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# COURSE MODULE INFORMATION

## CH311: Organic Chemistry

### Semester 1 | Credits: 5

This course comprises lectures and tutorials, and expands upon the fundamentals of organic chemistry covered in years 1 and 2. Heterocyclic chemistry, chemistry of biomolecules, structure and reactivity, determination of reaction mechanism, retrosynthesis and stereochemistry are introduced and studied in detail. The course emphasizes chemistry of relevance to modern industry, including the (bio)pharmaceutical industry.

(Language of instruction: English)

### Learning Outcomes

1. Understand the structure, bonding and the influence of the heteroatom(s) of pyridine, pyrrole, indole, thiophene, furan, diazoles, triazoles and tetrazoles, and the affect on reactivity.
2. Write reaction schemes and give curly arrow mechanisms for aromatic substitutions on the above heterocycles, as well as Diels-Alder and 1,3-dipolar cycloaddition reactions.
3. Understand the chemistry of peptide synthesis
4. Understand how organic structure and reactivity are related quantitatively & approaches to determining organic reaction mechanism
5. Use a retrosynthetic approach to design a multistep synthesis for a carbon based molecule

6. Apply basic stereochemical principles to the structure and reactions of carbon based molecules
7. Demonstrate knowledge of the structure and function of biomolecules
8. Demonstrate an understanding of protein structure in the context of the properties of amino acid residues, the peptide backbone and environmental factors

## Assessments

i This module's usual assessment procedures, outlined below, may be affected by COVID-19 countermeasures. Current students should check Blackboard for up-to-date assessment information.

- Written Assessment (90%)
- Continuous Assessment (10%)

## Module Director

- PAUL MURPHY: [Research Profile](#) | [Email](#)

## Lecturers / Tutors

- JUDY BUCKLEY: [Research Profile](#)
- PETER BERNARD CROWLEY: [Research Profile](#)
- HENRY CURRAN: [Research Profile](#)
- KAREN KELLY: [Research Profile](#)
- DONAL LEECH: [Research Profile](#)
- PATRICK O'LEARY: [Research Profile](#)
- ANDREA ERXLEBEN: [Research Profile](#)
- PAUL MURPHY: [Research Profile](#)

## Reading List

1. "Organic Chemistry, Bruice; Introduction to Peptide Chemistry" by Dougherty & Anslyn; Advanced Organic Chemistry, Carey & Sundberg.

2. "Foundations of Chemical Biology" by C. M. Dobson, J. A. Gerrard and A. J. Pratt  
Publisher: Oxford Chemistry Primers
3. "Protein, Protein Complexes: Analysis, Modeling and Drug Design" by Martin Zacharias
4. "Protein Surface Recognition: Approaches for Drug Discovery" by Ernest Giralt, Mark Pecuh and Xavier Salvatella (Wiley 2010) Advanced Organic Chemistry, Carey & Sundberg
5. "Heterocyclic Chemistry" by J. A. Joule, K. Mills,

The above information outlines module CH311: "Organic Chemistry" and is valid from 2016 onwards.

Note: Module offerings and details may be subject to change.

## ABOUT NUI GALWAY

Founded in 1845, we've been inspiring students for 175 years. NUI Galway has earned international recognition as a research-led university with a commitment to top quality teaching.



## CONTACT

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