

The structures of the **Junior Sophister examinations** are outlined below along with information that will appear on the front cover of the exam papers.

**Please note that the information given below is informal and is not guaranteed to be error and/or omission free.**

**PY3P01-1 Quantum Mechanics I**

**Physics, Physics and Astrophysics, and Nanoscience-Physics and Chemistry of Advanced Materials**

	<b>Module</b>	<b>Lecturer</b>	<b>No. Questions</b>
Quantum Mechanics I	3P01	Mauro Ferreira	4

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them.

Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

*ALL QUESTIONS CARRY EQUAL MARKS.*

**All Students**

Answer *TWO* questions, in 2 hours.

**PY3P02-1 Electromagnetic Interactions I**

**Physics, Physics and Astrophysics, and Nanoscience-Physics and Chemistry of Advanced Materials**

		<b>Module</b>	<b>Lecturer</b>	<b>No. of Questions</b>
<i>Section A</i>	Electromagnetic Theory	PY3P02	David O'Regan	2
<i>Section B</i>	Quantum Optics and Lasers	PY3P02	Werner Blau	2

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them.

Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

*ALL QUESTIONS CARRY EQUAL MARKS.*

**All Students**

Answer *TWO* questions, ONE from Section A and ONE from Section B, in 2 hours.

**PY3P03-1      Condensed Matter I**

**Physics, Physics and Astrophysics, Nanoscience-Physics and Chemistry of Advanced Materials, and Theoretical Physics**

	<b>Module</b>	<b>Lecturer</b>	<b>No. Questions</b>
<i>Section A</i> Crystal Structure	3P03	Igor Shvets	2
<i>Section B</i> Thermal and Electronic Properties	3P03	Igor Shvets	2

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them.

Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

**All students**

Answer *TWO* questions, ONE from Section A and ONE from Section B, in 2 hours.

**X-PY3A07-1 Experimental Techniques for Astrophysics**

**Physics and Astrophysics**

	<b>Module</b>	<b>Lecturer</b>	<b>No. of Questions</b>
<i>Section A</i> Electronics	PY3A07	Joe McCauley	2
<i>Section B</i> Astrophysical Instrumentation	PY3A07	Brian Espey	2

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them. Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

**All Students**

Answer *TWO* questions, ONE from Section A and ONE from Section B, in 2 hours.

Note that your answer for Section A (Electronics) will have a greater weighting than your answer for Section B (Astrophysical Instrumentation), as the Astrophysical Instrumentation element of this module has already been partly assessed by continuous assessment.

**PY3P07-1 Experimental Techniques**

**Physics**

	<b>Module</b>	<b>Lecturer</b>	<b>No. of Questions</b>
<i>Section A</i> Electronics	PY3P07	Joe McCauley	2
<i>Section B</i> Instrumentation	PY3P07	Martin Hegner	2

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them. Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

*ALL QUESTIONS CARRY EQUAL MARKS*

**All Students**

Answer *TWO* questions, ONE from Section A and ONE from Section B, in 2 hours.

**PY3P04-1      Condensed Matter II**

**Physics, Nanoscience-Physics and Chemistry of Advanced Materials, and Theoretical Physics**

		<b>Module</b>	<b>Lecturer</b>	<b>No. of Questions</b>
<i>Section A</i>	Magnetic Properties	PY3P04	J. M. D. Coey	2
<i>Section B</i>	Physics of Semiconductors	PY3P04	David O'Regan	2

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them.

Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

*ALL QUESTIONS CARRY EQUAL MARKS.*

**All Students**

Answer *TWO* questions, ONE from Section A and ONE from Section B, in 2 hours.

**X-PY3A06-1 Statistical Thermodynamics & Astrophysical Spectroscopy**

**Physics and Astrophysics**

		<b>Module</b>	<b>Lecturer</b>	<b>No. of Questions</b>
<i>Section A</i>	Statistical Thermodynamics	PY3A06	John McGilp	2
<i>Section B</i>	Astrophysical Spectroscopy	PY3A06	Brian Espey	2

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them.

Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

**All Students**

Answer *TWO* questions, ONE from Section A and ONE from Section B, in 2 hours.

Note that your answer for Section A (Statistical Thermodynamics) will have a greater weighting than your answer for Section B (Astrophysical Spectroscopy), as the Astrophysical Spectroscopy element of this module has already been partly assessed by continuous assessment.



**PY3P06-1      Dynamical Systems**

**Physics**

		<b>Module</b>	<b>Lecturer</b>	<b>No. of Questions</b>
<i>Section A</i>	Statistical Thermodynamics	PY3P06	John McGilp	2
<i>Section B</i>	Mechanics of Matter	PY3P06	John Pethica	2

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them. Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

*ALL QUESTIONS CARRY EQUAL MARKS.*

**All Students**

Answer *TWO* questions, ONE from Section A and ONE from Section B, in 2 hours.

**PY3P05-1 Atomic and Nuclear Physics**

**Physics, Physics and Astrophysics, and Theoretical Physics**

		<b>Module</b>	<b>Lecturer</b>	<b>No. of Questions</b>
<i>Section A</i>	Atomic and Molecular Spectroscopy	PY3P05	Peter Gallagher	2
<i>Section B</i>	Nuclear Structure	PY3P05	Paul Eastham	2

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them.

Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

*ALL QUESTIONS CARRY EQUAL MARKS.*

**All Students**

Answer *TWO* questions, ONE from Section A and ONE from Section B, in 2 hours.

**PY3A03-1 Stellar and Galactic Structure**

**Physics and Astrophysics, Physics (option) and Theoretical Physics (option)**

	<b>Module</b>	<b>Lecturer</b>	<b>No. of Questions</b>
<i>Section A</i> Stellar Astrophysics	PY3A03	C. S. Jeffrey	2
<i>Section B</i> Galaxies: From the Milky Way to Quasars	PY3A03	Jose Groh	2

**Rubric:**

Follow the instructions below appropriate.

Booklets of Formulae and Tables are available from the invigilator for all students who require them.

Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ANSWER EACH QUESTION IN A SEPARATE ANSWER BOOK.*

*ALL QUESTIONS CARRY EQUAL MARKS*

**All Students**

Answer *TWO* questions, ONE from Section A and ONE from Section B, in 2 hours.

**PY3C01-2      Computer Simulation I**

**Physics and Astrophysics, Physics (option) and Theoretical Physics (option)**

	<b>Module</b>	<b>Lecturer</b>	<b>No. of Questions</b>
Numerical Methods I	PY3C01	Stefan Hutzler	2

**Rubric:**

Follow the instructions below.

Booklets of Formulae and Tables are available from the invigilator for all students who require them.

Graph paper is also available.

Non-programmable calculators are permitted for this examination – please indicate the make and model of your calculator on each answer book used.

*ALL QUESTIONS CARRY EQUAL MARKS*

**All Students**

Answer *ONE* question, in 1 hour.