
YR 4/SEM 1/2	8X3 [8] Examples Classes	0	0	2 [9] Project report	0	**26**

Notes

[1] 4 X core modules where feedback is offered to students on example sheets at tutorials on a weekly basis (additional core depending on programme stream).

[2] Special topics, group work which is peer assessed.

[3] Lab experiments with oral and grade descriptor feedback to students by the demonstrators.

[4] 1st vacation essay (written over the summer vacation).

[5] 2nd vacation essay (written over the summer vacation).

[6] 2 X Example classes each week to cover core courses where feedback is offered to students.

[7] BSc Dissertation.

[8] Staff will set students problem sheets for 4th year units and provide feedback. This would typically be 3 problem sheets for each unit depending on the units selected.

[9] MPhys Project.

Section 12: General FAQs

Q: **How do I contact the School Office?**
A**:** You should email physics@manchester.ac.uk from your University email address.

Q: What happens if I don't register with the University by the deadline?
A: A £200 late registration charge will be applied if you have not registered by 30th September.

Q: Who should I contact about fees and student loans?
A: You should contact the Student Services Centre (SSC) on 0161 275 5000 or via email ssc@manchester.ac.uk

Q: Who should I contact about my scholarship?
A: You should contact the Recruitment and Admissions Office at ug.physics@manchester.ac.uk

Q: What happens if I have a debt to the University?
A: You will not be able to graduate or progress to the next year until the debt has been cleared.

Q: How do I book a room in the Schuster building?
A: You should email sarah.cole@manchester.ac.uk with your requirements, e.g room size, date and times.

Q: I need an unofficial transcript, how do I get one?
A: Email physics@manchester.ac.uk with your student number, degree programme, the deadline of when the transcript is required and if you require a hard copy or an emailed copy.

Q: I need an official transcript, how do I get one?
A: Your official transcript can be accessed via the Student Services system Digitary https://edocs.manchester.ac.uk/wallet/servlet/UserWalletApp/template/Login.vm for further details please visit http://www.graduation.manchester.ac.uk/after-youve-graduated/copies-of-degree-certificates-and-transcripts/

Paper copies of academic transcripts
Official Paper Copies can be purchased through our online store for a charge of £15 for 3 copies.

If you have any queries please email transcripts@manchester.ac.uk

Q: What happens if I want to get a job whilst studying?
A: The University of Manchester recommends that students work for no more than 15 hours per week. This is so that you can achieve the right balance between your studies, other commitments and the need to earn money to support yourself. The full guidance can be found at: http://www.careers.manchester.ac.uk/media/services/careersandemployabilitydivision/careersservice/crcpublications/startingpointseriesofhandouts/jobsearch/PartTimeJobs.pdf

For international students, the statement below is from the Careers web pages (http://www.careers.manchester.ac.uk/international/workduringstudy/):

"It is important to check your visa to confirm if you can work during your studies. Most international students are allowed to work up to 20 hours per week during term time and full time during vacations but there are different vacation rules for postgraduate students. There are also some restrictions on the type of work you can do".

The full guide for Tier 4 Students can be found at: http://www.careers.manchester.ac.uk/media/services/careersandemployabilitydivision/careersservice/international/Tier-4-working-guide.pdf

Student Support FAQs

Q: Who should I contact if I have any personal issues?
A: You should contact the Student Support Team on physics.support@manchester.ac.uk See section 8 for more information.

Q: I've been advised to contact the Student Support Team, will this be confidential?
A: Yes. You can contact the team in confidence by phone, e-mail or in person. There will be a "drop in" session each Wednesday afternoon from 2pm till 3pm, during term time, in the sound proofed pod just inside the entrance to the Braddick Library.

Q: Can I get someone else to speak on my behalf?
A: Due to Data Protection regulations, we do not discuss students with any other party unless written permission is given by the student. If you would prefer someone to speak on your behalf, then send an e-mail to the Student Support Team from your University e-mail address giving your permission.

Q: What sort of supporting evidence do I need to provide along with my mitigating circumstances form?
A: The nature of this documentation will vary according to the nature of the circumstances, but it must be sufficiently independent to confirm the case you are making. Contact the Student Support Team if you are unsure whether the evidence you have is acceptable.

Q: What happens if I don't have supporting evidence ready in time for the mitigating circumstances deadline?
A: If supporting evidence has not been received before the Mitigating Circumstances Committee (MCC) meets, your application will not normally be processed further. However, you should still submit an application form, to ensure that the School is aware of your situation, even if evidence is not available in time for the MCC to accept it.

Q: I'm registered with DASS, do I still need to submit for mitigating circumstances and provide evidence?
A: If you need to apply for mitigating circumstances due to issues directly related to your disability, you do not need to provide any additional supporting evidence if you are registered with DASS. However, you must provide a detailed explanation of how your disability is currently affecting your studies. It is not sufficient to indicate only that you are registered with DASS. A Disability Advisor from DASS will be in liaison with the MCC that will consider your application.

Q: What happens once I have submitted my mitigating circumstances form?
A: Forms and evidence are taken before the MCC which meets three times a year to rule on requests for mitigation. The decision of the panel is provisional and is reviewed by the Board of Examiners at their meeting in June or September.

Q: How do I find out the decision made on my mitigating circumstances?
A: Students will be contacted and informed of their mitigating circumstances outcome by the Student Support Team within 10 working days from when the committee meets. Remember to check your University email account regularly.

Q: How do I apply for an Interruption of Studies?
A: Students who wish to explore this option should contact Géraldine Garrabet, the Student Support and Welfare Officer, in the first instance. To apply you should download and complete the form from Blackboard and submit this to Géraldine, along with sufficient evidence.

Q: What should I do if I am unwell and cannot attend University?
A: If you are absent from the University, due to illness, for up to 7 days you must complete a Short Term Absence form (available on Blackboard). Submit this to the Student Support Team at your earliest convenience. The relevant members of staff will then be notified of your absence and you will be marked as excused. If you miss more than 7 days, you will need to submit for mitigating circumstances.

Teaching and Learning FAQs

Q: Who do I contact if I am struggling academically?
A: In the first instance, contact your Personal or Physics Tutor. If necessary you can also contact your Year Tutor or the Deputy Director of Teaching and Learning.

Q: How do I change my programme of study?
A: If you would like to change degree programme, you should email karen.rogers@manchester.ac.uk. For more information see below:

Programme to change	To be approved by	Deadline to change
Straight Physics to Physics with Astrophysics	Programme Director	Start of any Semester (subject to suitable option choice)
Physics with Astrophysics to Straight Physics	Programme Director	Start of any Semester
Physics to Maths and Physics	Programme Director	Start of Year 1
Maths and Physics to Straight Physics	Programme Director	Start of Year 1, 2 and 3 (subject to suitable option choice)
Straight Physics to Physics with Theoretical Physics	Programme Director	Start of Year 1, 2 and 3 (subject to suitable option choice)
Physics with Theoretical Physics to Straight Physics	Programme Director	Start of any Year
Straight Physics to Physics with Philosophy	Programme Director	First 6 weeks of Year 1 (mid-November)
Physics with Philosophy to Straight Physics	Programme Director	Start of any Year
Straight Physics to Physics with Study in Europe	Programme Director	Start of Year 1 or Year 2 (if language qualification adequate)
Physics with Study in Europe with Straight Physics	Programme Director	Start of Year 1, 2 and 3

Q: When must I make my final decision on whether to take a BSc or MPhys programme?
A: You must have decided which degree programme you want to take by the end of registration week in September of 3rd year.

Q: I want to study abroad in 3rd year, how do I get further information?
A: Information about the study abroad programme is given at a meeting during October of 2nd year. The Study Abroad Co-ordinator is Dr Yvonne Peters (yvonne.peters@manchester.ac.uk).

Q: Can I change my option at any time if I don't like it?
A: No, *only within the first 2 weeks of each semester*. Any changes after the 2 week deadline must only be in exceptional cases which are approved by your Year Tutor. It would be detrimental to your study if you changed your options after week 2.

Q: Can I take an external option module outside of the programme structure?
A: You may be allowed, but this would require formal approval from your year tutor by completing the Change of Options Form on Blackboard.

Q: Can I take an option if it clashes with another module?
A: In 1st and 2nd year you cannot take options that clash. If you decide to take a module which clashes with another module in 3rd and 4th year, you will only be permitted if the clash is no more than 1 hour per week. You should complete the Option Clash Approval Form on Blackboard and get this signed by your year tutor.

Q: Can I take more than 120 credits in the year?
A: No. Students should register for a total of 120 credits per year or 125 credits in the case of some Mathematics and Physics and Physics with Philosophy students.

Q: What happens if I don't register for an exam by the deadline set by the Exams Office?
A: Failure to register for an exam will incur a £75 fine payable to the School.

Q: What do I do if one of my exams is missing from my exam timetable?
A: The Exams Office is responsible for timetabling examinations and email students regarding timetables. Students should follow the instructions written in the email and update their exam details within their 'My Manchester' page.

Q: What happens if I miss an exam?
A: You will receive a mark of zero unless you have valid mitigating circumstances.

Q: How do I find out my exam results?
A: Results are posted on the student system. You will be sent an email giving details on how to access them.

Q: What happens if I fail some units?
A: You will be allowed resits in 1st and 2nd year providing you pass 60 credits at the first attempt (including lab). Some marks below 40% but above 30% may be compensated. There are no resits in 3rd and 4th year.

Q: How do I register for a resit exam?
A: You will be automatically registered for any resit examinations you have to take.

Q: When do the resits take place?
A: Resits start on Monday 20th August 2018 for two weeks. You will receive your timetable via the Exams Office.

Q: Do I have to pay a resit examination fee?
A: If you are sitting the exam as a second attempt, you will be charged a £75 resit fee, payable to Student Services. There is no charge if you are resitting as a first attempt.

Q: What happens if I fail my resit exam(s)?
A: You will receive a letter clarifying your results and the next steps you need to take. If you have any queries you contact the Teaching and Learning office.

Q: How is my degree class calculated?
A: Your credit-weighted year marks are combined as follows:

	Year 1	Year 2	Year 3	Year 4
BSc (All programmes)	10%	30%	60%	
MPhys/MMath&Phys (All programmes except Year 3 abroad)	6%	19%	37.5%	37.5%
All Programmes with Year 3 Abroad	8%	23%	23%	46%

Q: Can I carry my marks if I interrupt and repeat the year with attendance?
A: No. You will be repeating all of the year, therefore, you will repeat everything and any marks from the year you have interrupted against will not be counted or carried.

Q: Do I get an opportunity to view my exam scripts?
A: You will be sent emails regarding script viewing sessions.

Q: When will I get feedback on coursework?
A: All formative assessments and assessed coursework feedback will be provided within 15 working days of the final submission deadline.

If I knew how awful marking exams was I'd have enjoyed sitting them more!

P. Mitchell

Table of Constants

Symbol	Description	Numerical Value
c	Speed of light in vacuum	299 792 458 m s^{-1}, exactly
μ_0	Permeability of vacuum	$4\pi \times 10^{-7}$ N A^{-2}, exactly
c_0	Permittivity of vacuum where $c = 1/\sqrt{c_0\mu_0}$	8.854×10^{-12} C^2 N^{-1} m^{-2}
h	Planck constant	6.626×10^{-34} J s
n	$h/2\pi$	1.055×10^{-34} J s
G	Gravitational constant	6.674×10^{-11} m^3 kg^{-1} s^{-2}
e	Elementary charge	1.602×10^{-19} C
eV	Electron volt	1.602×10^{-19} J
α	Fine structure constant, $\frac{e^2}{4\pi\ \varepsilon_0 nc}$	$\frac{1}{137.0}$
m_e	Electron mass	9.109×10^{-31} kg
$m_e c^2$	Electron rest-mass energy	0.511 MeV
μ_B	Bohr magneton, $\frac{en}{2m_e}$	9.274×10^{-24} J T^{-1}
R_∞	Rydberg energy, $\frac{\alpha^2 m_e c^2}{2}$	13.61 eV
a_0	Bohr radius, $\frac{\hbar}{\alpha\, m_e c}$	0.5292×10^{-10} m
Å	Ångström	10^{-10} m
m_p	Proton mass	1.673×10^{-27} kg
$m_p c^2$	Proton rest-mass energy	938.272 MeV
$m_n c^2$	Neutron rest-mass energy	939.565 MeV
μ_N	Nuclear magneton, $\frac{en}{2m_p}$	5.051×10^{-27} J T^{-1}
fm	Femtometer or Fermi	10^{-15} m
b	Barn	10^{-28} m^2
u	Atomic mass unit, $\frac{1}{12}m(^{12}\text{C atom})$	1.661×10^{-27} kg
N_A	Avogadro constant, atoms in mole	6.022×10^{23} mol^{-1}
T_t	Triple-point temperature	273.16 K exactly
k	Boltzmann constant	1.381×10^{-23} J K^{-1}
R	Molar gas constant, $N_A k$	8.314 J mol^{-1} K^{-1}
σ	Stefan-Boltzmann constant, $\frac{\pi^2}{60}\frac{k^4}{\hbar^3 c^2}$	5.670×10^{-8} W m^{-2} K^{-4}
M_E	Mass of Earth	5.972×10^{24} kg
R_E	Mean radius of Earth	6.371×10^{6} m
g	Standard acceleration due to gravity	9.806 65 m s^{-2}, exactly
atm	Standard atmosphere	101 325 Pa, exactly
$M_\odot$	Solar mass	1.989×10^{30} kg
$R_\odot$	Solar radius	6.955×10^{8} m
$L_\odot$	Solar luminosity	3.84×10^{26} W
$T_\odot$	Solar effective temperature	5.78×10^{3} K
AU	Astronomical unit, mean Earth-Sun distance	1.496×10^{11} m
pc	Parsec	3.086×10^{16} m
	Year	3.156×10^{7} s