2019-2020 Integrated Science

SC/ISCI 1101 3.0 & SC/ISCI 1102 3.0 Integrated Science (Biology)
SC/ISCI 1210 6.0 Integrated Science (Chemistry)
SC/ISCI 1310 6.0 Integrated Science (Physics)
SC/ISCI 1401 3.0 & SC/ISCI 1402 3.0 Integrated Science (Mathematics)

Integrated Science Team

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Dr. C. Jang</td>
<td>Dr. T. Kelly</td>
<td>Dr. W. Pietro</td>
<td>Dr. P. Delaney</td>
<td>Dr. O. Mermut</td>
</tr>
<tr>
<td>Ext. 77801</td>
<td>Ext. 22972</td>
<td>Ext. 77700</td>
<td>Ext. 77763</td>
<td>Ext. 33452</td>
</tr>
<tr>
<td>Farquharson 251</td>
<td>Lumbers 311</td>
<td>Petrie 138</td>
<td>Petrie 329</td>
<td>Petrie 244</td>
</tr>
<tr>
<td>E: jangc</td>
<td>E: b1001lec</td>
<td>E: pietro</td>
<td>E: pdelaney</td>
<td>E: omermut</td>
</tr>
</tbody>
</table>

*Include ISCI in subject line

Mathematics - F19
Dr. N. Madras
Ext. 33971
Ross S616
E: madras@mathstat.yorku.ca

Mathematics - W20
Dr. J. Heffernan
Ext. 33943
Ross N615
E: jmheffer@mathstat.yorku.ca

All email addresses above, as well as those for the Lab Directors listed below, are @yorku.ca, except where noted. Each instructor will hold their own office hours. Office hours will be listed on Moodle.

Dr. Madras also serves as the Coordinator of the Integrated Science program. He monitors the e-mail account isci@yorku.ca, which can be used for matters relating to the program in general.

Lab Directors

<table>
<thead>
<tr>
<th>Biology – F18</th>
<th>Biology – W19</th>
<th>Chemistry</th>
<th>Physics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. N. Nivillac</td>
<td>Dr. M. Vicari</td>
<td>Dr. D. Jackson</td>
<td>Dr. S. Menary</td>
</tr>
<tr>
<td>Ext. 55745</td>
<td>Contact info TBA</td>
<td>Ext. 55312</td>
<td>Ext. 22982</td>
</tr>
<tr>
<td>LSB 102</td>
<td></td>
<td>CB 124</td>
<td>PSE 237</td>
</tr>
<tr>
<td>E: b1000lab</td>
<td></td>
<td>E: genchem</td>
<td>E: menary</td>
</tr>
</tbody>
</table>

Peer Mentor

Soumik Shome
Time and Location

Class: MWF 8:30AM – 12:30PM
LSB 101

Biology Lab (~Every other week): Tues 10AM - 1PM
Chemistry Lab (~Every other week): Thurs 10:30AM - 1:30PM
Physics Lab (~Every other week): Tues 2:30PM - 5:30PM
See lab schedule

Please consult the schedule in the laboratory manuals for your specific laboratory dates and rooms.

Important Dates

A complete listing of important dates is available on the Registrar's Office website. The last dates to drop Integrated Science without receiving any grades are

- **November 8, 2019** for 1101 and 1401 (Fall term courses),
- **February 3, 2020** for 1210 and 1310 (full year courses), and
- **March 13, 2020** for 1102 and 1402 (Winter term courses).

Please note that Integrated Science courses are drop by permission only, and all four courses must be dropped at the same time. The course withdrawal periods where you can withdraw from Integrated Science and receive a grade of "W" on the courses are

- **November 9 – December 3, 2019** for 1101 and 1401,
- **February 4 – April 5, 2020** for 1210 and 1310, and
- **March 14 – April 5, 2020** for 1102 and 1402.

Integrated Science Description

Integrated Science introduces foundational topics in biology, chemistry, physics, and mathematics using an interdisciplinary approach that broadly considers current scientific frontiers and real-world issues from different perspectives. Integrated Science has 12 class hours per week where you will be actively engaged in learning more advanced scientific concepts through direct and peer instruction. You are expected to learn basic scientific concepts outside of class through independent study of materials provided by the Integrated Science team, supplemented by resources that you may find on your own. You will acquire basic laboratory skills by actively participating in five biology labs, six chemistry labs, and five physics labs each term. Each lab is three hours in length. There are no tutorials. Upon successful completion of Integrated Science, you will acquire a total of 24 credits (six credits in each of biology, chemistry, physics, and mathematics). These credits are equivalent to BIOL 1000 3.0, BIOL 1001 3.0, CHEM 1000 3.0, CHEM 1001 3.0, PHYS 1010 6.0, MATH 1013 3.0, and MATH 1014 3.0.

Integrated Science Goals

Upon successful completion of Integrated Science, you will have developed the following skills and abilities at a first-year undergraduate level:

**General**
1. Critically and creatively **solve** disciplinary and interdisciplinary problems by integrating and applying knowledge and skills in biology, chemistry, physics, and math.
2. Quantitatively and qualitatively **reason** to form conclusions and make evaluations.
3. Effectively **communicate** with different audiences using written and verbal communication.
4. **Collaborate** with others in a productive and professional manner.
Science
1. Use the process of scientific inquiry to make effective decisions/arguments about real-world issues, including assessment of information in the media using scientific reasoning.
2. Describe the nature of science, how scientific knowledge is iterative and cumulative, the process by which scientific knowledge comes to be accepted as valid, including the roles of prediction, evidence, consensus, and authority and what is, and is not, appropriate subject matter to scientific study.
3. Explain and illustrate the predictive power of scientific theories and how acceptance or rejection of hypotheses takes place.
4. Use terminology with correct scientific meaning and appropriate context.

Biology
1. Describe the nature of light, and explain how light impacts life in different ways.
2. Describe the cell theory and theory of evolution, and relate these theories to each other and other biological concepts in the context of natural selection.
3. Relate biological structure and function at different biological levels of organization.
4. Compare and contrast major biochemical pathways (including cellular respiration, photosynthesis and cell signaling).
5. Compare and contrast different mechanisms regulating gene expression, relating genes, alleles, proteins and phenotype.
6. Describe processes of cellular inheritance.
7. Describe basic techniques used in recombinant DNA technology and their significance.
8. Explain, in basic terms, how evolution (via mechanisms not limited to natural selection) shapes life on Earth, the necessity of genetic variation (e.g. through mutation), and how many behavioural traits are adaptive.
9. Describe how populations change over time and space through intraspecific interactions and environmental constraints.
10. Describe the history of evolutionary thought, and the evidence for evolution and the common ancestry of life.
11. Explain how phylogenetics are used to generate hypotheses about the history of life on Earth.
12. Describe the mechanisms by which speciation can occur, difficulties in assigning a universal definition of the term ‘species’, and why the term can vary between groups of organisms.
13. Describe the different factors that can influence population growth, explaining differences in their effects.
14. Describe how interspecific interactions can share populations and the communities these populations comprise.
15. Relate conservation plans with evolutionary processes and population dynamics.
16. Describe how energy and matter flow and/or are recycled in ecosystems, and how ecosystems may change over time due to natural or human-induced processes.

Chemistry
1. Explain and predict gas behavior and properties using the gas laws, ideal gas equation and general gas equation.
2. Use kinetic molecular theory to explain effusion and diffusion, and relate kinetic molecular theory and collision theory in the context of gas reactions.
3. Relate heat, work, and internal energy, and explain the transfer of energy as heat and work in chemical reactions using the Laws of Thermodynamics.
4. Describe entropy as a driving force for physical and chemical changes.
5. Describe and apply the following concepts – equilibrium, equilibrium constant expressions, Le Chatelier’s principle, and the reaction quotient – to chemical equilibrium problems. Relate equilibrium and thermochemistry concepts together.
reactions involving strong and weak acids and bases, including buffers as a specific case of acid-base equilibria. Relate acidity and basicity to molecular structure.

7. Calculate the solubility of various solutes, determine whether precipitates will form in given reactions, and predict reactions involving complex ions.

8. Describe an electrochemical half-cell using cell diagrams and correct terminology. Describe and apply the Nernst equation to electrochemical reactions. Predict half-reactions and overall reactions in electrolysis and calculate quantities associated with electrolysis reactions. Explain how a battery works using electrochemical principles.

9. Describe atomic structure from a classical and quantum theoretical perspective, and explain how atomic orbitals combine to form chemical bonds using Valence Bond theory.

10. Discuss the scope and limitations of Lewis Theory, VSEPR theory, Valence Bond theory, and Molecular Orbital theory in explaining chemical bonds, and/or the structure and reactivity of molecules. Apply these theories in the appropriate contexts.

11. Describe intermolecular forces (van der Waals forces, London dispersion forces, dipole-dipole interactions), relate intermolecular forces to states of matter and their properties, and describe changes between states of matter using phase diagrams.

12. Describe the intermolecular forces involved in solvation as well as the properties of solutions, including colligative properties.

13. Describe and apply rate laws to various reactions. Write plausible reaction mechanisms. Identify different types of catalysis and explain how a catalyst works.

14. Describe various applications of nuclear chemistry including radioactive labeling and radiocarbon dating.

**Physics**

1. Explain Newton’s laws of motion, and relate force, mass and motion.

2. Solve rotational dynamics problems using the work-mechanical energy approach, force-torque approach, and conservation of angular momentum.

3. Relate the principle of conservation of mechanical energy to the work done by a constant force, variable force and a spring.

4. Apply the laws of conservation of momentum and energy to collisions.

5. Solve problems using Newton's law of universal gravitation.

6. Describe oscillatory motion, apply the conservation of mechanical energy to a simple harmonic oscillator, and identify and describe situations when resonance occurs.

7. Describe wave motion as a multi-variable function, relate Newton’s laws to wave motion, and examine different wave behaviors in a variety of mediums.

8. Solve rotational dynamics problems using the work-mechanical energy approach, force-torque approach, and conservation of angular momentum.

9. Describe electric charge and relate electric charge, electric force, electric fields, and electric field lines.

10. Derive electric fields from electric charge distributions and solve for force on charged objects.

11. Describe electric flux and solve for electric fields using Gauss’ Law.

12. Use conservation of energy to relate kinetic and electric potential energy.

13. Solve simple DC electric circuits using electric potential and circuit elements.

14. Describe the force on a moving charge due to a magnetic field and derive magnetic fields due to moving electric charges.

15. Describe induction.

16. Derive Maxwell's equations and describe electromagnetic waves travelling at speed c.

17. Describe concepts of introductory optics: reflection, refraction; imaging and instruments; interference and diffraction.

18. Describe particles and waves of quantum systems, and fundamentals of quantum mechanics.

**Mathematics**

1. Appropriately develop and interpret limits, and use them to analyze continuous and differentiable functions.
2. Compute first and higher order derivatives and sketch graphs of functions.
3. Identify and employ the appropriate tools and techniques in differential calculus to solve problems on related rates and optimization.
4. Define the definite integral in terms of Riemann sums and interpret it as an area.
5. Explain the Fundamental Theorem of Calculus, and use it to compute definite integrals.
6. Distinguish between the indefinite and definite integral, and decide which one is relevant to a given problem.
7. Evaluate definite and indefinite integrals using the appropriate techniques at hand.
8. Identify the appropriate integration techniques needed to solve a problem.
9. Evaluate improper integrals using the appropriate techniques at hand.
10. Develop the appropriate integrals in rectangular and polar coordinates for areas of planar regions, volumes and surface areas of solids.
11. Compute areas of specific planar regions, surface areas and volumes of solids arising in science and engineering.
12. Use differential equations to model quantitative scientific problems.
14. Test for convergence and divergence of sequences and infinite series.
15. Represent functions in terms of power series and Taylor series.
16. Use parametric curves and polar coordinates to perform calculations and solve problems.

Laboratory
1. Carry out laboratory activities using safe and reliable techniques.
2. Develop hypotheses and make predictions for laboratory experiments.
3. Design and troubleshoot experiments.
4. Make descriptive observations and critically analyze data.
5. Prepare clear, appropriately labeled and formatted figures and tables for presentation of results.
6. Write a laboratory report.
7. Describe plagiarism. Prepare written work that paraphrases and cites reference sources appropriately, and otherwise abides by the principles of academic integrity.
# Integrated Science Topics
## September – December 2019

<table>
<thead>
<tr>
<th>Week</th>
<th>Math</th>
<th>Physics</th>
<th>Chemistry</th>
<th>Biology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Fri Sept 6)</td>
<td>Coordinates &amp; vectors</td>
<td>Motion in straight line</td>
<td></td>
<td>Nature of Science</td>
</tr>
<tr>
<td>2 (Sept 9-13)</td>
<td>Functions and models</td>
<td>Motion in line, 2D, and 3D</td>
<td>Gases</td>
<td>Light &amp; origins of life</td>
</tr>
<tr>
<td>3 (Sept 16-20)</td>
<td>Limits</td>
<td>Motion in 2D and 3D; Force and Motion</td>
<td>Gases</td>
<td>Evolution + Cell</td>
</tr>
<tr>
<td>4 (Sept 23-27)</td>
<td>Limits &amp; sequences</td>
<td>Force, motion; Newton’s Laws</td>
<td>Thermochemistry</td>
<td>Cell</td>
</tr>
<tr>
<td>5 (Sept 30 - Oct 4)</td>
<td>Derivatives; diff. rules</td>
<td>Newton’s Laws; energy</td>
<td>Thermochemistry</td>
<td>Energy &amp; enzymes</td>
</tr>
<tr>
<td>6 (Oct 7-11)</td>
<td>Differentiation methods</td>
<td>Energy, work, power</td>
<td>Spontaneous change</td>
<td>Membranes</td>
</tr>
<tr>
<td>(Oct 14-18)</td>
<td>FALL READING WEEK</td>
<td></td>
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</tr>
<tr>
<td>7 (Oct 21-25)</td>
<td>Applications of derivatives</td>
<td>Cons. of energy; gravity</td>
<td>Chemical equilibrium</td>
<td>Cell resp / Photo</td>
</tr>
<tr>
<td>8 (Oct 28-Nov 1)</td>
<td>Applications of derivatives</td>
<td>Gravity</td>
<td>Acids and bases</td>
<td>Photo / DNA</td>
</tr>
<tr>
<td>9 (Nov 4-8)</td>
<td>Applications of derivatives</td>
<td>Systems of particles</td>
<td>Acid-Base equilibria</td>
<td>Biotech / Cell division</td>
</tr>
<tr>
<td>10 (Nov 11-15)</td>
<td>Optimization; antiderivatives</td>
<td>Rotational motion &amp; angular momentum</td>
<td>Solubility and complex-ion equilibrium</td>
<td></td>
</tr>
<tr>
<td>11 (Nov 18-22)</td>
<td>Integrals</td>
<td>Oscillatory &amp; wave motion</td>
<td>Electrochemistry</td>
<td>Gene expression</td>
</tr>
<tr>
<td>12 (Nov 25-29)</td>
<td>Integrals</td>
<td>Wave motion &amp; Fluids</td>
<td>Electrochemistry</td>
<td>Cell communication</td>
</tr>
<tr>
<td>13 (Dec 2)</td>
<td>Review</td>
<td>Review</td>
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</table>

## January – April 2020

<table>
<thead>
<tr>
<th>Week</th>
<th>Math</th>
<th>Physics</th>
<th>Chemistry</th>
<th>Biology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Jan 6-10)</td>
<td>Applications of integrals</td>
<td>Optics</td>
<td>Electrons in atoms</td>
<td>Genetics</td>
</tr>
<tr>
<td>2 (Jan 13-17)</td>
<td>Integration techniques</td>
<td>Optics</td>
<td>Electrons in atoms</td>
<td>Evolution + History</td>
</tr>
<tr>
<td>3 (Jan 20-24)</td>
<td>Integration techniques</td>
<td>Optics</td>
<td>Chemical bonding</td>
<td>Evidence + Micro</td>
</tr>
<tr>
<td>4 (Jan 27-31)</td>
<td>Integration techniques</td>
<td>Electric charge, force, field</td>
<td>Chemical bonding</td>
<td>Microevolution</td>
</tr>
<tr>
<td>5 (Feb 3-7)</td>
<td>Sequences and series</td>
<td>Electric field; Gauss’ Law</td>
<td>Chemical bonding</td>
<td>Microevolution</td>
</tr>
<tr>
<td>6 (Feb 10-14)</td>
<td>Sequences and series</td>
<td>Electric potential</td>
<td>Real gases + IM forces</td>
<td>Phylogenetics</td>
</tr>
<tr>
<td>(Feb 17-21)</td>
<td>WINTER READING WEEK</td>
<td></td>
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<tr>
<td>7 (Feb 24-28)</td>
<td>Sequences and series</td>
<td>Electrostatic energy</td>
<td>IM forces</td>
<td>Speciation</td>
</tr>
<tr>
<td>8 (Mar 2-6)</td>
<td>Sequences and series</td>
<td>Electric currents</td>
<td>Solutions</td>
<td>Macro + Human evol</td>
</tr>
<tr>
<td>10 (Mar 16-20)</td>
<td>Differential equations</td>
<td>Magnetism</td>
<td>Kinetics</td>
<td>Community ecology</td>
</tr>
<tr>
<td>11 (Mar 23-27)</td>
<td>Parametric equations</td>
<td>EM Induction; Maxwell Eqs</td>
<td>Kinetics</td>
<td>Ecosystem ecology</td>
</tr>
<tr>
<td>12 (Mar 30 – Apr 3)</td>
<td>Polar coordinates</td>
<td>Modern Physics</td>
<td>Nuclear chemistry</td>
<td>Ecology -- concluded</td>
</tr>
</tbody>
</table>
Resources

Textbooks and Online Companion Programs
The following textbooks and online companion programs are required for Integrated Science:

<table>
<thead>
<tr>
<th>Textbook</th>
<th>Online Companion Program (requires purchase of an access code)</th>
</tr>
</thead>
</table>

Listed below are three options for purchasing the textbooks and access codes:

1. Purchase the hard-copy textbook and access code bundle (available at the York University Bookstore); **OR**
2. Purchase the hard-copy textbook and access code separately (available online); **OR**
3. Purchase the access code only if it includes an electronic version of the textbook (available at the York University Bookstore or online)

You are responsible for pricing out these (or other) options, and making the best decision for you. Older editions of the textbooks may be purchased, but the referenced editions will be used in Integrated Science. If you purchase an older edition, you are responsible for cross-referencing textbook sections and page numbers to ensure that you are reading the correct material. You are also responsible for any reading material that is included in the referenced edition, but not in the older editions.

A copy of each textbook is available on reserve at Steacie Science Library.

These textbooks and online companion programs are also being used in the traditional science courses (BIOL 1000/1001, PHYS 1010, MATH 1013/1014).

Lab Manuals, Coat and Safety Goggles
The following lab manuals are required for Integrated Science, and are available at the York University Bookstore:

1. BIOL 1000 Fall 2019 Lab Manual
2. BIOL 1001 Winter 2020 Lab Manual (Available in the winter term)

You will be given the Chemistry lab manual at your first Chemistry lab (the first section will be available on Moodle in advance). You are required to bring a laboratory coat and safety goggles to any wet lab. If you do not have these items, you will not be permitted in the lab. Depending on the lab policy, you may not be able to make up the lab. Lab coats and safety goggles can be purchased at the York University Bookstore.

Other Books
The following book is required for Integrated Science, and is available at the York University Bookstore:


Additional readings may be assigned or recommended during the course.
**Personal Response Systems**
We will be using the iClicker Cloud system in Integrated Science where you can use your personal phone, tablet, or computer to answer questions. One of these devices must be brought to every class. Using someone else's device to answer questions for them is considered academic dishonesty.

**Moodle**
All Integrated Science materials will be housed on one Moodle site. Additional biology and chemistry laboratory materials, including quizzes, are also housed on Moodle.

**Evaluation**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Biology ISCI 1101 ISCI 1102</th>
<th>Chemistry ISCI 1210</th>
<th>Physics ISCI 1310</th>
<th>Mathematics ISCI 1401 ISCI 1402</th>
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</thead>
<tbody>
<tr>
<td>Guided Practice</td>
<td>5%</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>R&amp;R* Quizzes</td>
<td>10%</td>
<td>10%</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>*Readiness &amp; Recap</td>
<td>- 5% Individual</td>
<td>- 5% Individual</td>
<td>- 2.5% Individual</td>
<td>- 5% Individual</td>
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<tr>
<td>- 5% Team</td>
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<tr>
<td>Homework</td>
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<tr>
<td>In-class activities</td>
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<td>N/A</td>
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<td>Integrated Assignments</td>
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<td>20%</td>
<td>20%</td>
<td>20%</td>
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<tr>
<td>Labs</td>
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<td>10%</td>
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<tr>
<td>Midterm Exam (F18 semester)</td>
<td>15% of term</td>
<td>7.5%</td>
<td>10%</td>
<td>15% of term</td>
</tr>
<tr>
<td>Midterm Exam (W19 semester)</td>
<td>15% of term</td>
<td>7.5%</td>
<td>10%</td>
<td>15% of term</td>
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<tr>
<td>Final Exam (December)</td>
<td>30% of term</td>
<td>15%</td>
<td>17.5%</td>
<td>35% of term</td>
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<tr>
<td>Final Exam (April)</td>
<td>30% of term</td>
<td>15%</td>
<td>17.5%</td>
<td>35% of term</td>
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</tbody>
</table>

Both the academic and lab components must be passed, independent of one another, to pass the course (ISCI 1101/1102, ISCI 1210, and ISCI 1310). There are no extra credit assignments.

**Fall 2019 Midterm Tests**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology (ISCI 1101)</td>
<td>Mon. Oct. 28</td>
<td>8:30 AM – 9:30 AM</td>
<td>LSB 101</td>
</tr>
<tr>
<td>Chemistry (ISCI 1210)</td>
<td>Fri. Oct. 11</td>
<td>8:30 AM – 9:30 AM</td>
<td>LSB 101</td>
</tr>
<tr>
<td>Math (ISCI 1401)</td>
<td>Wed. Oct. 23</td>
<td>8:30 AM – 9:45 AM</td>
<td>LSB 101</td>
</tr>
<tr>
<td>Physics (ISCI 1310)</td>
<td>Wed. Oct. 30</td>
<td>8:30 AM – 9:45 AM</td>
<td>LSB 101</td>
</tr>
</tbody>
</table>

**Winter 2020 Midterm Tests (very tentative)**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry (ISCI 1210)</td>
<td>Mon. Feb. 10</td>
<td>8:30 AM – 9:30 AM</td>
<td>LSB 101</td>
</tr>
<tr>
<td>Biology (ISCI 1102)</td>
<td>Fri. Feb. 14</td>
<td>8:30 AM – 9:30 AM</td>
<td>LSB 101</td>
</tr>
<tr>
<td>Math (ISCI 1402)</td>
<td>Wed. Feb. 26</td>
<td>8:30 AM – 9:45 AM</td>
<td>LSB 101</td>
</tr>
<tr>
<td>Physics (ISCI 1310)</td>
<td>Fri. Feb. 28</td>
<td>8:30 AM – 9:45 AM</td>
<td>LSB 101</td>
</tr>
</tbody>
</table>

**Description of evaluation components**

**Guided Practice**: Guided Practices are outlines of readings, videos, comprehension questions, and/or practice problems that introduce you to more basic concepts in preparation for class. By completing Guided Practices, you will be prepared to build upon these concepts and learn more advanced concepts in class.
R&R Quizzes: R&R Quizzes can take one of two forms: Readiness quiz or Recap quiz. Readiness quizzes are warm-up questions given at the beginning of class to ensure that you and your team have sufficiently mastered the basic concepts and are ready to proceed on to more advanced concepts. Your responses help to inform the ISCI faculty on what they should spend more time on in lecture. Recap quizzes are review questions given at the end of a unit to help cement your understanding of basic and advanced concepts and identify areas that need more work to fully master them. R&R quizzes are completed individually and in teams to help you learn through explanation.

Homework: Homework assignments will help you to cement your understanding of disciplinary concepts. Some of these individual assignments will be accessed through the online companion program that accompanies each textbook while others will be assigned and submitted in person.

Integrated Assignments: Integrated Assignments are interdisciplinary mini-projects that require an integrated understanding of biology, chemistry, physics and math concepts to complete them. There will be three Integrated Assignments in each term that will be completed outside of class in teams.

Labs: Basic laboratory skills will be developed in labs. You will individually complete 5 biology labs, 6 chemistry labs, and 5 physics labs offered as part of the traditional science courses in each term.

Midterm exam: You will individually write a midterm exam in each discipline in the fall and winter term.

Final exam: You will individually write a final exam in each discipline in the fall and winter term. Final exams occur in December and April and are scheduled by the Registrar’s Office.

Integrated Science Courses’ Policies

Grading
The grading scheme for the course conforms to the 9-point grading system used in undergraduate programs at York (A+ = 9, A = 8, B+ = 7, C+ = 5, etc.). Assignments and tests will bear either a letter grade designation or a corresponding number grade (e.g. A+ = 90 to 100, A = 80 to 89, B+ = 75 to 79, etc.) For a full description of York grading system, see the York University Undergraduate Calendar (under Academic Information).

Assignment Submission
Proper academic performance depends on you doing your work not only well, but on time. Accordingly, all assignments must be received on the due date specified for the assignment. Integrated Assignments are submitted on Moodle. Homework assignments are submitted as part of the online companion system used to assign the homework, unless otherwise specified by the instructor. Lab assignments are submitted according to the submission guidelines outlined in the lab manual or communicated by the lab director.

Late Assignments
Assignments received later than the due date will be penalized as follows. Guided Practices will be granted a “No Pass”. Homework assignments will receive a grade of zero. Integrated Assignments will have marks deducted according to the lateness factor described in the first assignment. Exceptions to the lateness penalty for valid reasons, such as illness or compassionate grounds, may be taken into consideration by the Integrated Science team. Submission of valid supporting documentation within 7 days of a late submission is required. Supporting documentation must be e-mailed to isci@yorku.ca. See “Supporting Documentation” below for a description of what is considered valid supporting documentation. Late lab assignments are subject to the late policy outlined in the corresponding lab manual or communicated by the lab director. There are NO make-ups for course assignments that are late without a valid reason and supporting documentation.
Missed Labs
The policy for missing a biology, chemistry, or physics lab is the same as that for the equivalent course. Please refer to your lab manual or e-mail the lab director regarding the policy details. Any arrangements must be made with the lab director.

Missed Quizzes and Midterm Exams
If you miss a quiz or exam for a valid reason, such as medical reasons or compassionate grounds, that is confirmed by supporting documentation, then you will have your grade weighting redistributed. See the section “Supporting Documentation” for what is considered as valid documentation. Otherwise, you will receive a grade of zero on the missed quiz or test. Missed lab quizzes or tests are subject to the relevant policy outlined in the lab manual or communicated by the lab director. There are NO make-ups for course quizzes and tests.

Missed Final Exams
If you miss a final exam, you may petition for deferred standing, according to the process outlined by the Registrar’s Office. If you are granted deferred standing, the deferred exam may differ in format from the original exam. If the petition is denied, you will receive a zero on the final exam.

Supporting Documentation
- Medical: Valid documentation for medical reasons is an “Attending Physician’s Statement”, or letter/document of similar detail.
- Compassionate: Valid documentation for compassionate grounds (e.g. death of an immediate family member) is a death certificate or letter from the funeral director.
- Other: For other circumstances, e-mail the Integrated Science team to determine the appropriate documentation required at isci@yorku.ca.

Valid supporting documentation must be received within 7 days of missing a quiz or test, and must be e-mailed to isci@yorku.ca. If supporting documentation is not received within 7 days of missing a quiz or test, you will receive a grade of zero.

Religious Observances
If you are observing a religious holiday, you are responsible for providing notice in advance (not less than 14 days) if you cannot meet an academic obligation (other than final exams). You must provide notice by emailing the Integrated Science team at isci@yorku.ca. You can consult the University Policy on Accommodations for Religious Observance as well as the Senate Policy on Sessional Dates and Scheduling Exams.

Academic Integrity
You are responsible for upholding the principles of academic integrity in all of your academic work. To learn about academic integrity, you can visit the Academic Integrity section of the Student Papers & Academic Research Kit (SPARK). You must complete the Academic Integrity Tutorial (details to come).

Note: Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g. Course Hero, One Class, etc.) were taken and used by unknown students in later offerings of the course. The Faculty’s Committee on Examinations and Academic Standards (CEAS) found in these cases that the burden of proof in a charge of aiding and abetting had been met, since the uploading students had been found in all cases to be wilfully blind to the reasonable likelihood of supporting plagiarism in this manner. Accordingly, to avoid this risk, students are urged not to upload their work to these sites. Whenever a student submits work obtained through Course Hero or One Class, the submitting student will be charged with plagiarism and the uploading student will be charged with aiding and abetting.
Note also that exams, tests, and other assignments are the copyrighted works of the professor assigning them, whether copyright is overtly claimed or not (i.e. whether the © is used or not). Scanning
these documents constitutes copying, which is a breach of Canadian copyright law, and the breach is aggravated when scans are shared or uploaded to third party repository sites.

**Academic Accommodation for Students with Disabilities**

Formal letters of accommodation are received through [Student Accessibility Services](#), and can only be provided to students with diagnosed disabilities who are registered with one of the Disability Services. You are responsible for delivering this letter to each of your course instructors as early as possible in the term.

**Important Course Information for All York University Students**

You are expected to be familiar with the following information:

- [Senate Policy on Academic Honesty](#)
- [Ethics Review Process for research involving human participants](#)
- [Academic accommodation policy for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities, and guidelines](#)
- [Student Code of Rights and Responsibilities](#)
- [Religious Observance Accommodation](#)

**York University Student Resources**

York University has many resources that you can access to help support your health, well-being, and success at university. Some of these resources are listed here:

- [Bethune College](#) (including SOS, PASS, Peer Tutoring, Peer Mentoring, and more!)
- [Student Accessibility Services](#)
- [ESL Open Learning Centre](#)
- [Libraries](#)
  - You can book Group Study Rooms using the [Library Room Booking System](#). Book early as space fills up fast!
- [Math Lab, S525 Ross](#): Drop-in room for help with first-year math courses
- [Mental Health and Wellness](#)
- [Registrar's Office](#)
- [Science Academic Services](#)
- [Student Financial Services](#)
- [York University Athletics & Recreation](#)

*September 2019*