

Module code

SPC-3405

Type of module

Undergraduate: Chemistry – Elective

Chemistry of Carbocycles



Modular credits

2

 Total student
engagement

28 hours

Prerequisite

 SPC-1202
(Fundamental
Concepts in Chemistry)

Anti-requisite

None

Aims

To explain the classification, structures and properties of cyclic organic compounds. It covers ring closure factors, Baldwin's rules, key carbocycle syntheses and FMO-controlled pericyclic and carbocyclic ring-forming reactions.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Analyse cyclic organic compounds based on their structure and properties.

MLO 2

Analyse factors influencing ring closure, including Baldwin's rules, and apply key named reactions with mechanisms for cyclic compound formation.

MLO 3

Apply Frontier Molecular Orbital (FMO) theory to analyse and predict the mechanisms and outcomes of pericyclic reactions, including electrocyclisations, cycloadditions and sigmatropic rearrangements.

Module contents

 Classification, structures, and
properties of cyclic organic
compounds

 Factors influencing ring closure,
including Baldwin's rules and ring-
size strategies

 Named reactions for cyclic
compound formation with
reaction mechanisms

 Frontier molecular orbital
controlled electrocyclisations,
cycloadditions and sigmatropic
rearrangements

 Carbocyclic synthesis without
reactive intermediates

Assessment

60%

Examination

40%

Coursework



■ Examination — 60% ■ Quizzes/Tests — 15% ■ Assignments — 15% ■ Presentations — 10%

Formative assessment

Weekly discussion
and feedback

Summative assessment

COMPONENT		WEIGHTING
Examination		60%
Coursework		40%
Individual		30%
Quizzes/Tests		15%
Assignments		15%
Group		10%
Presentations		10%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

1

PLO 1 (Fundamental Knowledge in Chemistry)

4

PLO 4 (Communication and Collaborative Skills)

3

PLO 3 (Critical Thinking and Problem-Solving Skills)

6

PLO 6 (Digital Literacy and Lifelong Learning Skills)

Sustainability concept addressed

4

SDG 4 Quality Education

Digital skills/software used (not limited to)

- Word processing software (e.g. Microsoft Word)
- Presentation software (e.g. PowerPoint)
- Organisational tools (e.g. Outlook calendar)
- Chemical drawing software (e.g. ChemSketch or ChemDraw)
- Learning management system (e.g. Canvas)

Micro-credentialling option

No

Stackable towards GenBESTARI Undergraduate Degree Programme or other relevant Lifelong Learning Programmes

No

Document details

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