(Pre-)Advising thoughts for those entering Physics and Astronomy 2016

Entry Routes

The School is pleased to welcome in to its degree programmes students from a variety of education backgrounds. We have three main entry routes to our degree programmes:-

- Traditional First Year Entry
- Accelerated Entry (Direct Entry to Second Year)
- Physics and Astronomy (Gateway)

The First Year Entry route is the norm across the University. It can lead to a BSc honours degree in physics or astronomy in four years, or an MPhys or MSci in five. This entry route allows maximum flexibility, as students can take a number of subjects alongside physics and mathematics in first year, and depending on module choices can progress from a successful first year towards a number of different degree options. Some of our joint degrees permit entry only by this traditional route, due to the necessary breadth of material to be covered. The breadth of the traditional first year is also appreciated by a number of students who are convinced that they wish to take physics/astronomy to degree level, but who wish to pick up some university-level education in other subjects on the way past.

The Accelerated Entry route is available for degrees within the School, and for joint degrees with the School of Mathematics and Statistics. It allows well qualified entrants to bypass first year study, and thus reduces the length of time needed to obtain a particular degree by one year. There is some reduction in flexibility of final choice of degree, but there can still be options at the end of the entry year for degree programmes amongst physics, theoretical physics, joint degrees with mathematics, and where appropriate astronomy. In recent years around one third of our entrants have taken this accelerated route. Entrants must have Advanced Higher or A-level qualifications in Physics and Maths at grade A, IB with 38 points, or equivalent. If you have the necessary qualifications, are sure that you wish to do a degree within the School, or joint with Mathematics, we suggest that you give this route serious consideration. There is more information elsewhere on the School website.

The Gateway entry route is accessible only to those who have been given an entry offer stating this programme. It is an alternative first year that concentrates on physics, mathematics, and academic skills, and it does not have an accelerated entry route.

First Year Entry – Module Choices

Students entering by this route will normally take PH1011 Physics 1A in first semester, and PH1012 Physics 1B in second semester. They will also take MT1001 Introductory Maths in first semester and MT1002 Mathematics in second semester, unless they have the qualifications needed to bypass MT1001, in which case they can take MT1002 in either semester. Those considering a degree in astrophysics should also take AS1001 Astrophysics one, which is in first semester. All the above are 20 credit modules. Students take 120 credits in first year, with the remaining credits being made up of modules chosen by the student depending on their interests, or as needed for the other half of joint degree programmes. Students are welcome to choose modules from across the University, subject to timetable constraints and prior learning. Two possibilities are given in the tables below.

Those students on the joint degree programmes with Chemistry and with Computing Science and who have Advanced Higher or A-level physics and mathematics at grade A are encouraged to consider replacing Physics 1A by Physics 2A in order to reduce their credit load in second year.
Tables showing two possible arrangements of modules for first year entry. The number in brackets is the number of credits for the module. The second table is for those students who may bypass MT1001. Normal lecture times are shown – some modules will also have tutorials or laboratory sessions. If the astrophysics module is taken then these choices would open up progression to the second year of degree programmes in physics, in astrophysics, mathematics, and joint degrees maths/physics maths/theoretical physics. If relevant chemistry or computing or philosophy modules are taken then the joint (and possibly single honours) degrees with those subjects remain possibilities after a successful first year. Please also see later table for some more information on module choices and timetables.

### Accelerated Entry, Direct Entry to Second Year Physics and Maths – Module Choices

Students with the necessary qualifications (eg Advanced Highers A grades in Maths and Physics, A-level AAA including Maths and Physics) can enter by this route and find PH2011 Physics 2A in first semester to be at an appropriate level for their prior learning. This is followed in second semester by PH2012 Physics 2B. Students choosing this route now normally commence their university mathematics studies at level 2 also. Some students may choose to take MT1002 alongside MT2503 Multivariate Calculus. All students aiming for a degree involving our School will need to take MT2501 Linear Maths and MT2503 Multivariate Calculus.

We list below some of the module choices for those aiming towards different degree programmes. Formal specifications are in the University’s Course Catalogue. You will see that several options of degree title can be kept open depending on module choices.

MT2501 Linear Maths runs in both semesters, so for many students there will be the option of doing this in either semester, possibly opening up other choices of modules. Students need to get to a total of 120 credits over the year, though if they end up with 5 or 10 more that is acceptable. They must have at least 80 credits at level 2, which can be satisfied by any of the routes shown.

In order to allow students to be prepared for the second semester Astrophysics modules AS2001 or AS2101, we are now offering a short Astrophysics module in semester one that covers the essential parts of first year astrophysics.

For the joint degrees with Maths it is important to choose the “correct” set of MT2* modules in order to open up a route to either the pure or applied flavours of the maths joint degrees, and also the BSc Maths degree.

These tables show possible module combinations for intended degree titles, and what degree titles this set of modules may also lead to. There is not a clash between for example Linear Maths and Multivariate Calculus at noon in first semester, as these run on different days of the week. Some tables seem to be repeated, as the same set of modules can satisfy different intended degree titles.
A. Can lead to BSc or MPhys Physics or Theoretical Physics. If two relevant level two maths modules are taken as the choice in second semester then can also lead to the joint degrees with Mathematics.

<table>
<thead>
<tr>
<th>Physics, Sem 1</th>
<th>Physics, Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH2011 (30) 10 am, Physics 2A</td>
<td>PH2012 (30) 10 am, Physics 2B</td>
</tr>
<tr>
<td>MT2503 (15) noon, Multivariate Calculus</td>
<td>Choice (30)</td>
</tr>
<tr>
<td>MT2501 (15) noon, Linear Maths</td>
<td></td>
</tr>
</tbody>
</table>

B. With modules shown can lead to BSc or MPhys Astrophysics, Physics or Theoretical Physics. It is worth noting that this set of modules can lead to any of the single-honours degrees within the School.

<table>
<thead>
<tr>
<th>Physics, Sem 1</th>
<th>Physics, Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH2011 (30) 10 am, Physics 2A</td>
<td>PH2012 (30) 10 am, Physics 2B</td>
</tr>
<tr>
<td>AS1101 (5), 11 am, Astro 1 condensed</td>
<td>AS2001 (30) 11 am</td>
</tr>
<tr>
<td>MT2503 (15) noon, Multivariate Calculus</td>
<td>OR [AS2101 (15) 11 am &amp; choice eg MT2507 (15)]</td>
</tr>
<tr>
<td>MT2501 (15) noon, Linear Maths</td>
<td></td>
</tr>
</tbody>
</table>

C. With modules shown can lead to BSc or MPhys Physics or Theoretical Physics. If the choice in each semester was a relevant level two maths module then this could lead to joint degrees with Mathematics.

<table>
<thead>
<tr>
<th>Theoretical Physics, Sem 1</th>
<th>Theoretical Physics, Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH2011 (30) 10 am, Physics 2A</td>
<td>PH2012 (30) 10 am, Physics 2B</td>
</tr>
<tr>
<td>MT2503 (15) noon, Multivariate Calculus</td>
<td>Choice (30)</td>
</tr>
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<td></td>
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A. With modules shown can lead to BSc or MPhys Physics or Theoretical Physics. If two relevant level two maths modules are taken as the choice in second semester then can also lead to joint degrees with Mathematics.

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<tr>
<td>PH2011 (30) 10 am, Physics 2A</td>
<td>PH2012 (30) 10 am, Physics 2B</td>
</tr>
<tr>
<td>AS1101 (5), 11 am, Astro 1 condensed</td>
<td>AS2001 (30) 11 am</td>
</tr>
<tr>
<td>MT2503 (15) noon, Multivariate Calculus</td>
<td>OR [AS2101 (15) 11 am &amp; choice eg MT2507 (15)]</td>
</tr>
<tr>
<td>MT2501 (15) noon, Linear Maths</td>
<td></td>
</tr>
</tbody>
</table>

B. Can lead to BSc or MPhys Astrophysics, Physics or Theoretical Physics. It is worth noting that this set of modules can lead to any of the single-honours degrees within the School.
C. With modules shown can lead to BSc or MPhys Physics or Theoretical Physics. If the choice in each semester was a relevant level two maths module then this could lead to joint degrees with Mathematics.

### Astrophysics, Sem 1
- PH2011 (30) 10 am, Physics 2A
- AS1101 (5), 11 am, Astro 1 condensed
- MT2503 (15) noon, Multivariate Calculus
- MT2501 (15) noon, Linear Maths

### Astrophysics, Sem 2
- PH2012 (30) 10 am, Physics 2B
- AS2001 (30) 11 am
- OR [AS2101 (15) 11 am & choice eg MT2507 (15)]

B. With modules shown can lead to BSc or MPhys Astrophysics, Physics or Theoretical Physics. It is worth noting that this set of modules can lead to any of the single-honours degrees within the School.

### Physics & (Applied) Maths, Sem 1
- PH2011 (30) 10 am, Physics 2A
- MT2503 (15) noon, Multivariate Calculus
- MT2501 (15) noon, Linear Maths

### Physics & (Applied) Maths, Sem 2
- PH2012 (30) 10 am, Physics 2B
- MT2506 (15) 9 am, Vector Calculus
- MT2507 (15) noon, Maths Modelling

D. (is a defined version of A) With modules shown can lead to BSc or MPhys Physics or Theoretical Physics or the joint BSc or MPhys degrees with Mathematics.

### Physics & (Pure) Maths, Sem 1
- PH2011 (30) 10 am, Physics 2A
- MT2503 (15) noon, Multivariate Calculus
- MT2502 (15) 11 am, Analysis

### Physics & (Pure) Maths, Sem 2
- PH2012 (30) 10 am, Physics 2B
- MT2501 (15) 11 am, Linear Maths
- MT2505 (15) 11 am, Abstract Algebra

E (is a defined version of C) With modules shown can lead to BSc or MPhys Physics or Theoretical Physics or the joint BSc or MPhys degrees with Mathematics.

The set of second year maths modules is as follows. There are no timetable clashes amongst them:

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT2501</td>
<td>Linear Maths, noon sem 1, 11 sem 2</td>
</tr>
<tr>
<td>MT2502</td>
<td>Analysis, 11 Sem 1</td>
</tr>
<tr>
<td>MT2503</td>
<td>Multivariate calculus, noon Sem 1</td>
</tr>
<tr>
<td>MT2504</td>
<td>Combinatorics &amp; Prob, 11 Sem 1</td>
</tr>
<tr>
<td>MT2505</td>
<td>Abstract Algebra, 11 Sem 2</td>
</tr>
<tr>
<td>MT2506</td>
<td>Vector Calculus, 9 Sem2</td>
</tr>
<tr>
<td>MT2507</td>
<td>Maths Modelling, noon Sem2</td>
</tr>
<tr>
<td>MT2508</td>
<td>Stats and Inference, noon Sem2</td>
</tr>
</tbody>
</table>
First semester modules

Modules might include some of the following, amongst others. Complete listings and more information from the University Course Catalogue, including full listing of module codes and slots at http://www.st-andrews.ac.uk/coursecatalogue/ug/ and scroll down to the 100 & 2000 Level Timetable

The following modules were available in 2014-15. The intention is to update this list when the catalogue for 2016-17 becomes available.

9 am slots (clash with some first year maths)
FR1001 French language and literature, needs Higher or A-level French or equivalent
MT1001 Introductory Mathematics, needs Higher or AS level Maths
MT1002 Mathematics, needs at least a B at Advanced Higher Maths or A level Maths
SD1001 (9 am Mon, Tue, Thu, Fri) Sustainable Development - Priorities and Pathways
MU2002 (9 am Tue, Wed, Thu) Scottish Music

10 am slots (clash with second year physics)
BL1101 Biology 1
CS1002 Object Oriented Programming, needs Maths Higher or A-level at B at least
DI1012 Living Faith
IT1001 Intro to Italian Language, not for native speakers or those who have Higher or A level Italian
ME1003 The fall of Rome and the origins of Europe
PH2011 Physics 2A

11 am slots (clash with first year astrophysics)
AN1001 Greek History
AS1001 /1101 Astronomy and Astrophysics 1 (requires Higher or A-level Physics and Maths at B at least
CH1401 Intro Inorganic and Physical Chemistry, needs Higher or A-level Chemistry at B at least
EN1003 Culture and Conflict: An intro to 19th and 20th Century literature
GG1001 Understanding our Changing World
PY1005 (11 am Mon, Tue, Thu) Mind and Reality
RU1001 Elementary Russian Language 1
MT2502Analysis, needs Adv Higher or A-level Further Maths at A or MT1002
MT2504 Combinatorics and Probability, needs Adv Higher or A-level Further Maths at A or MT1002
DI2003New Testament 2
EC2008 Topics in Finance

Noon slots (clash with first year physics, and with relevant second year maths)
CH1301 The Impact of Chemistry, needs Standard Grade or GCSE Chemistry
CL1004 Myth and community in Ancient Greek Literature and Culture
CS1005 Computer Science in Everyday Life
DI1003 Old Testament 1: Torah and Prophets
ES1001 Planet Earth
MO1007The Early Modern Western World
PH1011 Physics 1A
PS1001 Psychology 1
SP1001 Spanish Language and Texts – needs Higher or A level Spanish

MT2501 Linear Maths, needs quals

MT2503 Multivariate Calculus, needs quals

1 pm slots

ID1003 (1 pm Mon, Tue, Thu) Great Ideas I

ID2003 Science Methods (see also 4 pm)

2pm slots (choice of physics (and astro) lab afternoon then important)

EC 1002 (2 pm Mon, Tue, Thurs) Microeconomics, available only to entrant students

SP1003 Spanish for beginners 1, students must not be speakers of Spanish

3 pm slots (choice of physics (and astro) lab afternoon then important)

GM1001 First level German A1, Needs Higher or A level German – may then need Wed Phys1A lab

MU1003 (3 pm Mon, Tue, Thu) Understanding Music, needs music qualifications

MU1013 (3 pm Mon, Tue, Thu) Understanding Music (B), must not have certain music qualifications

4 pm slots (choice of physics (and astro) lab afternoon then important)

GM1003 First Level German B1, not for native speakers, or those with Higher or A level German – may then need Wed Phys1A lab

ID2003 Science Methods additional slot on Thursday

MN1001 Organisations and Society – may then need Wed Phys1A lab

5 pm slots (choice of physics (and astro) lab afternoon then important)

PY1105 (5 pm Mon, Tue, Thu) Ethical Controversies

Second semester modules

Modules might include some of the following, amongst others. Complete listings and more information from the University Course Catalogue, including full listing of module codes and slots at http://www.st-andrews.ac.uk/media/publications/coursecatalogue/undergraduate/2014-2015/10002000level/2014-15%20semester%202.pdf

9 am slots

MT1002 Mathematics, needs MT1001 or B at Adv Higher or A level

MT1003 Pure and applied mathematics (needs MT1002)

FR1002 French language and literature 2 – needs FR1001

SD1003 Sustainable Development: Towards alternative futures

MT2506 Vector Calculus (needs MT2503)

CL2003 Early Greek poetry and philosophy

MU2002 Scottish Music

10 am slots (clash with second year physics)

BL1102 Biology 2
CH1402 Inorganic and Physical Chemistry 1 – needs Higher or A level Chem or CH1401
CS1003 Programming with data – needs CS1002
DI1001 Theology: Issues and history
ME1006 Scotland and the English Empire
MU1005 Reading opera...
PH2012 Physics 2B in your programme at some stage

11 am slots (clash with second year astrophysics)
AN1002 Roman history from foundation to empire
AS1002 The Physical Universe - not for those taking other PH or AS modules)
AS2001 Astronomy and Astrophysics 2 - needs AS1001 or As1101, MT1002, PH1011 or bypassed
AS2101 Astrophysics 2 condensed - needs AS1001 or As1101, MT1002, PH2011
CH1601 Organic and biological chemistry – needs Higher or A level Chem at B
CS1006 Programming projects – needs CS1002
EN1004 Explorers and revolutionaries: Literature 1680-1830
GG1002 A world in crisis?
IT1002 Italian language (elementary) – needs IT1001 or Higher Italian or equivalent
MT1007 Statistics in Practice – needs Higher Maths C or similar
PY1106 Society, authority, and freedom
MT2501 Linear Mathematics – needs quals, needed in either semester one or two in level two
MT2505 Abstract Algebra – needs quals
EC2008 Topics in Finance

Noon slots (clash with first year physics)
CL1005 Images of Augustan Rome
DI1006 New Testament 1: Jesus and the Gospels
ES1002 Earth resources and environment – needs ES1001
ID1005 IT in the organisation
MO1008 Themes in late modern history
PH1012 Physics 1B
PS1002 Psychology 2
SP1002 Spanish language and texts 2 – needs SP1001
MT2507 Mathematical Modelling – needs MT2503
MT2508 Statistical Inference – needs MT2504, antireq EC2003
EC 2003 Quantitative Methods – Statistics – needs EC1001, antireq MT2508

1 pm slots
ID1004 Great ideas 2
SP1030 Introduction to modern Latin America

2 pm slots (care needed to check with lab afternoons)
EC1001 Macroeconomics
LI1002 Foundations of language 2
MU2004 Electronic Music
3 pm slots (care needed to check with lab afternoons)
GM1002 First level German A2 – needs GM1001
MU1004 Making Music – needs grade 8 performance certificate

4 pm slots (care needed to check with lab afternoons)
DI1005 New Testament Greek 1
GM1004 First level German B1 – needs GM1003
MN1002 Organisations and analysis
RU1006 Advanced elementary Russian language and literature 2 – needs RU1005
SA1002 Ways of thinking

5 pm slots (care needed to check with lab afternoons)
PY1006 Reasoning and Knowledge
Module Choices and Timings
One of the following two tables may help you plan your choice of modules. We note some, but not all, modules that may be of interest. More information is in the University’s Course Catalogue. Times below have not yet been updated for 2016-17, but most are likely to remain similar.

First Year Entry

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>MT1001/2 (20), FR1001, SD1001, MU2002</td>
</tr>
<tr>
<td>10</td>
<td>BI1101, CS1002, DI1012, IT1101, ME1003</td>
</tr>
<tr>
<td>11</td>
<td>Astrophysics 1? (20), AN1001, CH1401, EN1003, GG1001, PY1005, RU1001</td>
</tr>
<tr>
<td>12</td>
<td>PH1011 Physics 1A (20)</td>
</tr>
<tr>
<td>1</td>
<td>ID1003</td>
</tr>
<tr>
<td>2</td>
<td>EC1002, SP1003</td>
</tr>
<tr>
<td>3</td>
<td>GM1001, MU1003, MU1013</td>
</tr>
<tr>
<td>4</td>
<td>GM1003, MN1001</td>
</tr>
<tr>
<td>5</td>
<td>PY1105</td>
</tr>
</tbody>
</table>

Physics Labs/tutorials a chosen afternoon of the week. Astrophysics labs/tutorials on one afternoon a week. Number in brackets is number of credits, normally 60 per semester.

Second Year Entry

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>MT1002 Maths (20), FR1001, SD1001, MU2002</td>
</tr>
<tr>
<td>10</td>
<td>Physics 2A (30)</td>
</tr>
<tr>
<td>11</td>
<td>AS1101 Astro (5), AS1001 Astro(20), MT2502 Analysis (15), MT2504 (15), CH1401, EN1003, GG1001, PY1005, RU1001, EC2008</td>
</tr>
<tr>
<td>12</td>
<td>MT2501Multiv. Calculus(15), MT2503 Lin Math (15)</td>
</tr>
<tr>
<td>1</td>
<td>ID1003 (20), ID2003 (10)</td>
</tr>
<tr>
<td>2</td>
<td>EC1002, SP1003</td>
</tr>
<tr>
<td>3</td>
<td>MU1003, MU1013</td>
</tr>
<tr>
<td>4</td>
<td>ID2003 Thurs slot</td>
</tr>
<tr>
<td>5</td>
<td>PY1105</td>
</tr>
</tbody>
</table>

Note that the 15-credit maths modules in the same time slot can be taken together due to not running all days. Second Year Physics labs/tutorials run on Tuesday, Thursday, and Friday afternoons, each student chooses one of these afternoons for the semester. Second Year Astrophysics lab/tutorial run on Tuesday and Thursday afternoons, each student chooses one of these afternoons for the semester. Normally 60 credits per semester, 65 OK, 70 more difficult.
The single honours and joint honours degrees involving our School are:-

- BSc Astrophysics
- BSc Physics
- BSc Physics and Computer Science
- BSc Physics and Philosophy (formerly Logic and Philosophy of Science and Physics)
- BSc Physics and Mathematics
- MPhys Astrophysics
- MPhys Physics
- MPhys Theoretical Physics
- MPhys Theoretical Physics and Mathematics
- MSci Physics and Chemistry

We believe that these programmes all provide our students with interesting and useful learning opportunities and with the skills and knowledge that will open up a good range of career and postgraduate study opportunities.

We have some comments from our graduates about their careers in the Careers section of the School’s Students and Staff web page. The University Careers Centre has a wealth of information online. The UK Institute of Physics has some comments at http://www.iop.org/careers/i-am-at-university/index.html and the “prospects.ac.uk” web site allows you to look at careers options with your subject. Graduates from all our programmes have acquired a wide range of knowledge and skills in physics, mathematics, and IT skills that can make them attractive to research/development/sales in physics-based industry, medical physics, patent agencies, education, computing, financial services, etc. The more general graduate and professional skills that are developed as part of the degree programme also open up more general “any graduate” career options.

All our programmes can lead to post-graduate study for a PhD. If you know that you would like to do a PhD in a particular area (astronomy, physics, theoretical physics, etc) then it is probably worth considering doing a named degree in that area, but students who do well in their programme are likely to find that they can move from one area to another given the underlying core material that is in all of the programmes. A PhD can lead on to research work in universities or in industry, or a wider range of career opportunities inside or outside physics and astronomy.

Once in the honours years students have core modules and a set of modules from which they can choose, depending on the flavour of their degree programme. Our honours modules are informed by the research being carried out in the School in astrophysics, biophysics, condensed-matter physics, millimetre-waves, photonics, and theoretical physics, as well as on-going work on physics education. There are opportunities to get directly involved in this research. Our single- and joint-honours degree programmes are all accredited by the UK Institute of Physics.

The different programmes all have within them a set of modules that cover the core of physics. Thus all students in honours will take modules covering Quantum Mechanics, Thermal & Statistical Physics, Electromagnetism, Nuclear and Particle Physics, and Computational Techniques. All students do additional work on mathematical techniques, either in our Maths for Physicists module or with the School of Mathematics and Statistics. All students do a final-year project. For those doing a single honours degree the project will often be with one of the School’s research teams running a particular investigation or development. All students doing a degree wholly within the School will take the module “Transferable Skills for Physicists”, in which they develop advanced research/professional skills at the same time as gaining credit for investigating areas of science of particular interest to them; students on the joint degrees with Computing and with Philosophy do some of this work within an extended module that also includes nuclear physics.
The astrophysics programmes apply these core ideas along with the material in second level astrophysics to investigate the universe around us. Computational, observational, and theoretical skills and knowledge are developed in this programme. A recent highlight was the discovery by students on the observational astrophysics module of a new extra-solar planet as part of their work.

The physics honours programmes provide a wide range of modules. Students on these programmes have a set of core modules and a wide choice of others. These are usually the programmes within the School with the most students. Students include in their programme two laboratory modules in which they can explore aspects of physics and develop relevant laboratory skills. In recent years two physics students have been in the top three in the UK in the “Physics Student of the Year” competition, based primarily on the work in their final year projects, one in photonics and one in mm-waves. We also had a physics student have the Irish President present her with her award for one of the best physics students from the world’s top 100 universities.

The theoretical physics programme allows the development of mathematical physics to a high level. These students do not usually do the laboratory modules, but spend additional time on topics such as Special Relativity and Quantum Field Theory. A recent highlight was the international recognition of a student doing a theoretical physics project for his development of new ideas in invisibility cloaks.

So the first choice students have when entering honours in our School is the degree title. Depending on the degree title there will be different modules that then become compulsory in a programme, as well as the core modules for all students mentioned above. In most cases there will also be a range of optional modules.

The single-honours degree programmes can have a fair amount of choice within them, particularly in SH and (where relevant) the M-year. This allows students to choose modules of particular interest to them. At level-four such choice modules may include Gravitational & Accretion Physics, Observational Astrophysics, Advanced Quantum Mechanics, Laser Physics, Physics of Music, Fluids, Physics of Electronic Devices, Signals & Coherence, Principles of Optics, and Communicating & Teaching Science. At MPhys level modules currently include Quantum Optics, Biophotonics, Photonic Applications, The Interacting Electron Problems, Foundations of Quantum Mechanics, General Relativity, Monte-Carlo Radiation Transfer Techniques, Contemporary Astrophysics, and Magnetofluids & Space Plasmas, amongst others.

The joint degree programmes allow students to spend about half their time in physics and about half their time on another subject. This can allow good access to work at the interfaces between disciplines. The MSci Chemistry and Physics students spend JH doing entirely Chemistry modules and SH entirely Physics. The MSci year is a combination. The joint degrees with Mathematics are also popular, and the two Schools continue to work together to allow students to create a useful joint programme as readily as is possible with the wide choice of modules that can be available in maths. Those students with an interest in philosophy can take the joint degree with that school, developing their ways of thinking and looking at the world from both a physical and a philosophical viewpoint.

Doing a joint degree necessarily means that there is less time available for phys/astro study due to having only about half the honours credits from this School. For the MSci Chemistry and Physics the physics modules taken before level-five are fixed, and shown later in this document. The BSc Physics and Philosophy programme has the physics content of JH defined, but there is room for some choice of physics modules in SH. The BSc joint degree with maths has some choice of PH modules. The MPhys joint degree with Maths has some choice of physics modules in SH, and a wider choice in the MPhys year, where students can choose to do a project in either mathematics or theoretical physics. The reduced choice of PH modules in joint degrees is of course balanced by the introduction of relevant and interesting modules from the other discipline.
All of our degree programmes should develop the thinking, numeracy, research, and problem-solving skills that are crucial to many future career opportunities. When considering which of our programmes you may wish to do, please consider which you are going to find most interesting.

**Pre-advising**

All students are asked to take part in the pre-advising. We accept that students may still choose different entry routes and modules when it comes to advising at the start of their entry year, but it is still very helpful to have the pre-advising process completed. This means that students have considered which entry route and modules they wish to do. It means that the University has a better idea about how many students will be in different classes, thus allowing appropriate rooms to be booked.

Students are asked to realise that choosing their modules is an important responsibility. You should check degree requirements for your intended honours programme(s), as shown in the University Course Catalogue and/or the relevant School literature. The normal procedure would be for you to fill in your module choice online and then to get this approved during the 10-15 minutes advising meeting in September. Please bear in mind that first year module choices have major implications for the rest of your degree programme.

http://www.st-andrews.ac.uk/students/academic/advising/pre-advising/science/

**Advising**

The September consultation period is organised as follows. First get acquainted with the University and School Orientation Week timetable – it has a number of interesting events, and provides you with various bits of useful information. During this week some days are allocated for advising meetings. The advising meetings are normally run by the respective Adviser of Studies in his/her office. Each student can meet their Adviser for 10-15 min. You should book your place on a sign-up sheet which has defined time slots. The sign-up sheets are available on the main academic notice board in the School or on the office door of the Adviser, or via an on-line tool. Please look at emails from your adviser or the noticeboard to see which your adviser is going to use. Make sure that you sign in in time, as there is only a limited amount of time allocated for Advising by the University. You may be faced with late matriculation fees otherwise. Your module choices can be approved only after you have seen your Adviser IN PERSON, and you can matriculate only after this has happened.

**Additional Information**

The School’s Pre-Honours and Honours handbooks will be updated during the summer, and will be made available on line. We are not expecting any major changes to first and second year programmes between 2015-16 and 2016-17, though there may be changes in the optional modules that you are available for you to choose. Your adviser of studies will be happy to answer queries you may have.

Bruce Sinclair 5 April 2016

There may be errors in this document. The University’s official publications and your adviser should be consulted. E&OE