**Syllabus for CHEM3600
Introduction to Nanotechnology – Winter 2022**

**Course Description**
Nanoscale units, bulk properties vs. nanoscale properties, electrons, atoms and ions, metals, band structure, electrical conduction, biosystems, molecular devices, quantum mechanics and optics, tools for measuring nanostructures. Production of nanostructures: self assembly, nanoscale crystal growth, polymerization. Applications to sensors, magnets, electronics, drug delivery. Toxicology of nanostructures. Prerequisite(s): CHEM 3100.

**Associated Term:** Winter 2023 (January-April)
**Levels:** Undergraduate, 0.5 Credits

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| **Type** | **Time** | **Days** | **Where** | **Date Range** |
| Lecture | 8:35 – 9:55 am | M, W | River Building (RB) 3201 | Jan 9 - Apr 10, 2023 |

**Schedule**

 **Text**There is no required text for the course, but you might find Nanostructures and Nanomaterials by Guozhang Cao interesting. Other readings will be assigned as we go. There will be an attempt to cover material in a way that lines up with your work in CHEM3107.

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|  | **value** | **date** |
| **Assignments** | 30% | throughout term |
| **In-class exam** | 20% | tbd |
| **Paper** | 10% | Late April |
| **Final exam** | 40% | tbd |

**Marking Scheme**

**Topics**• Scale and Dimensionality

• Top-down vs. Bottom-up

• Characterization Methods

• Nanoparticles

• Quantum Dots

• Nanotubes and Nanowires

• Nanofilms

• Bionanotechnology

• Nanoelectronics

• Environmental and Health Implications of Nanotechnology

**A full list of important dates is available on the Calendar website.** Please note that dates may have changed recently. Consult the Calendar website for the most updated information:
https://calendar.carleton.ca/academicyear

**Compassionate Grading Policy:** The compassionate grading policy from the previous two years (SAT/UNS) is no longer in effect. However, there will be some lenient grading for students coming straight out of high school for their first two terms. The details of this are still being processed, and communication from the Provost will come sometime soon. In the interim, it is important to remove any language about compassionate grading from the course outline and instead direct students to the Provost’s website, where the most up to date information can be found.

**Survivors of Sexual Violence**As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [carleton.ca/sexual-violence-support](http://carleton.ca/sexual-violence-support)

**Requests for Academic Accommodation**You may need special arrangements to meet your academic obligations during the term. Please contact your instructor with any requests for academic accommodation (pregnancy, religious, disability, etc.) during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

For an accommodation request, the processes can be found here:
[carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

**Academic Accommodations for Students with Disabilities**If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. [carleton.ca/pmc](http://carleton.ca/pmc)

**Accommodation for Student Activities**Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: [students.carleton.ca/course-outline](http://students.carleton.ca/course-outline)

**Caveat**
Obviously, I reserve the right to make adjustments or changes throughout the semester. Remember that you are responsible to learn about these changes, which will be posted on CULearn.