

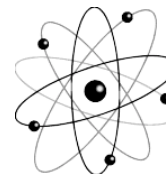
Fall 2015
CHEMISTRY 1311 D and F Course Information and Syllabus

PROFESSOR:

Dr. Wendy G. Pell
MCD 409
562-5800 ext. 6041
wpell@uottawa.ca

OFFICE HOURS:

Tuesday: 3 - 4:30 pm
Wednesday: 4:30 - 6 pm
Or by appointment



LECTURE SCHEDULE: CHM1311D

Monday	Tuesday	Wednesday	Thursday	Friday
DGD 5 ³⁰ :7 pm FSS 1030	Lecture 1: 2 ³⁰ pm MNT 203	DGD 2 ³⁰ :4 pm BSC 140	Lecture 11 ³⁰ : 1pm MNT 203 DGD 5 ³⁰ :7 pm MRN Aud	

LECTURE SCHEDULE: CHM1311F

Monday	Tuesday	Wednesday	Thursday	Friday
DGD 5 ³⁰ :7 pm FSS 1030	Lecture 10: 11 ³⁰ am MNT 203	DGD 2 ³⁰ :4 pm BSC 140	Lecture 8 ³⁰ : 10am MNT 203 DGD 5 ³⁰ :7 pm MRN Aud	

COURSE MARKS:

75% of the course mark will be from the lecture portion of the course (see below) and 25% of the course mark will be from your lab work (see lab manual).

There is some flexibility in the marks associated with the lecture portion of the course as you may opt-out of certain components as presented below:

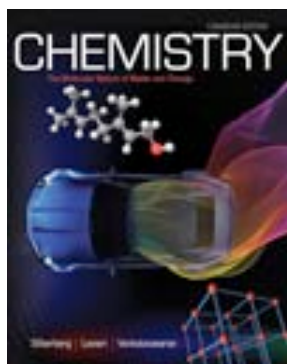
	Assignments and Participation (Recommended option for highest grade)	No Assignments (NOT recommended)
Lab	25	25
Participation	5	5
Homework (weekly)	10	-
Midterm 1 (Oct. 15)	15	17
Midterm 2 (Nov. 19)	15	17
Final Exam	30	36

If you would like to opt out of Homework: you may do so with no penalty to your course mark. You must inform me AT THE BEGINNING of the semester that you do not wish to participate and your marks will be redistributed. To be on the OPT-OUT List, you must contact me via email **no later than September 30th**. Requests to opt out after this date will be denied.

I **STRONGLY RECOMMEND** that you do not opt out of the weekly assignments - the weekly assignments are grade boosters; in 2012 the average mark for the weekly homework assignments was 84%. Also in 2012, 15 students opted out of weekly assignments; of these 15, 1 passed the course - these are not good odds!!

RECOMMENDED TEXT:

You are **not required** to buy any text; however, I **strongly recommend** purchase of a text. In addition to the readings you can do to support the lecture material, I will assign ungraded homework problems from each chapter. This year our text is [Chemistry \(Canadian Edition\) The Molecular Nature of Matter and Change by Silberberg, Laverie, Venkateswaran](#). In past years we have used *General Chemistry* (10th edition) by Petrucci - if you have access to a copy of this text, it is also suitable. We are not using any of the "extras" that come packaged with the text - so used books are a good option!



Chemistry (Canadian Edition) The Molecular Nature of Matter and Change
by Silberberg, Laverie, Venkateswaran

General Chemistry (10th edition)
Principles and Modern Applications by
Petrucci, Herring, Madura, Bissonnette



EVALUATION EXERCISES

There are approximately 250 students in this class! To be sure to get credit for your work, you must neatly print your **student number**, and **full name** (first and last) on all tests and exams. If these are not **legible** and completed in full, you will be credited 0 for that test or exam.

All exams

Cellular phones, unauthorized electronic devices or course notes are not allowed during exams. Phones and devices must be turned off and put away in your bag. Do not keep them in your possession, such as in your pockets. If caught with such a device or document, the following may occur: you will be asked to leave immediately the exam and academic fraud allegations will be filed which may result in you obtaining a 0 (zero) for the exam.

Tests:

There will be two **in-class** tests (**Thursday, October 15; Thursday, November 19**) each worth **15%** (or 17 %) of your final mark. The content of each test may vary slightly from that listed in this syllabus and will be verified in class. Tests are *not* cumulative. A **formula sheet** and **periodic table** will be provided for all tests and for the final exam.

If you are ill on the day of the test, you must **BRING ME** a medical certificate to receive exemption from the test. **THERE ARE NO RETESTS.** The weight of the missed midterm will be redistributed to the other midterm and the final exam.

To assist you in studying, tests from previous years will be posted on the course website. The material covered on a given test may vary from one year to the next.

Final Exam:

Final exam dates and locations will be posted later in the term. Your final exam *will be cumulative* and will be worth **30%** (or **36 %**) of your final mark. A formula sheet and periodic table will be provided for all tests and for the final exam.

If you miss the final exam due to illness, please **bring a medical certificate to the Faculty of Science** to have your final exam deferred. These are generally written during the February Study Break. For more information on Final Exam deferral, consult the Faculty of Science website.

Re-Grade Policy

Re-grade requests must be submitted within 1 week of the date that **tests are returned in class** (not the date you pick up your exam). If you find an error in the marking of a test, staple a note to the front of your test indicating: 1) The problem number; and 2) A detailed explanation of why you think you should receive more points for that problem.

Bring the test to me before or after class or during office hours.

I will **not** discuss grades/re-grades prior to or immediately following any lecture or DGD.

I will return your re-graded test. If at this time you have further comments you must make an appointment to see me personally.

Problem Based Assignments (10 % of final mark)

Weekly problem-based assignments will be available at www.Saplinglearning.ca. There is a registration fee (approximately \$32) associated with this tool. Assignments are designed to take an average student approximately one hour to complete - provided they understand the fundamental concepts and have completed a selection of textbook problems. If you find the assignments are taking you significantly longer than 1 hour - look for some help (lecture DGDs, chemistry help center, office hours!). More details will be found in the **What do I need for Sapling On-line Homework**.

Lecture Tools - In-class Assignments (5% of final mark)

These are practically free marks; marks for in class personal response assignments are allocated to participation (answer the questions you get the marks). Accessed through Lecture Tools

You should have received an email (to your uottawa account) inviting you to join Lecture Tools.

Consult the **What do I need for Lecture Tools** document for detailed instructions.

Ungraded Homework

In addition to the graded assignments, for each topic we cover in lecture I will suggest/recommend a number of End of Chapter problems in either text. These will not be graded, but it is strongly recommended that you do these problems (without consulting your solution manual). A selection of these problems will be taken up in the DGD.

CALCULATORS:

You will need a **non programmable** calculator for the tests and for the final exam. The following calculators have been approved by the Faculty of Science: Texas TI-30X, Ti-30XA, TI-30XIIS, TI-30SLR scientific and non programmable calculators. You may

NOT use cell phones, palm pilots, or other electronic devices in place of a calculator during tests or finals.

ABSENCE:

Exemptions from tests/midterms/assignments are limited to documented medical illness and exceptional personal circumstances (this requires authorization PRIOR to the evaluation exercise). If you are ill on the day of a test, please bring me a medical certificate to receive exemption from the test. If you miss the final exam due to illness, please bring a medical certificate to the faculty of science to have your final exam deferred to the study week in February. (For more information on final exam deferral, go to <http://web5.uottawa.ca/admingov/regulations.html>)

You will **not** be exempt from an online homework due to illness unless you have proof that you were ill for the *full 7 days* during which the homework was available online.

If you miss a lab due to illness, please obtain a medical certificate; inform your demonstrator and the laboratory coordinator, Dr. Rashmi.

OFFICE HOURS

If you have problems with the course material, you are welcome to

1. come and see me during posted office hours
2. make an appointment via phone(x6041) or email wpell@uottawa.ca outside of my posted office hours
3. ask specific questions via course website message board

I will not be available to answer questions in the lecture hall immediately before and after our lectures as this time is needed to set up for the lecture.

EMAIL

I will happily answer email inquiries subject to the following restrictions:

1. The subject of the email message is clearly indicated in the message header, this should include the course code (CHM 1311D) and a brief description of body of the email. e.g. Subject: CHM 1311D, request for an appointment
2. I will try to answer all email messages with 24 h, do not expect an answer to email messages after 5pm or on weekends - so budget your time wisely.

LECTURES, DGDs, AND DISCUSSION GROUPS

There is an 80% attendance requirement in the Faculty of Science. If you miss a lecture, it is your responsibility to acquire any notes and assignments for that day from another member of the class. Course notes will be posted to the course website in pdf

format. Lectures will contain additional material not included in course notes (example: worked problems).

Lecture DGDs are optional, but highly recommended. In Lecture DGDs, I (or my TAs) will guide you through practice problems relevant to the current lecture material and similar to what you might see on midterms. Material covered in DGDs will not be posted to the course website. (Lecture DGDs will begin on **Wednesday, September 16.**)

Chemistry Help Center: This facility is staffed with qualified graduate students to support students in first year chemistry. The help center is found in VNR5040.

Help Center hours

Monday	Tuesday	Wednesday	Thursday	Friday
11: ³⁰ am to 2: ³⁰ pm VNR5040	11: ³⁰ am to 1 pm VNR5040	2: ³⁰ pm to 5: ³⁰ pm VNR5040	1 pm to 2: ³⁰ pm VNR504	11: ³⁰ am to 5: ³⁰ pm VNR5040

Academic Integrity:

If you are caught cheating or allowing someone else to copy your work during a test or exam, you will be removed from the examination room and reported to the faculty. Penalties range from failure of the course to expulsion from the University. Don't risk it - your whole future could be affected! Keep your paper covered so others cannot copy your work, otherwise you may be accused of cheating by allowing them to copy!

STUDY TIPS AND RESOURCES

University level material is more advanced than High School, and is presented at a much faster pace. Developing good study habits right from the start can help you a great deal down the road.



Manage your time well:

As a general rule, spend at least **2 hours** on studying/homework for every **1 hour** of lecture (= 6 hours per week, minimum, for the lecture only!)

Stay on top of the material:

Material presented in each lecture will build upon the material previously presented. Stay on top of it to save yourself a great deal of time, work, and confusion in the long run. Don't put it off studying until the night before a test or exam!

How to study:

Work problems! Then work more problems! If this is all review to you, still work problems! Be sure you understand the chemistry concepts behind the problems.

Use all available learning resources:

Attend lectures and DGDs, complete all assigned quizzes, complete additional suggested problems, attend office hours (don't be shy, that's what I'm here for!), use study tools found on the course website. For further help, contact the chemistry office (562-5800 ext. 5728) to ask for names of tutors.

Budget your time appropriately!

Know how much each assignment, test, lab report, etc. is worth and budget your time accordingly. Studying for a test that is 11% of your course mark should take priority of an assignment that is worth only 1% of your course mark!

SERVICES PROVIDED BY UNIVERSITY OF OTTAWA**Student Academic Success Services:**

www.sass.uottawa.ca/welcome.php

Student Academic Success Services provides a variety of free services to all University Students to help you succeed.

Academic Writing Help Centre (AWHC): 110 University Private

www.sass.uottawa.ca/writing/

Provides assistance with writing assignments (e.g. lab reports). Help you get started organizing your ideas and information, review drafts, offer assistance with organization, style, and grammar.

Access Services: Desmarais Building (3rd Floor - Room 3172)

www.sass.uottawa.ca/access/

562-5976; adapt@uottawa.ca

Provides special support, testing accommodations, and adaptive technologies for students with physical, medical, psychological, or learning disabilities.

Accommodations for a mid-term/final examinations are administered through the Exam Accommodation Request form found at this site.

Counselling and Personal Development Service: 100 Marie Curie, 4th floor

<http://www.sass.uottawa.ca/personal/>

562-5200

Provides personal assistance during difficult life events and transitions.

ABOUT THE LAB

LAB INFORMATION: Everything you need to know related to the laboratory component of this course will be found on the [General Chemistry Lab - Labo de chimie générale](#) Blackboard website.

WHERE IS THE LAB? Third floor MRN building - you can't miss it!

LAB Instructor: Dr. Rashmi Venkateswaran (vrashmi@uottawa.ca)

LAB MANUAL: You will find a link to the lab on the course website - follow it to gain access to lab resources (policies, manuals, videos, prelab exercises etc.)

LAB SCHEDULE:



The lab is currently being renovated and the start date for the laboratory component of the course is not yet determined. Please consult the General Chemistry Lab Blackboard website for updates.

BEFORE THE LAB:

Students **MUST** purchase safety glasses and lab coats **BEFORE** coming to the lab. This will be available for purchase USING YOUR STUDENT CARD beginning Sept. 8th in MRN 08.

There is an 80 % attendance requirement for the laboratory portion of the course. If you do not attend 80% of the labs, **for whatever reason**, you will not receive credit for the course.

Lab Tutorials:

Several lab tutorials will be held each week. Attendance at one of the lab tutorials is highly recommended, and will greatly assist you in preparing for upcoming labs and writing your lab reports. Once available, tutorial schedule can be found on the General Chemistry Lab Blackboard website.

All lab concerns should be directed to Dr. Rashmi (vrashmi@uottawa.ca)

CHM 1311 D/F Fall 2015 Syllabus

Chapters refer to the Text: *Chemistry (Canadian Edition) The Molecular Nature of Matter and Change*

Lecture Date	Lecture Package	Chapters
Sept. 10,15,17 and 22	<p><i>1. Intro Chapters 1-3 (4 lectures)</i></p> <ul style="list-style-type: none"> • Law of conservation of mass, Dalton's atomic theory, Thompson, Millikan, Rutherford • Standard notation for atoms • Isotopes • Define molecules and ions • Molecular, structural, and empirical formula • Molecular weight, molar mass, percent composition • Determination of empirical formula from %composition • Scientific notation • Significant figures Avogadro's number, amu, moles • Combustion reactions • Define chemical reaction, interpretation of chemical equations • Balancing chemical equations • Stoichiometry • Limiting reagents • Define homogeneous and heterogeneous solutions, solvent, solute, solubility • Electrical conductivity of solutions (salts, acids/bases) • Concentration units (molarity, molality, mole fraction, and weight percent) • Preparing solutions of known concentration • Converting between units of concentration • Assigning oxidation states and recognizing oxidation and reduction reactions 	1,2 and 3 12.4 19.1
Sept. 24, 29	<p><i>2. Gases (2 lectures)</i></p> <ul style="list-style-type: none"> • Boyle's, Charles', Avogadro's Laws, Ideal Gas Law • Gas density • Gases and stoichiometry • Dalton's Law • Quantifying gas by liquid displacement • Mole fraction and partial pressures • Kinetic Molecular Theory • Non-ideal gases 	4
Oct. 1, 6	<p><i>3. Thermochemistry (2-3 lectures)</i></p> <ul style="list-style-type: none"> • Potential and kinetic energy, internal energy 	

Lecture Date	Lecture Package	Chapters
and 8	<ul style="list-style-type: none"> • Law of conservation of energy • State functions and changes in state • 1st Law of Thermodynamics • Heat, heat capacity, heat of vaporization, heat of fusion, heating/cooling curves • Chemical work, work of an expanding gas, • Exothermic and endothermic reactions: reaction enthalpy • Calorimetry • Hess's Law • Use of standard enthalpies to determine reaction enthalpy 	5 8.4
Oct. 15	<p><i>Midterm Exam: Content to be confirmed in lecture</i></p> <ul style="list-style-type: none"> • Chapters 1-5, 8.4, 12.4 and 19.1 	
Oct. 13 and 20	<p><i>4. Chemical Kinetics (2-3 lectures)</i></p> <ul style="list-style-type: none"> • Average rate, instantaneous rate, initial rate • Experimental determination of rates • Effects of concentration on rate (Rate laws) • Determining rate laws by method of initial rates • Integrated rate laws and $t_{1/2}$ (1st, 2nd, and zero order) • Collision theory and activation energy, Arrhenius equation • Reaction mechanisms: molecularity of elementary steps, determining plausibility of mechanisms • Catalysts 	14
Oct. 22 and Nov. 3	<p><i>5. Chemical Equilibrium (2 lectures)</i></p> <ul style="list-style-type: none"> • Definition and properties of equilibrium • Equilibrium Constant, Law of mass action, K_c and K_p • Homogeneous vs. heterogeneous equilibrium • Multiple equilibria • Le Chatelier's principle, Calculating K, predicting direction of reaction, calculating equilibrium concentrations • Effects of pressure, volume, and temperature • K, Q 	15
Nov. 5 and 10	<p><i>6. Acids and Bases (2 lectures)</i></p> <ul style="list-style-type: none"> • Definitions • K_w, $[H_3O^+]$, $[OH^-]$, pH • Weak acid and weak base calculations • Concentrations of ions in diprotic and polyprotic acid solutions 	16
Nov. 12,17,	<p><i>Acids, Bases, and Solubility (3 lectures)</i></p> <ul style="list-style-type: none"> • Acid-base properties of soluble salts • Common ion effect, buffer solutions 	17

Lecture Date	Lecture Package	Chapters
and 24	<ul style="list-style-type: none"> • Acid base titrations • Calculations involving K_{sp} • Unsaturated, saturated, and supersaturated solutions • Separating salts by difference in K_{sp} • Common ion effect 	
Nov. 19	<i>Midterm Exam: Content to be confirmed in lecture</i> Chapters 14,15,16,17	
Nov. 26 and Dec. 1	<i>Quantum Theory and Electronic Structure (2 lectures)</i> <ul style="list-style-type: none"> • Bohr Model • Wave properties of light, wave-particle duality • Quantum numbers, orbitals, electron configurations • Bohr Model • Wave properties of light, wave-particle duality • Quantum numbers, orbitals, electron configurations 	6.4 7.1 7.2 7.4
Dec. 3 and 8	<i>Lewis Theory and Molecular Shape (2 lectures)</i> <ul style="list-style-type: none"> • Determining Lewis Dot structures • Exceptions to the octet rule • Formal charges • Resonance theory • VSEPR theory 	8.6 9
Dec.	REVIEW - session scheduled once exam dates posted	