



# Chem 4450/6490: Heterocyclic Chemistry

Winter 2018

## Instructor Information

Instructor	Email	Office Location and Hours
Dr. Huck Grover	hgrover@mun.ca	C-4034, Chemistry 9:00 – 10:00 am, Tuesday & Thursday

## General Information

**Lecture Times:** Tuesday, Thursday 10:30 – 11:45 am, Location: C-4002

## Description:

Many naturally occurring and synthetically developed compounds containing heterocyclic frameworks are known to display a variety of interesting and useful pharmaceutical and material properties. As such there is an ongoing pursuit for the development of new heterocycles and unique methods for creating them. This course aims to provide a fundamental understanding of the importance of heterocyclic compounds along with exploration into their designed synthesis. This course will include (but is not limited to): nomenclature, historically relevant molecules, new synthetic approaches, and compound reactivity/properties.

## Course Material and Resources

**Texts (no textbook is required for this course)**

**Recommend textbooks on this subject:**

- Joule, J. A.; Mills, K. *Heterocyclic Chemistry*. Wiley 5th ed. 2010.
- Li, J. J. *Name Reactions in Heterocyclic Chemistry II*. Wiley. 2011.
- Li, J. J. *Contemporary Drug Synthesis*. Wiley. 2004.

## Current Literature:

Much of the reading assigned in this class will come from the primary literature. Journals particularly relevant to the chemistry of heterocycles include:

- *Journal of Medicinal Chemistry*
- *Organic Process Research and Development*
- *Heterocycles*
- *Bioorganic and Medicinal Chemistry Letters*

## Evaluation 4450

Your performance in this course will be evaluated by the following scheme:

Participation	15%
Article Presentation (~10 mins)	15%
Heterocycle Lecture (35 mins)	25%
Research Proposal (~3-5 pages)	20%
Final Exam (take home due last day of class)	25%
Total Evaluation	100%



## Evaluation 6490

Your performance in this course will be evaluated by the following scheme:

Participation	15%
Article Presentation (~15 mins)	15%
Heterocycle Lecture (50 mins)	25%
Research Proposal (~5 pages)	20%
Final Exam (take home due last day of class)	25%
Total Evaluation	100%

Evaluation notes:

(1) Participation is based on active discussions during lecture and peer presentations, problem solving, and in class group work. (2) Article presentation - a short synfacts type article overview; the details will be discussed during class. (3) Lecture - an in depth overview on one heterocycle; the details will be discussed during class. (4) Proposal - the details will be discussed during class. (5) Final exam - 6490 will be approximately double the length of 4450; the details will be discussed during class.

## Accommodations

Memorial University is committed to ensuring an environment of understanding and respect for the dignity and worth of each student and also to supporting inclusive education based on the principles of equity, accessibility, and collaboration.

## Academic Misconduct

Cheating is not permitted. The act of cheating includes, but is not limited to, the copying of lab materials and assignments from previous or current years, or using unreferenced information in a lab write up, paper, or presentation. University regulations pertaining to cheating are found in the university calendar in section 6.12. If you are caught cheating, the first incident will be forwarded to the Head of Chemistry for a resolution. If you are found guilty at the Departmental level, the penalty is usually a zero on the work in question as well as a letter of reprimand copied to the registrar describing the incident and the resolution, and will be kept on file. In the event of a second offence, the incident will be directed to SCUGS (which can also happen on the first offence). An incident which is resolved by SCUGS usually result in harsher penalties such as reduction of your mark for the course, probation, suspension, or expulsion. Note that the Senate Committee on Undergraduate Studies (SCUGS) resolves all offences that involve allegations of impersonation, submission of forged documents, or academic misconduct on exams or works in excess of 20% of the grade.

## Course Topics (Tentative)

- General Reactions
- Pyrroles
- Furans
- Thiophenes
- Indoles
- Benzofurans
- Carbazoles
- Benzothiophenes
- Pyridines
- Quinolines/Isoquinolines
- Pyrones/Pyryliums
- Diazines
- 5-membered, 2 heteroatoms
- 3 or more heteroatoms
- Non-aromatic heterocycles
- Bridged heterocycles
- Unusual heterocycles