School of Chemistry

CH1202 Introductory Chemistry

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<tr>
<th>SCOTCAT Credits:</th>
<th>10</th>
<th>SCQF Level 7</th>
<th>Semester:</th>
<th>1</th>
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<tr>
<td>Planned timetable:</td>
<td>9.00 am or 10.00 am</td>
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This module provides an introduction to some of the fundamental aspects of Chemistry and is primarily aimed at students entering the Chemistry B.Sc. and M.Chem. courses directly into second year. The module will cover structure and bonding in inorganic chemistry, states of matter and an introduction to thermodynamics and the solid state in physical chemistry and bonding, stereochemistry and reaction mechanisms in organic chemistry.

Programme module type: Compulsory for second year entry to Biomolecular Science, Chemistry, Chemistry with Medicinal Chemistry, Chemistry with External Placement, Chemistry with Medicinal Chemistry and External Placement, Chemical Sciences

Anti-requisite(s): CH1401, CH1402, CH1601 Required for: CH2601, CH2602, CH2603, CH2701

Learning and teaching methods and delivery: Weekly contact: 2 lectures.
Scheduled learning: 30 hours Guided independent study: 70 hours

Assessment pattern: As defined by QAA:
Written Examinations = 100%, Practical Examinations = 0%, Coursework = 0%

As used by St Andrews:
Written Examination = 100%

Module Co-ordinator: Dr F M Gray

Lecturer(s)/Tutor(s): Prof P Lightfoot, Professor P C J Kamer, Dr N J Westwood, Dr M L Clarke, Dr F M Gray, Dr J B O Mitchell, Dr T Van Mourik

CH1301 The Impact of Chemistry

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<tr>
<th>SCOTCAT Credits:</th>
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<th>SCQF Level 7</th>
<th>Semester:</th>
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<td>Planned timetable:</td>
<td>12.00 noon</td>
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This module explores the impact that Chemistry has on all our lives and all aspects of society. Starting with the chemical origins of life in the primordial soup, it will explore fuel and energy, the great challenge of global warming, forensic chemistry, chemistry and the environment, and chemistry in food production.

Programme module type: Optional for all qualified students

Pre-requisite(s): Standard Grade or GCSE Chemistry (Students with no formal qualification in chemistry may be admitted but should expect to undertake additional tutorial work and private study)

Learning and teaching methods and delivery: Weekly contact: 4 lectures and 1 group project hour.
Scheduled learning: 56 hours Guided independent study: 144 hours

Assessment pattern: As defined by QAA:
Written Examinations = 70%, Practical Examinations = 20%, Coursework = 10%

As used by St Andrews:
Coursework = 10%, Practical Examination = 20%, Written Examination = 70%

Module Co-ordinator: Dr R A Aitken

Lecturer(s)/Tutor(s): Dr R A Aitken, Dr S E M Ashbrook, Prof D J Cole-Hamilton, Dr P A Connor, Dr T K Smith, Professor J H Naismith, Dr J A Crayston
### CH1401 Introductory Inorganic and Physical Chemistry

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<th>SCOTCAT Credits:</th>
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The module includes lectures on the origin of the elements, atoms and the Periodic Table, shapes and properties of molecules, chemistry of the elements, states of matter, thermochemistry, thermodynamics and kinetics.

**Programme module type:** Compulsory for Biomolecular Science, all Degrees involving Chemistry

**Pre-requisite(s):** Higher or A-Level Chemistry at Grade B or above

**Anti-requisite(s):** CH1202  
Required for: CH1402

**Learning and teaching methods and delivery:**  
**Weekly contact:** 4 lectures, 1 tutorial and a 3-hour practical.  
**Scheduled learning:** 82 hours  
**Guided independent study:** 118 hours

**Assessment pattern:**  
As defined by QAA:  
Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%  
As used by St Andrews:  
Coursework = 40%, Written Examination = 60%

**Module Co-ordinator:** Dr C J Baddeley

**Lecturer(s)/Tutor(s):** Prof P A Wright, Dr C J Baddeley, Dr J A Crayston, Professor J D Woollins, Dr P Kilian

### CH1402 Inorganic and Physical Chemistry 1

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<th>SCOTCAT Credits:</th>
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<th>SCQF Level 7</th>
<th>Semester:</th>
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The module includes lectures on bonding in simple molecules, inorganic solids, chemistry of the first row transition metals, properties of solids, properties of solutions and introductory spectroscopy.

**Programme module type:** Compulsory for Chemical Sciences, all Degrees involving Chemistry (except Biomolecular Science, Chemistry with Pharmacology)

**Pre-requisite(s):** CH1401 or Higher or A-Level Chemistry at Grade B or above

**Anti-requisite(s):** CH1202  
Required for: CH2701

**Learning and teaching methods and delivery:**  
**Weekly contact:** 4 lectures, 1 tutorial and a 3-hour practical.  
**Scheduled learning:** 82 hours  
**Guided independent study:** 118 hours

**Assessment pattern:**  
As defined by QAA:  
Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%  
As used by St Andrews:  
Coursework = 40%, Written Examination = 60%

**Module Co-ordinator:** Prof P Lightfoot

**Lecturer(s)/Tutor(s):** Dr F D Morrison, Dr F M Gray, Dr G Haehner, Prof P C J Kamer, Professor P Lightfoot, Dr B E Bode
### CH1601 Organic and Biological Chemistry 1

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<th>SCOTCAT Credits:</th>
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<th>SCQF Level: 7</th>
<th>Semester:</th>
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<td>Planned timetable:</td>
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The module includes lectures on the structure, stereochemistry and nomenclature of simple organic compounds, fundamental organic reaction mechanisms, organic functional groups and their reactions, introductory bioorganic chemistry, and organic spectroscopy.

**Programme module type:** Compulsory for Biomolecular Science, all Degrees involving Chemistry (except Chemistry and Physics, Materials Chemistry)

**Pre-requisite(s):** Higher or A-Level Chemistry at Grade B or above

**Anti-requisite(s):** CH1202

**Required for:** CH2601, CH2602, CH2603

**Learning and teaching methods and delivery:**
- **Weekly contact:** 4 lectures, 1 tutorial and a 3-hour practical.
- **Scheduled learning:** 80 hours
- **Guided independent study:** 120 hours

**Assessment pattern:**
- **As defined by QAA:**
  - Written Examinations = 60%, Practical Examinations = 5%, Coursework = 35%
- **As used by St Andrews:**
  - Coursework = 35%, Practical Examination = 5%, Written Examination = 60%

**Module Co-ordinator:** Dr I A Smellie

**Lecturer(s)/Tutor(s):** Prof D Philp, Prof J H Naismith, Dr A D Smith

### CH2201 A First Course in Organic Chemistry

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<td>Planned timetable:</td>
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This module is an introductory course in Organic Chemistry. It covers aspects of structure, bonding and stereochemistry in Organic Chemistry. The syllabus includes the chemistry of alkanes, simple cycloalkanes, alkenes and alkynes together with functional group chemistry, largely that of singly-bonded functional groups. The chemistry is discussed and rationalised with reference to reaction mechanisms. The lecture course is complemented by a laboratory course.

**Programme module type:** Non-graduating students only

**Anti-requisite(s):** CH1202, CH1601

**Learning and teaching methods and delivery:**
- **Weekly contact:** 4 lectures, 2 seminars, 1 tutorial, 1 or 2 practical classes. In addition a total of 3 or 4 half-day visits to hospitals.
- **Scheduled learning:** 85 hours
- **Guided independent study:** 115 hours

**Assessment pattern:**
- **As defined by QAA:**
  - Written Examinations = 60%, Practical Examinations = 15%, Coursework = 25%
- **As used by St Andrews:**
  - Coursework = 25%, Practical Examination = 15%, Written Examination = 60%

**Module Co-ordinator:** Prof D Philp

**Lecturer(s)/Tutor(s):** Dr H Mitchell
### CH2501 Inorganic Chemistry 2

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<th>SCOTCAT Credits:</th>
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<th>SCQF Level: 8</th>
<th>Semester:</th>
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**Planned timetable:** 11.00 am

The module includes lectures on metal complexes and organometallics, descriptive transition-metal chemistry, atmospheric chemistry, green chemistry, solid-state chemistry and descriptive main-group chemistry.

**Programme module type:** Compulsory for Biomolecular Sciences, all Degrees involving Chemistry

**Pre-requisite(s):** CH1402 or Advanced Higher Chemistry or A-Level Chemistry

**Co-requisite(s):** CH1202 if Direct entrant to 2000-level

**Learning and teaching methods and delivery:**

- **Weekly contact:** 5 lectures, 1 tutorial and 5 hours of practicals.

- **Scheduled learning:** 105 hours

- **Guided independent study:** 195 hours

**Assessment pattern:**

- **As defined by QAA:**
  - Written Examinations = 60%, Practical Examinations = 5%, Coursework = 35%

- **As used by St Andrews:**
  - Coursework = 35%, Practical Examination = 5%, Written Examination = 60%

**Module Co-ordinator:** Dr J A Crayston

**Lecturer(s)/Tutor(s):** Prof P G Bruce, Dr J A Crayston, Professor D J Cole-Hamilton, Dr P Kilian, Dr R T Baker, Professor R E Morris

### CH2601 Organic Chemistry 2

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<tr>
<th>SCOTCAT Credits:</th>
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<th>SCQF Level: 8</th>
<th>Semester:</th>
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**Planned timetable:** 12.00 noon

The module includes lectures on carbon-carbon bond formation, interconversion of functional groups, aromatic and heteroaromatic reactivity, mechanistic biological chemistry, organic spectroscopy and organic polymer chemistry.

**Programme module type:** Compulsory for Biomolecular Science, Chemical Sciences, Chemistry, Chemistry with External Placement, Chemistry with Medicinal Chemistry, Chemistry with Medicinal Chemistry and External Placement. Either CH2601 or CH2701 is compulsory for Chemistry and Geology

**Pre-requisite(s):** CH1601 (or Advanced Higher Chemistry or A-Level Chemistry + CH1202 if Direct entrant to 2000-level)

**Anti-requisite(s):** CH2602, CH2603

**Learning and teaching methods and delivery:**

- **Weekly contact:** 5 lectures, 1 tutorial and 5 hours of practicals.

- **Scheduled learning:** 115 hours

- **Guided independent study:** 185 hours

**Assessment pattern:**

- **As defined by QAA:**
  - Written Examinations = 60%, Practical Examinations = 5%, Coursework = 35%

- **As used by St Andrews:**
  - Coursework = 35%, Practical Examination = 5%, Written Examination = 60%

**Module Co-ordinator:** Dr A D Smith

**Lecturer(s)/Tutor(s):** Dr A D Smith, Dr G J Florence, Prof J H Naismith, Dr M L Clarke
### CH2603 Organic Chemistry 2 (French)

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<th>SCOTCAT Credits:</th>
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<tr>
<td>The module includes lectures on carbon-carbon bond formation, interconversion of functional groups, aromatic and heteroaromatic reactivity, mechanistic biological chemistry, organic spectroscopy and organic polymer chemistry.</td>
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<td>Programme module type:</td>
<td>Compulsory for Chemistry with French, Chemistry with French and External Placement</td>
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<td>Pre-requisite(s):</td>
<td>CH1601 (or Advanced Higher Chemistry or A-Level Chemistry + CH1202 if Direct entrant to 2000-level)</td>
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<td>Anti-requisite(s):</td>
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<td>Required for:</td>
<td>CH3712</td>
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<td>Lecturer(s)/Tutor(s):</td>
<td>Dr A D Smith, Dr G J Florence, Prof J H Naismith, Dr M L Clarke</td>
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### CH2701 Physical Chemistry 2

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<td>The module includes lectures on quantum mechanics, thermodynamics and electrochemistry, kinetics, molecular spectroscopy and diffraction and mathematical tools for chemistry.</td>
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<td>Programme module type:</td>
<td>Compulsory for Chemical Sciences, Chemistry, Chemistry and Mathematics, Chemistry with External Placement, Chemistry with French, Chemistry with French and External Placement, Chemistry with Medicinal Chemistry, Materials Chemistry, Chemistry with Mathematics, Chemistry with Medicinal Chemistry and External Placement, Chemistry and Physics, Materials Chemistry with External Placement. Either CH2601 or CH2701 is compulsory for Chemistry and Geology</td>
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<td>Pre-requisite(s):</td>
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<td>Required for:</td>
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<td>Learning and teaching methods and delivery:</td>
<td>Weekly contact: 5 lectures, 1 tutorial and 5 hours of practicals.</td>
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<td>Assessment pattern:</td>
<td>As defined by QAA: Written Examinations = 60%, Practical Examinations = 5%, Coursework = 35%</td>
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<td></td>
<td>As used by St Andrews: Coursework = 35%, Practical Examination = 5%, Written Examination = 60%</td>
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<td>Module Co-ordinator:</td>
<td>Prof W Zhou</td>
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<td>Lecturer(s)/Tutor(s):</td>
<td>Dr G Haehner, Prof P A Wright, Dr F M Gray, Dr S E M Ashbrook, Dr R Schaub</td>
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