**Integrated Science**

**SCIE 1505.18**

**2015/2016**

**Syllabus and Handbook**

Prepared by

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September 2015



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**Philosophy behind the Dalhousie Integrated Science Program**

The idea of an Integrated Science Program had indirect beginnings in the Symposium on Undergraduate Education held in the fall of 1990. During the Symposium, three failings of the science undergraduate curriculum were identified. First, it was felt there is not a sufficient introduction in the first year to the breadth of subjects offered at the University. In other words, specialization comes too early. Second, there was little indication of "what was worth knowing." For example, what is the core of the **scientific** knowledge (as opposed to, say, chemistry)? Finally there was little integration of science subjects.

In addition to the impetus provided for a curriculum review by the Symposium on Undergraduate Education, there has been a growing body of evidence that the first-year science experience has caused many students to reject science as a possible field of study. Thus, the program grew out of the idea of a curriculum reform designed to address these issues. The program shifts the focus from **teaching** concepts and facts to teaching critical thinking and ideas by **using** concepts and facts.

The pedagogical goals of the Integrated Science Program are (in no particular order of priority):

1. To introduce students to scientific methodology and engage them in scientific research.

2. To give the students sufficient background in the core of scientific knowledge such that they are able to continue with a major degree (or double major) in, or an honours degree (or combined honours) in, the science subjects taught at Dalhousie.

3. To point out the interrelationships among the science disciplines.

4. To indicate to students how the history and philosophy of scientific thought helps us to understand science today.

5. To show the relevance of science in the students' lives and links between science and society.

To achieve these goals, the program uses a number of pedagogical approaches, from lectures to team exercises in the laboratory and field, to independent study. Throughout the year, students learn scientific methodology and its applications to different disciplines; the interrelationships among disciplines (e.g., how do the different disciplines approach the same questions? how do the questions they ask about the same phenomenon differ?); the limits of science and technology; and their ethical considerations. The research project provides an outstanding opportunity to experience the process of scientific research.

Integrated Science emphasises the development of transferable skills, including problem solving, critical thinking, written and oral communication, computer literacy, numeric and statistical techniques, information technology, teamwork, planning and organization, research methods and skills, and laboratory and field work. In comparison to the typical first year of a Dalhousie BSc, Integrated Science requires a higher level of commitment and more active participation by students.

Over the years, the program has changed, based on student feedback and interests, teaching innovations, and various challenges. Since its inception, the pedagogical goals of the program have remained the same and its focus on preparing students as scientists has only strengthened. A description of previous versions of the program can be found on OWL.

**Program Description**

Integrated Science is an alternative and more interdisciplinary way for a BSc student to complete their first-year. A team of professors teach the concepts and techniques from first-year, introductory-level Biology, Earth Science, Psychology, and Statistics classes, in a more integrated way. Our professors meet weekly to discuss student progress, the concepts that connect disciplines, and development skills that transcend their boundaries, including the disciplines taught in the co-requisites. In class, the professors identify links between their disciplines and apply statistical methods to questions across these sciences, as well as draw students’ attention to links with other subjects (Chemistry, Mathematics, and Physics).

Compared to regular first-year classes, Integrated Science covers more or less the same material, some in greater depth. The sequence of topics may differ from regular first-year classes to promote . The flexibility to organize topics in a different way allows the relationships among the disciplines to be revealed. Integrated sessions taught by two or more professors explore these relationships, address big questions or consider complex problems.

Small class size facilitates student-instructor interaction and enables more hands-on learning. Overall, our students spend a larger proportion of their class time in hands-on activities (labs, field trips, oral presentations, discussions, team work, and research) than other science students. This emphasis allows our students to develop a wider range of transferrable skills needed in later science classes, in undergraduate research projects, and in scientific or professional careers.

Much of the hands-on class work is done in teams, which fosters a co-operative atmosphere and allows students to develop team-building skills, needed in subsequent academic, research, and work. Teams are assigned after the first day of class. Team members work together on a avriety of hands-on exercises, including field trips, laboratories, and workshops.

Through interdisciplinary field trips, students gain considerable field experience while observing the natural world from a variety of quantitative viewpoints. Many of the laboratory exercises that Integrated Science students experience are similar to those in regular first year courses in Biology, Earth Science, and Psychology. Some are more open-ended and some are more integrated.

Research methods are learned while conducting research in a team supervised by a Dalhousie science professor. Emphasis on scientific research methods and communication skills, along with a broad introduction to science, makes any Integrated Science option an excellent foundation for an honours or a combined honours degree. Integrated Science professors can help you select second-year classes or a major, and provide insights into career options and possible science-related jobs at the university.

Student workload is managed so that assignments and quizzes are spread out across the days and weeks. Regular assignments and quizzes discourage “slacking off” and encourages students to keep up, allowing them to achieve at high levels and hone their time-management skills.

The focus of the Integrated Science tests (quizzes and exams) is the application of knowledge and understanding to novel problems or situations that allow for multidisciplinary questions. In other words, tests include questions from more than one subject. Test formats are primarily problem-solving and short answer, organized around a particular theme or context. Students also get some practice with multiple-choice questions, to prepare for multiple-choice tests in some of the larger second-year classes in the life sciences.

Below is the official description of SCIE 1505XY.18, Integrated Science, from the Dalhousie University Calendar, followed by some added explanation:

**SCIE 1505X/Y.18: Integrated Science**

This program provides comprehensive first-year preparation for science majors or honours degrees and includes a full-year writing course and research project in the sciences. Concepts and techniques are taught in Biology, Earth Science, Psychology, and Statistics and are linked to material taught in separate Chemistry, Mathematics, Philosophy, and Physics courses.

**Note:** Credit can only be given for this course if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

**Format:** Writing requirement; Lecture approx. 9 hours/lab and other activities approx. 5 hours

**Cross-Listing:** BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03; ERTH 1080.03; PSYO 1011.03/1012.03 or PSYO1021.03/1022.03; SCIE 1111.03; STAT 1060.03.

**Co-requisites:** (1)PHIL 1050.03; (2) CHEM 1011.03/1012.03; (3) MATH 1000.03/1010.03 or MATH 1000.03 or MATH 1500 or MATH 1215.03.

**Recommended co-requisites (not required):** PHYC 1190.03/1290.03 or PHYC 1300.06 X/Y or PHYC 1310.03/1320.03 or PHYC 1310.03.

The Statistics component of SCIE 1505 plus one term of Calculus fulfil the first-year Mathematics distribution requirement for BSc students. Note that a full year of Calculus is needed for degrees in Mathematics, physical sciences, and Engineering. A full year *may* be needed for applications to Medical or other professional schools in provinces other than Nova Scotia—students intending to apply to such programs should find out the requirements for schools at which they intend to apply.

The full-year Psychology component of SCIE 1505 fulfils the Social Science requirement.

The integrated Writing in Science component of SCIE 1505 and the companion Humanities course (PHIL 1050) together fulfil a full-year Writing Requirement at Dalhousie University. The Integrated Science writing course serves in lieu of ENGL 1000 for entry to the School of Pharmacy at Dalhousie University. Note that other universities might not accept our writing course in lieu of English (many universities still require an English course). Note that PHIL 1050 also satisfies *half* of the full-credit Humanities or Language requirement at Dalhousie; therefore, before they graduate, students will need to take another half-credit course in a Humanities or Language.

Physics is not a required co-requisite for students interested in the life sciences. It is recommended, however, as a basic knowledge of Physics is useful in many ways for a career in science. Students interested in life or medical sciences who need or want Physics can take it in first or second year.

**Students are advised to pay close attention to details such as the minimum grade and other requirements needed to enter particular second-year classes or degree programs. It is the student’s responsibility to be aware of such requirements. See the Dalhousie Undergraduate Calendar or contact departments for this information.**

**Integrated Science Faculty**

The Integrated Science program is made possible by a team of dedicated professors and a small student to instructor ratio in SCIE 1505. Classes are further enriched by guest lectures given by other faculty members. Teaching Assistants assist the faculty with laboratories, field trips, tutorials, and assignments. Information retrieval exercises are taught by staff from the Killam Library. Research projects are supervised by a additional faculty from a wide range of departments at the university.

Furthermore, we are aware of the topics you are covering in your Science co-requisite classes (Chemistry, Math, and Physics), and when, enabling us to point out links to your other classes.

The following professors are the primary Integrated Science teaching professors for 2015-2016:

**Subject &**

**Professor name Phone Office Location E-mail Address**

*Biology*

Cindy Staicer 494-3533 Rm 7130, Biology wing, Cindy.Staicer@dal.ca

(and Program Director) Life Sciences Centre

Martha Mullally 494-8496 Rm 2112, Biology Wing MarthaMullally@gmail.com

Life Sciences Centre

# Earth Sciences

Alexandra Arrnott 494-7018 Rm 2045, Earth Science aarnott@dal.ca

wing, Life Sciences Centre

*Philosophy*

Carlos Mariscal 494-3538 Rm 3131, McCain Arts mariscal@dal.ca

& Social Sciences Bldg.

*Psychology*

Jennifer Stamp 494-3432 Rm 2533, Psychology wing, Jennifer.Stamp@dal.ca

Life Sciences Centre

*Statistics*

Brad Frankland (use email) by arrangement Brad.Frankland@gmail.com

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Your profs will let you know what times you can find them in their offices (weekly office hours). You can also e-mail them at any time to ask questions or set up an appointment to meet.

Your profs will communicate with you through the Dal online learning portal, OWL (BBLearn or Blackboard Learn). Announcements will be posted on OWL and through e-mail sent through the OWL page. You may e-mail profs through the OWL page as well.

Students are encouraged to meet with the Program Director (Cindy Staicer) or Class Coordinator (Martha Mullally) to discuss their academic progress, career interests, and plans for second year and beyond, to ensure they are preparing effectively.

**Important Dates and Holidays**

Please note these important dates and check when arranging trips home or making apointments.

**Date(s) Day (and time) Activity, holiday, or exam**

Sept 10 Thursday, 0905 Classes start in Dunn room 135.

Sept 25 Friday Last day to register, add or drop Fall classes with no penalty;

Oct TBA Dates of Fall term final exams are announced

Oct 12 Monday Thanksgiving Holiday - Dalhousie Closed

Nov 6 Friday Last day to drop Fall classes with a “W” (withdrawl) on transcript

Nov 11 Wednesday Remembrance Day Holiday - Dalhousie Closed

Nov 12 Thursday Study Day – No Dalhousie Classes

Dec 7 Monday, 1730-2030 End of term party (chance to relax & dress up)

Dec 8 Tuesday Reviews for exam preparation; Last day of Fall term classes

Dec 10-20 Fall Final Exam period

Dec 21 - Jan 3 Break between Fall and Winter terms

Jan 4 Monday Classes start for Winter term

Jan 5 Tuesday, 0905 First Integrated Science class for Winter term, in Dunn room 135

Jan 15 Friday Last day to register, add or drop Winter classes with no penalty

Jan TBA Academic Program Fair (majors and programs information)

Jan TBA Dates of Winter term final exams are announced

Feb 5 Friday Munro Day Holiday - Dalhousie Closed

Feb 8 Monday Last day to drop Winter term or full-year classes with a “W”

Feb 12 Friday, 1725 Last class before Study Break finishes (Biology lab)

Feb 15-19 Study Break - No classes but University and dorms are open

Mar 25 Friday Good Friday Holiday (University closed)

Apr 5 Tues, 0905-1700 Research Project Symposium - Team Presentations

Apr 6 Wed, 1435-1700 Poster Session (public is invited); last day of classes

Apr 9-23 Winter Final Exam period

**Quiz dates:** Regular, multidisciplinary quizzes are scheduled for the following dates, roughly spaced at montly intervals. Please ensure you do not make other arrangements for these times. The main contact for Integrated Science Quizzes and Exams is Prof. Mullally. Note that you may also have evening tests in your co-requisites on other dates.

Quiz 1 October 1 Thursday 1305-1425

Quiz 2 October 29 Thursday 1305-1425

Quiz 3 November 26 Thursday 1305-1425

Quiz 4 January 28 Thursday 1335-1455

Quiz 5 March 3 Thursday 1335-1455

Quiz 6 March 31 Thursday 1335-1455

**Field Trip Details**

In Nova Scotia, weather conditions change quickly, and temperatures are 5-10°C cooler on the coast, so we suggest layers of clothing made of synthetic fibres to keep you warm and dry. Outdoor outfitters, like Mountain Equipment Co-op, have a good selection of field apparel. Always arrive appropriately dressed, bring a covered clipboard, lined and unlined paper, pens, pencils, eraser, ruler, stapler, and calculator. Other things needed for specific trips are listed below.

These are the field trips scheduled for 2015-2016:

**Friday, Sept 11 afternoon, 1400-1800** -- Point Pleasant Park, Halifax (Measurement Scavenger Hunt, first team assignment, followed by a BBQ. with profs and DISP grads) -- bring wind and rain protection, sunscreen, and wear comfortable walking shoes. Teams will get there on their own (walk or take Metro bus; meet at Black Rock Beach).

**Friday, Sept 18, 1435-1700** -- Public Gardens, Halifax (Ethology: Observing Animal Behaviour) – bring rain protection, wear walking shoes, and bring a cellphone, stopwatch or digital watch to time events. Walk or take a Metro bus to the park; meet at bandstand.

**Thursday, Sept 24, all day, 0900-1800** -- Conrad Beach, east of Dartmouth (Dynamics of Sandy Beaches and Tidal Salt Marsh Ecosystems) -- bring lunch, water, snacks, sunscreen, warm clothes, rain and wind protection, sneakers, and knee-high rubber boots. We will travel by chartered bus.

**Friday, October 2, 1335-1725** – Chebucto Head, near Duncan's Cove, west of Halifax (Bogs and Barrens Ecosystems) – bring warm clothes, rain protection, knee-high rubber boots. We will travel by chartered bus.

**Thursday, October 8, all day, 0900-1700** – Two locations: Horton Bluff, Fundy shore; and the Windsor Causeway (Reconstructing an Ancient Environment; and Anthropogenic Environmental Change) – bring lunch, water, snacks, warm clothes, rain and wind protection, hat, gloves, knee-high rubber boots. Dress warmly. We will travel by chartered bus.

**Tuesday, Oct 13, afternoon, 1235-1800** -- Cranberry Cove, near Peggy's Cove, west of Halifax (Intertidal Ecology and Diversity; Testing Hypotheses) -- water, snacks, sunscreen, warm clothes, rain protection, hat, gloves, knee-high rubber boots or shoes that can be submerged in seawater. We will travel by chartered bus.

**Thursday, March 24, morning, 0905-1125** – Building Stones field trip: Historic Buildings, Halifax (Building Stones, Grave Stones, Historical Monuments) - wear very warm clothes, winter boots. Walk or take a Metro bus downtown.

**Friday, April 1, afternoon, 1435-1725** – Nova Scotia Museum of Natural History, Halifax (Form and Function of the Vertebrate Skeleton) -- indoors; wear appropriate attire to walk a few blocks; meet at the museum on 1747 Summer Street.

|  |
| --- |
| **Schedule for the first two weeks of Fall term 2015** |

*Includes SCIE 1505 and PHIL 1050 classes; does not include other co-requisites or electives*

*See OWL for any updates and full schedules for both terms*

|  |  |  |
| --- | --- | --- |
| **Week 1** |  |  |
| **Thursday, Sept 10** | |  |
| 0905-0955 | Dunn 135 | Introduction to the Integrated Science program; Overview of class organization and grading |
| 1005-1125 | Dunn 135 | Biology: Introduction to Biology and the Scientific Method |
| 1305-1425 | LSC 240 | Psychology: Measuring Behaviour |
| 1505-1655 | LSC 238 | Philosophy: Matters of Fact and Matters of Value |
|  |  |  |
| **Friday, Sept 11** | |  |
| 0905-0925 | LSC 2055 | Meet briefly for team assignments in the ERTH lab |
| 1400-1800 | Point Pleasant Park | Field Trip: Measurement Scavenger Hunt; and BBQ with Profs and previous students (teams to arrive at park on their own when their other classes are finished) |
|  |  |  |
| **Week 2** |  |  |
| **Tuesday, Sept 15** | |  |
| 0905-1025 | LSC 2055 | Interdisciplinary Sand Lab |
| 1035-1125 | Dunn 135 | Statistics: Introduction |
| 1305-1435 | LSC 240 | Biology: Introduction to Ecology |
|  |  |  |
| **Wednesday, Sept 16** | |  |
| 1505-1625 | LSC 238 | Psychology: Ethology |
| 1635-1725 | Killam Library | Philosophy tutorial: Library tour (meet in Killam Library foyer) |
|  |  |  |
| **Thursday, Sept 17** | |  |
| 0905-1025 | Dunn 135 | Field trip background: Glaciers and Glaciation |
| 1035-1125 | Dunn 135 | Statistics: Univariate Descriptive Statistics: Distributions |
| 1305-1425 | LSC 240 | Biology: Population Ecology |
| 1505-1655 | LSC 238 | Philosophy: Ethical Concepts and Theories |
|  |  |  |
| **Friday, Sept 18** | |  |
| 1435-1700 | Public Gardens | Ethology field trip at the Halifax Public Gardens (meet there) |

**Evaluation of Student Performance**

**Grades and GPA**

Dalhousie transcripts show letter grades. Integrated Science students receive a single official Science 1505.18 letter grade for first year, based upon combined marks on exams, quizzes, assignments (problem sets, labs, field trips), and writing class assignments. The next page shows how these numerical marks are weighted in calculating the grade.

The Dalhousie University grade scale is used to convert numerical marks (%) to letter grades:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mark (%) | Letter  Grade | GPA |  | Mark (%) | Letter  Grade | GPA |
| 90-100 | A+ | 4.3 |  | 65-69 | C+ | 2.3 |
| 85-89 | A | 4.0 |  | 60-64 | C | 2.0 |
| 80-84 | A- | 3.7 |  | 55-59 | C- | 1.7 |
| 77-79 | B+ | 3.3 |  | 50-54 | D | 1.0 |
| 73-76 | B | 3.0 |  | <50 | F | 0 |
| 70-72 | B- | 2.7 |  |  |  |  |

The Dalhousie Undergraduate Calendar states grades in the “A” range reflect “Excellent” performance: considerable evidence of original thinking; demonstrated outstanding capacity to analyze and synthesize; outstanding grasp of subject matter; and evidence of extensive knowledge base. Letter grades in the “B” range reflect “Good” performance: evidence of grasp of subject matter, some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues; and evidence of familiarity with the literature. Grades in the “C” range reflect “Satisfactory” performance: evidence of some understanding of the subject matter; ability to develop solutions to simple problems; and benefiting from his/her university experience. A grade of “D” is a “marginal pass”, meaning limited familiarity with subject matter, critical and analytical skills. A grade of “F” is a “Failure”, reflecting insufficient evidence of understanding of the subject matter; weakness in critical and analytical skills; and limited or irrelevant use of the literature. A grade of “D” in Integrated Science may put a student on academic probation and a grade of F may result in academic dismissal.

On transcripts, letter grades from different classes are weighted by number of credit hours and combined together into a numerical quantity known as the Grade Point Average (GPA). A student’s transcript shows the student’s GPA calculated for each term, as well as the student’s cumulative GPA across all classes taken at Dalhousie. Integrated Science students receive a separate grade in PHIL 1050, which, along with other co-requsites and electives, also get figured into calculating their GPA.

Please note: Certain second-year classes (e.g., Biology, Biochemistry, Marine Biology, Microbiology, Psychology, Neuroscience, and various Co-op degree programs), require a certain minimum grade in first year (Integrated Science overall or in the Biology or Psychology components) before they are admitted to the class or degree program. It is thee responsibility of the sudent to consult the Dalhousie Undergraduate Calendar and be aware of these requirements.

**Calculation of Numerical Marks**

Science classes calculate marks numerically before converting them to letter grades. Your overall mark for the year in Integrated Science will be calculated as shown below. Before quiz averages are calculated for the year, the lowest quiz score per subject will be dropped.

*Method of calculating your official, final numerical mark (%):*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Course | Exams | Quizzes | Science Assignments | Writing in Science Assignments | Total |
| SCIE 1505.18 | 35 | 30 | 20 | 15 | 100 |

Integrated Science is a full-year class, so the final grade is based on work done throughout the whole year and this is the grade that appears on student transcripts. Integrated Science students must finish the year to get a grade in Integrated Science. They get the same grade for each term.

Unofficial fall term grades will be calculated for every student at the beginning of winter term to provide students with feedback on their progress and for the purpose of applying for scholarships, jobs, and to other programs. Grades are calculated differently for the fall term because the Science Writing Class marks are not included. Note that this is an unofficial mark and will not appear on transcripts. The method for calculating the unofficial fall term mark in all options is shown below:

*Fall exams: 35%, Fall quizzes: 30%, Assignments: 35%, Total: 100%*

**Tests (Quizzes and Exams Components)**

Tests take the form of shorter quizzes and longer exams, similar except for duration.

Quizzes. Integrated Science will take a 1.5 hour multidisciplinary quiz covering material from all disciplines organized around a particular theme or context. Material to be covered will be specified in class and posted on OWL several days before the test, to enable you to direct your studies. Quizzes ensure you keep up with work and provide you with regular feedback with your learning progress, as well as evaluating your problem-solving skills and ability to apply concepts. These quizzes are good practice for the Integrated Science term exams.

Exams. Integrated Science exams are similar to quizzes but longer (3 hours instead of 1.5 hours). At the end of each term you will take two exams, each containing material from 3 disciplines, and a few integrated questions, organized around a theme. Our exams feature material covered during one term and take a problem-based approach to address questions from the perspectives of several science disciplines. Exams reveal how well you can apply your knowledge, synthesize and evaluate information, and integrate subject matter.

Rules for quizzes and exams. (1) Cell phones and other web-access or communication devices are not permitted at quizzes or exams. If you want to keep track of time, bring a watch. (2) Any books or papers must be secured in a closed book bag and left at the front of the room. (3) Only basic calculators are allowed (those with alpha-numeric storage or graphing capability are not permitted).

If you miss a test because of illness, contact Prof. Mullally immediately by phone or e-mail. If you are ill please stay home and notify Prof. Mullally within 48 hours.

**Science Assignment Component**

The science assignment mark includes labs and weekly assignments, such as those that provide practice in problem-solving in Statistics. Reports and assignments for the different components are either submitted by teams or individuals. Your instructors will specify whether an assignment is to be handed in individually or in teams.

All work must be completed on time. Each assignment has strict deadlines as listed on the Integrated Science schedules on OWL. Marks for written papers will be reduced by up to 10% per day late.

Assignment marks for each subject will be posted on OWL (students can se eonly their own marks, not others). You should save your marked assignments in a binder or folder and verify that the correct value has been posted. If you find a discrepancy, contact Prof. Mullally at once. He will compile assignment marks from the various subjects and calculate your overall assignment mark. Please inform him of any excused absences, missed assignments, or related problems. If you have a physician’s note, bring it to Prof. Mullally If you plan to be away, please notify Prof. Mullally at least one week in advance of your absence so a plan to complete missed work can be arranged.

The tables below show the method for calculating assignment marks. The calculations differ for each term because assignments for the Statistics component are given in the fall term, and assignments for the Earth Science component are given in the winter term. Marks for field trip assignments and other interdiscipinary work are given in the fall.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method of calculating SCIENCE ASSIGNMENT marks** | | | |  |  |  |  |
| Assignment components | Total marks both terms\* |  | **% of total** |  | *Fall marks\** |  | *% of fall* |
| Biology labs and assignments | 180 |  | **33.3** |  | *90* |  | *28* |
| Earth Science labs and assignments | 90 |  | **16.7** |  | *--* |  | *--* |
| Psychology labs and assignments | 90 |  | **16.7** |  | *45* |  | *16* |
| Statistics labs and assignments | 90 |  | **16.7** |  | *90* |  | *28* |
| Field trips and other interdisciplinary work | 90 |  | **16.7** |  | *90* |  | *28* |
| Total possible | 540 |  | **100** |  | *315* |  | *100* |
| \* total possible will be adjusted if necessary (and accounting for excused absences) | | | | | | | |

Note that formal writing assignments, where both content and writing skills make up an equivalent part of the mark, are not included in your regular assignment marks. Instead they contribute to your *Writing in Science* mark are weighted more heavily than other kinds of assignments. This component is calculated in the Winter term and is weighted as a half-credit class. See next section for details.

**Writing in Science Component**

Integrated Science fulfils the full-credit, first-year Writing Class distribution requirement at Dalhousie University. Integrated Science serves as an excellent writing class because of the variety of assignments and because students receive considerable instruction and feedback, with the opportunity to learn by re-writing several papers. This writing component is integrated across two classes: PHIL 1050.03[[1]](#footnote-1) and Integrated Science (SCIE 1505). Both use the same writing manuals so that students can learn to develop their writing skills in a consistent manner throughout the year.

The SCIE 1505 Writing in Science component builds on the skills students have acquired in the fall term and includes all formal science writing assignments (i.e. those that provide feedback on writing skills, and for which half of the mark is based on writing skills). Note that most of the marks are from the Research Project while some are from formal reports based on a fall field trip and biology laboratory experiment. Marks for this component will be calculated as follows:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Writing in Science class components** | |  | | | **Mark (%)** | | | **Due date (tentative)\*** | | |
| Beach Field Trip Report | |  | | | 5 | | | Oct 16, 22 | |
| Photosynthesis Lab Report (draft) | |  | | | 3 | | | Dec 3 | |
| Photosynthesis Lab Report (final) | |  | | | 3 | | | Jan 14 | |
| Project-related Workshops (winter term) | |  | | | 2 | | | (in-class) | |
| Writing Portfolio | |  | | | 3 | | | Nov 26, Feb 11, Apr 6 | |
| Written Research Proposal | |  | | | 5 | | | Jan 21 | |
| Annotated Bibliography | |  | | | 3 | | | Feb 4 | |
| Topic Sentence Outline | |  | | | 10 | | | Feb 25 | |
| Complete Draft of Written Paper | |  | | | 20 | | | Mar 17 | |
| Team Poster Draft (digital file) | |  | | | 2 | | | Mar 22 | |
| Team Presentation Draft (ppt file) | |  | | | 1 | | | Mar 24 | |
| Team Poster Final (digital file, poster session) | | | | | 8 | | | Mar 31, Apr 6 | |
| Team Presentation to Class and Profs | |  | | | 10 | | | Apr 5 | |
| Final Draft of Written Paper | |  | | | 20 | | | Apr 6 | |
| Assessment by Student Team Members | |  | | | 2 | | | Apr 15 | |
| Assessment by Project Supervisor | |  | | | 3 | | | Apr 15 | |
| **Total** | |  | | **100** | | |  | | |

**Research Projects**

In winter term, you will take the skills you have learned and apply them in your research project. On Nov 26, the profs and participating researchers will present the research projects available for winter 2016 and you will apply for the 5 projects of most interest to you. By the time you finish your December exams, you will have completed the fall-term writing and humanities class (PHIL 1050), the Statistics component of Integrated Science, and will have completed many team assignments, so you will be well-prepared to begin your team research projects under the supervision of a researcher.

Integrated Science students work together in teams (2-5 students) to address a tractable question, with the help of an Integrated Science professor, or another Dalhousie researcher, serving as the team’s research supervisor. The team will design a study or participate in an ongoing study, collect and analyse data, and communicate findings in an oral presentation, and scientific posters. Each student will write an independent paper with an individual focus. Thursday afteroons, 3-6 PM, in Winter Term, is designated project work time, when no Integrated Science classes will be scheduled. Depending on your project and supervisor’s schedule, however, you may need to do your lab work at a different time of the week when you are not in scheduled classes.

On April 5-6, each team will present its findings in a Scientific Symposium, including an all-day Oral Session to the class, the Integrated Science professors, and the other research supervisors on April 5, and a Poster Session open to the public on the afternoon of April 6. All students are required to attend all presentations, *so do not make other plans for those days*. Bonus points are awarded for active participation in the Oral Session (e.g., asking good questions, chairing sessions).

The written work for the Research Project is separated into several manageable parts, spaced 2-3 weeks apart, to allow sufficient time to complete each and use the feedback you received to improve your next assignment. The oral presentation and poster, created through team effort, will integrate and synthesize information in the individual papers in a cohesive and consistent format, and style. The team member assessment will reflect the relative contributions, in terms of time, effort, and assistance of each team member to the overall team product. The project supervisor will assess your ability to conduct research, and your commitment to scientific research.

About half of the Writing in Science component mark is based on successive drafts of the individual’s written paper. To give an idea of the depth expected, the final draft should be about 10 pages of text, plus additional pages of figures, tables, and references. Your marker will determine whether your paper has been prepared with appropriate depth and breadth, as well as evaluate its scientific content, logical organization, grammatical correctness and appropriate writing style. Markers also provide feedback on the mechanics of researching the topic and producing the written papers, oral presentations, and posters. You will receive formal instruction in preparing posters.

With help from supervisors, you will set a schedule for individual and team work for their project. Students should expect to spend an average of 4-6 hours per week throughout the winter term working on their projects, roughly equivalent to the workload of a half-credit class. Between mid-late January and mid-late March, much of this time will be spent conducting your lab research. The remainder of this time will be spent on independent library research, reading, and writing, as well as various in-class exercises or workshops that are designed to help students complete projects efficiently and effectively. These include finding and evaluating scientific sources, writing proposals, citing the literature, reading critically, interpretting data, and practice with particular scientific writing skills.

**Subject Marks and Grades**

Integrated Science calculates marks in the different subjects although they do not appear on official transcripts provided by the Dalhousie Registrar's Office. The scale used to convert numerical marks for subjects to letter grades is the same as for other Dalhousie Science classes.

***To get a grade in Integrated Science, a student must pass all components.*** At the end of fall term, if a student has not passed all of their Integrated Science subjects and the co-requisite PHIL 1050, she or he will not normally be allowed to continue in Integrated Science. The Dean’s office will facilitate the student’s transfer from Integrated Science into regular classes and provide transfer credit with grades for fall-term equivalent classes where possible.

Subject-specific marks will be calculated differently for each subject, in a manner that weights assignments, labs, and tests similar to the way regular first-year classes for the same subject will calculate their marks. This makes the subject marks from Integrated Science comparable to marks in first-year classes.

Relevant field trip exercises will be included in the assignment part of the subject-specific mark.

**Biology subject mark** – note: students must pass the lab to get credit for Biology

Assignments (includes labs): 30%, Quizzes: 35%, Exams: 35%

**Earth Science subject mark**

Assignments (includes labs): 35%, Quizzes: 30%, Exams: 35%

**Psychology subject mark**

Assignments (includes labs): 30%, Quizzes: 35%, Exams: 35%

**Statistics subject mark**

Assignments: 20%**,** Quizzes: 40%**,** Exams: 40%

**Writing in Science subject mark**

See details in previous section about our Writing in Science component

A breakdown of subject grades will be provided, upon request of the student, for the purpose of applying for scholarships, degree programs, transferring to professional programs at Dalhousie or other universities, and when applying for jobs or other positions. Students who need a grade breakdown letter should forward to the Integrated Science office the name and address to which the letter should be sent and the purpose of the letter. Please allow at least 10 days for processing of the letter.

**Integrated Science - Biology Outline – 2015/2016**

(Dalhousie course equivalent: BIOL 1010/1011 – Principles of Biology Part I and II)

*Texts: Campbell et al. BIOLOGY, Canadian edition. Pearson Canada.*

*Knisley. A Student Handbook For Writing In Biology, 4th Ed. WH Freeman/Sinauer.*

*Lectures: Tuesdays & Thursdays, Fall:1305-142 LSC 240; Winter, 1335-1455 in Winter)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Fall Week** | | **Date** | **Lecture Topic** | **Chapters in Campbell or Knisely (K)** | | |
| 1 | Sep 10 | | Introduction to Biology and the Scientific Method | | 1, and K 1 |
| 2 | Sep 15 | | Introduction to Ecology | | 52 |
| 3 | Sep 17 | | Ecology of Populations | | 53 |
| 3 | Sep 22 | | Interactions between species | | 54 |
| 4 | Sep 29 | | Ecology of Ecosystems | | 55 |
| 5 | Oct 6 | | Aquatic Biology | | 52 (aquatic biomes) |
| 6 | Oct 15 | | Introduction to Microbiology (guest Dr. Russell Easy) | |  |
| 6 | Oct 15 | | Conservation Biology | | 56 |
| 7 | Oct 20 | | Biological Molecules | | 5 |
| 7 | Oct 22 | | Chemistry of Life (guest Dr. Marc Whalen, Chemistry) | | 2, 3, 4 |
| 7 | Oct 22 | | Cell Structure & Function I | | 6.1-6.5 |
| 8 | Oct 27 | | Cell Structure & Fuction II/Membranes I | | 6.6-6.7, 7.1-7.2 |
| 8 | Oct 29 | | Exponential Functions & Population Growth (guest Dr. Richard Nowakowski, Math) | | 53.2-53.6 |
| 9 | Nov 3 | | Membranes II | | 7.3-7.5 |
| 9 | Nov 5 | | Cellular Respiration I | | 8, 9.1 |
| 10 | Nov 10 | | Cellular Respiration II | | 9.2-9.5 |
| 11 | Nov 17 | | Photosynthesis I | | 10.1-10.2 |
| 11 | Nov 19 | | Photosynthesis II | | 10.3-10.4 |
| 12 | Nov 24 | | Cell Communication | | 11 |
| 13 | Dec 1 | | Muscle Contaction: Using energy to move | | 50.5-50.6 |
| 13 | Dec 3 | | Biomechanics (guest Dr. Michael Lee, Biomedical Engineering) | |  |
| 13 | Dec 3 | | Regulating energy production and use | | 8.5, 9.6, 42.5-42.7 |
| 14 | Dec 8 | | Review | | --- |

**Integrated Science - Biology Outline – 2015/2016 (continued)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Winter Week** | **Date** | **Lecture Topic\*** | **Chapters in Campbell** |
| 1 | Jan 5 | Animal Anatomy and Physiology I | 40, 41 |
| 1 | Jan 7 | Animal Anatomy and Physiology II | 42, 44 |
| 2 | Jan 12 | Cell division for Growth: Mitosis | 12.1-12.3 |
| 2 | Jan 14 | Cell division for Reproduction: Meiosis | 13.1-13.4, 46 |
| 3 | Jan 19 | Mendelian Genetics | 14 |
| 3 | Jan 21 | Chromosomal basis of Inheritance | 15 |
| 4 | Jan 26 | Introduction to Immunology | 43 |
| 5 | Feb 2 | DNA and Replication | 16 |
| 5 | Feb 4 | Transcription & Translation | 17 |
| 6 | Feb 9 | Regulation of Gene Expression | 18 |
| 6 | Feb 11 | Gene technology | 20 |
| 8 | Feb 23 | Genomes and Their Evolution | 21 |
| 8 | Feb 25 | Evolution and Natural Selection | 22 |
| 9 | Mar 1 | Population Genetics and Evolution (guest: Dr. Paul Bentzen, Biology) | 23 |
| 10 | Mar 8 | Origin and Diversification of Species | 24 |
| 10 | Mar 10 | Tree of Life | 26 |
| 11 | Mar 17 | Plant Evolution and Diversity | 29, 30 |
| 12 | Mar 22 | Plant Development (guest: Dr. Arunika Gunarwardena) | 35 |
| 12 | Mar 24 | Animal Evolution and Development | 47, 32, 34.1-34.7 |
| 13 | Mar 29 | Human Evolution: Integrated Session with Psychology | 34.8 |
| 13 | Mar 31 | History of Life on Earth: Integrated Session with Earth Sciences | 25 |
| 14 | Mar 31 | Review for exams |  |

**\*** *Please note: Topics related to Neurobiology (neurons, cortex, nervous system, sensory systems, animal behaviour, hormones) are taught through the fallPsychology/Neuroscience component.*

**Integrated Science - Biology Outline – 2014/2015 (continued)**

**Activities – Field Trips and Laboratory exercises -** *Labs are normally held on Friday afternoons 1435-1725. Rooms vary depending on the term and exercise. Fall labs are usually in in LSC 5009/5012. Winter labs are usually in LSC 2102.*

|  |  |  |
| --- | --- | --- |
| **Week** | **Date** | **Activity** |
| **Fall** |  |  |
| 3 | Sep 24 | Field Trip to Conrad Beach (all day) - Dynamics of Beach Ecosystems; Bird Behaviour; Ecological Succession |
| 3 | Sep 25 | Microscopy Lab |
| 4 | Oct 2 | Field Trip to Duncan’s Cove (afternoon) – Ecology & Biodiversity of Plants & Lichens in a Bogs & Barrens Ecosystem |
| 6 | Oct 13 | Field Trip to Peggy’s Cove – Intertidal Ecology & Biodiversity; Hypothesis testing; Preparation of a Dichotomous Key |
| 6 | Oct 16 | Microbiology Lab I |
| 7 | Oct 23 | Microbiology Lab II |
| 8/9 | Oct 30/Nov 6 | Populus - Population Growth (exercise in computer lab) |
| 11/12 | Nov 20/27 | Photosynthesis Experiment Lab |
| 13 | Dec 4 | Fermentation Lab |
| **Winter** |  |  |
| 1 | Jan 8 | Vertebrate Anatomy Lab |
| 3 | Jan 22 | Student Team Presentations - Human Anatomy & Physiology |
| 4 | Jan 29 | Genetics Lab; Application of Chi-Square test |
| 6 | Feb 12 | Molecular Biology I |
| 8 | Feb 26 | Molecular Biology II |
| 9 | Mar 4 | Bioinformatics (exercise in computer lab) |
| 10/11 | Mar 11/18 | Cladogram Exercise (Trilobites) |
| 13 | Apr 1 | Field Trip to the Museum – Vertebrate Form & Function |

**Integrated Science - Earth Science Outline (Geology 1, Winter 2016)**

*Text: Marshak. Portrait of a Planet . 5th Ed. W.W. Norton*. *Geology 1 (winter) lectures Tues 9:05-9:25 AM in Dunn 135,* *Labs Thurs 9:05-11:25 AM in LSC 2055. Fall lectures, labs and field trips support the overall integration of the program.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Term** | **Week** | **Date** | **Day** | **Chapter** | **Topic** |
| Fall | 2 | 17 Sep | R | 22 | Glaciers: shaping the Canadian landscape |
| Fall | 4 | 1 Oct | R | 12, E | Geological Time, an introduction |
| Fall | 11 | 19 Nov | R | 20 | Evolution of the Atmosphere |
|  |  |  |  |  |  |
| Winter | 1 | 5 Jan | T | 5 | Minerals |
| Winter | 2 | 12 Jan | T | 9 | Volcanism |
| Winter | 3 | 19 Jan | T | 6 | Granite and Magmas |
| Winter | 4 | 26 Jan | T | B, 7 | Weathering, Erosion, and Soil |
| Winter | 4 | 28 Jan | R | B, 7 | Sediments and Sedimentary Rocks |
| Winter | 5 | 2 Feb | T | 12, E | Relative geological time |
| Winter | 6 | 9 Feb | T | 8 | Metamorphism |
| Winter | 8 | 23 Feb | T | 11 | Deformation |
| Winter | 9 | 1 Mar | T | 12, E | Geological Time |
| Winter | 10 | 8 Mar | T | 10 | Earthquakes |
| Winter | 11 | 15 Mar | T | 7 | Limestone and Salt |
| Winter | 12 | 22 Mar | T | 3 | Geology of the Oceans |
| Winter | 13 | 29 Mar | T | 4 | Plate Tectonics |
|  | | | | | |
| ***Labs & Field Trips*** | | | | | |
| Fall | 1 | 11 Sep | F |  | Point Pleasant Park Field Trip |
| Fall | 2 | 15 Sep | T | B, 7 | Sand Lab |
| Fall | 3 | 24 Sep | R |  | Conrad Beach Field Trip |
| Fall | 5 | Oct 8 | R |  | Horton Bluff & Windsor Basin Field Trip |
|  |  |  |  |  |  |
| Winter | 2 | 14 Jan | R | 5 | Minerals Lab |
| Winter | 3 | 21 Jan | R | 6 | Igneous Rocks |
| Winter | 5 | 4 Feb | R | 7 | Sediments and Sedimentary Rocks |
| Winter | 6 | 11 Feb | R | 8 | Metamorphic Rocks |
| Winter | 8 | 25 Feb | R | 5-8 | Lab Quiz Mineral & Rock Identification |
| Winter | 11 | 17 Mar | R | 7, 11 | Geological Maps |
| Winter | 12 | 24 Mar | R | 5-8 | Building Stones |

**Integrated Science – Psychology Outline - 2015-2016**

*(Dalhousie Course equivalent: PSYO 1011/1012 – Intro to Psychology and Neuroscience I and II)*

*Lectures: Wednesdays 1505-1625 in LSC 238 in Fall, LSC 236 in Winter; Labs: Fridays 1425-1625 in LSC 5207 unless otherwise noted*

*Textbook:* *Feist, G.J., Rosenberg, E.L., Stamp, J.A. & Poole, J.A. (2012). Psychology: Making Connections, 1st Canadian ed. McGraw Hill.*

**Fall 2015 Integrated Science Psychology Outline**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Lecture Title** | **Chapter Title** | **Chapter: pages** |
| Sept 10 | Measuring Behaviour | Conducting Research in Psychology | Ch. 2; 36-79 |
| Sept 16 | Ethology\* | Introduction to Psychology | Ch. 1: 23-24 |
| Sept 18 | **LAB –** *Ethogram*  Public Gardens |  | *Review Ch. 2* |
| Sept 23 | Learning I: Classical & Operant | Learning | Ch. 7: 264-283 |
| Sept 30 | Learning II: Cognitive & Ethological | Learning | Ch. 7: 283-305 |
| Oct 14 | Neurons | The Biology of Behaviour | Ch. 3: 90-105 |
| Oct 21 | The Brain | The Biology of Behaviour | Ch. 3: 105-120 |
| Oct 28 | Pseudoscience: Integrated session with Philosophy | TBA |  |
| Oct 30/Nov 6 | **LAB -** *Flavour ID* |  |  |
| Nov 4 | Genes, Neurogenesis, & Measuring the Brain | The Biology of Behaviour | Ch. 3: 80-90; 121-131 |
| Nov 18 | Sensation I: Hearing, Taste, Smell & Pain | Sensing and Perceiving our World | Ch. 4: 132-136; 159-177 |
| Nov 20/27 | **LAB –** *Neuroanatomy* |  | *Review Ch. 3* |
| Nov 25 | Sensation II: Vision | Sensing and Perceiving our World | Ch. 4: 139-148 |
| Nov 26 | **Assignment:** Journal Article | Due online at 11:59 pm | See OWL |
| Dec 2 | Perception | Sensing and Perceiving our World | Ch. 4: 136-139; 148-159 |

\* a significant portion of these lectures are not covered in the text

**Winter 2016 Integrated Science Psychology Outline**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Lecture Title** | **Chapter Title** | **Chapter: pages** |
| Jan 6 | Motivation: Hunger & Sex | Motivation and Emotion | Ch. 11: 450-467 |
| Jan 13 | Addiction\* | Consciousness | Ch. 5: 209-219  Ch. 7: 301-303 |
| Jan 15 | **LAB –** *Cocaine* |  | *Review Addiction Lecture* |
| Jan 20 | Stress & Health | Stress and Health | Ch. 12: 496-533 |
| Jan 27 | Sleep & Arousal | Consciousness | Ch. 5: 196-206 |
| Feb 3 | Cognitive Development | Human Development | Ch. 10: 390-417 |
| Feb 10 | Social Development | Human Development | Ch. 10: 417-428 |
| Feb 24 | Social Psychology | Social Behaviour | Ch. 14: 578-621 |
| Mar 2 | Memory I: Encoding | Memory | Ch. 6: 224-244 |
| Mar 3 | **LAB –** The “O” Train | Bring Clickers | *Review Social Psychology Lecture* |
| Mar 9 | Memory II: Retrieval | Memory | Ch. 6: 244-263 |
| Mar 11/18 | **LAB** – Memory |  | *Review Memory Lectures* |
| Mar 16 | Intelligence & Reasoning | Language and Thought | Ch. 8: 306-343 |
| Mar 23 | Intelligence & IQ tests | Intelligence, Problem Solving, and Creativity | Ch. 9: 344-375 |
| Mar 30 | Psychological Disorders | Psychological Disorders | Ch. 15: 622-647 |
| Mar 31 | Treatment | Treatment of Psychological Disorders | Ch. 16: 664-696 |

\* a significant portion of these lectures are not covered in the text

**Integrated Science - Statistics Outline - Fall 2015**

(Dal Course equivalent: STAT 1060 – Introductory Statistics for Science and Health Sciences)

*Lectures: Tues and Thurs 1035-1125, Dunn 135; Labs: Tues 0905-1025 in Dunn 301A*

*Weekly problem assignments are due on Mondays by midnight (one week after being assigned)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Date** | **TTopic** | **Readings (Lecture, R module)** | | | | |
| 15 Sep | Lecture: Introduction | | Lecture 1 | | |
| 17 Sep | Lecture: Univariate Descriptive Statistics: Distributions | | | Lecture 2 | | |
| 22 Sep | Lab: Excel | | |  | | |
|  | Lecture: Univariate Descriptive Statistics: Numerical Summaries | | | Lecture 3 | | |
| 29 Sep | Lab: Introduction to R | | | | Modules 1, 2 | | |
|  | Lecture: Bivariate Descriptive Statistics: The Line | | | | Lecture 4 | | |
| 01 Oct | Lecture: Bivariate Descriptive Statistics: The Correlation | | | | Lecture 5 | | |
| 06 Oct | Lab: Data in R | | | | Module 3 | | | |
|  | Lecture: Bivariate Descriptive Statistics: The Correlation | | | | Lecture 6 | | | |
| 13 Oct | Lab: Getting Data into R | | | | Module 4 | | |
|  | Lecture: Research Design: Types | | | | Lecture 7 | | |
| 15 Oct | Research Design: Control and Sampling | | | | Lecture 8 | | |
| 20 Oct | Lab: Data Manipulation; Univariate Statistics | | | | Modules 5; 6 | | |
|  | Lecture: Univariate Inferential Statistics | | | | Lecture 9 | | |
| 22 Oct | Lecture: The Normal Distribution | | | | Lecture 10 | | |
| 27 Oct | Lab: Quiz Review | | | |  | | |
|  | Lecture: Univariate Hypothesis Testing: | | | | Lecture 11 | | |
| 29 Oct | Lecture: Univariate Hypothesis Testing: The z-Test | | | | Lecture 12 | | |
| 03 Nov | Lab: Data Visualization: Stem & Leaf Plots; Histograms, Box Plots | | | | Module 7 | | |
|  | Lecture: Univariate Hypothesis Testing:: The t-Text | | | | Lecture 13 | | |
| 05 Nov | Lecture: Bivariate Inferential Statistics | | | | Lectures 14,15 | | |
| 10 Nov | Lab: Bivariate Statistics | | | | Module 8 | | |
|  | Lecture: Bivariate Inferential Statistics: The Line and Correlation | | | | Lectures 15, 16 | | |
| 17 Nov | Lab: Data Visualization: Scatterplots | | | | Module 9 | | |
|  | Lecture: Experimental Research: Two Group (Independent Samples) | | | | Lecture 17 | | |
| 19 Nov | Experimental Research: Dependent (Paired) Samples | | | | Lecture 18 | | |
| 24 Nov | Lab: Quiz Review | | | |  | | |
|  | Lecture: Experimental Research: Multiple Groups | | | | Lecture 19 | | |
| 26 Nov | Lecture: Probability | | | | Lecture 20 | | |
| 1 Dec | Lab: Independent and Dependent Two Sample Tests | | | | Module 10 | | |
|  | Lecture: The Binomial Distribution | | | | Lecture 21 | | |
| 3 Dec | Lecture: The Chi-Square Test | | | | Lecture 22 | | |
| 8 Dec | Review | | | |  | | |

**Intellectual Honesty**

You will be required to complete an *on-line self-study on academic integrity* during the fall term. At Dalhousie University, we respect the values of academic integrity: honesty, trust, fairness, responsibility and respect. As a student, adherence to the values of academic integrity and related policies is a requirement of being part of the academic community at Dalhousie University.

**What does academic integrity mean?** Academic integrity means being honest in the fulfilment of your academic responsibilities thus establishing mutual trust. Fairness is essential to the interactions of the academic community and is achieved through respect for the opinions and ideas of others. “Violations of intellectual honesty are offensive to the entire academic community, not just to the individual faculty member and students in whose class an offence occurs.” [[University Calendar](http://ug.cal.dal.ca/UREG.htm#12)]

**How can you achieve academic integrity?**

* make sure you understand [Dalhousie’s policies on academic integrity](http://academicintegrity.dal.ca/Policies/)
* give appropriate credit to the sources used in your assignment such as written or oral work, computer codes/programs, artistic or architectural works, scientific projects, performances, web page designs, graphical representations, diagrams, videos, and images
  + Use RefWorks to keep track of your research and edit and format bibliographies in the citation style required by the instructor <http://www.library.dal.ca/How/RefWorks>
* do not download the work of another from the Internet and submit it as your own
* do not submit work that has been completed through collaboration or previously submitted for another assignment without permission from your instructor
* do not write an examination or test for someone else
* do not falsify data or lab results

*[these examples should be considered only as a guide and not an exhaustive list]*

**What will happen if an allegation of an academic offence is made against you?**

Your instructors are required to report a suspected offence. The full process is outlined in the [Discipline flow chart](http://academicintegrity.dal.ca/Files/AcademicDisciplineProcess.pdf) and includes the following:

* Each Faculty has an Academic Integrity Officer (AIO) who receives allegations from instructors
* The AIO decides whether to proceed with the allegation; you will be notified of the process
* If the case proceeds, you will receive an INC (incomplete) grade until the matter is resolved
* If you are found guilty of an academic offence, a penalty will be assigned ranging from a warning to a suspension or expulsion from the University and can include a notation on your transcript, failure of the assignment or failure of the course. All penalties are academic in nature.

**Where can you turn for help?** If you are ever unsure about ANYTHING, contact your instructor.

* [Academic Integrity website](http://academicintegrity.dal.ca) - Links to policies, definitions, online tutorials, tips on citing and paraphrasing
* [Writing Center](http://writingcentre.dal.ca/) *-* Assistance with proofreading, writing styles, citations
* Workshops, online tutorials, citation guides, Assignment Calculator, RefWorks
* [Dalhousie Student Advocacy Service](http://www.dsu.ca/inner.php?page=200&sub1=201) - Assists students with academic appeals and student discipline procedures.
* [Senate Office](http://senate.dal.ca/) - List of AIOs, discipline flow chart, Senate Discipline Committee

**Acceptable Use Policy for Information Technology Services**

approved by Dalhousie University, March 19, 2009

(source: http://its.dal.ca/policies/5.1.1-acceptable-use.pdf)

**A. PURPOSE**

The purpose of this policy is to outline appropriate use of Information Technology Resources owned, leased, controlled and/or operated by the University.

**B. APPLICATION**

This policy applies to all individuals who have been granted a NetID and/or Banner account by the University. This policy does not replace other policies, procedures or guidelines concerning the use of specific IT Resources or data management but rather sets out a minimum standard of acceptable use.

**C. DEFINITIONS**

In this Policy, “User Account” means a NetID and/or Banner account issued by the University;

“Information Technology Resources”, or “IT Resources”, means computing equipment, peripherals, facilities, networks or systems owned, leased, controlled or operated by the University, including those purchased through research funds;

“User” means an individual who has been issued a User Account.

**D. POLICY**

**1.0 Accounts**

1.1 Authorized access to IT Resources requires a User Account. User Accounts are non-transferable.

1.2 Users are responsible for any and all uses of their User Account and are expected to take reasonable steps to ensure the security of their User Account.

**2.0 Acceptable Use**

2.1 Users shall use IT Resources for authorized purposes only.

2.2 No User shall use IT Resources for any disruptive or unauthorized purpose, or in a manner that violates any law, University regulations, policies or procedures. Examples of unacceptable uses of IT Resources include, but are not limited to, the following:

2.2.1 using another person’s User Account, or misrepresenting themselves as another User;

2.2.2 disclosing passwords or other access codes assigned to themselves or others;

2.2.3 interfering with the normal operation of IT Resources by, among other things, unauthorized network interception, network traffic, flooding the network with messages, sending chain letters or pyramid solicitations;

2.2.4 copying, removing or distributing proprietary software and/or data without authorization;

2.2.5 breaching terms and conditions of software licensing agreements;

2.2.6 accessing, displaying, transmitting, or otherwise making available information that is discriminatory, obscene, abusive, derogatory, harassing or otherwise objectionable in a university setting;

2.2.7 destroying, misplacing, misfiling, or rendering inoperable any stored information on a University administered computer or other information storage, processing or retrieval system;

2.2.8 unauthorized use of IT Resources for profit or commercial gain; and

2.2.9 attempting to or circumventing security facilities on any system or network.

**3.0 Consequences of Unacceptable Use**

3.1 If there is reason to suspect that a User has violated this policy, the Assistant Vice-President, Information Technology Services or the Information Security Manager may temporarily revoke or restrict User Account access privileges of any User, pending further investigation by the Information Security Manager.

3.2 To aid in the investigation of a suspected violation of this policy, the Information Security Manager may examine a User’s User Account information, including, but not limited to, emails, files, and any other material or data connected with the User Account, provided that s/he obtains the Assistant Vice-President Information Technology Services’ prior written approval. If the User in issue works within the Information Technology Services Department, then approval must be obtained from the President.

3.3 If the investigation concludes that a violation of this policy has occurred, the Assistant Vice-President Information Technology Services may restrict, suspend or revoke the User’s access to any or all of the University’s IT Resources, and may

3.31 **in the case of students, initiate disciplinary proceedings under the Code of Student Conduct;**

3.32 or in the case of employees, refer the matter for consideration of discipline in accordance with applicable collective agreements or human resource policies, as appropriate.

**Online Web-based Learning (OWL)**

Like most courses at Dalhousie, Integrated Science uses a web-based online technology called Online Web-based Learning or OWL. Check OWL daily for class information, including schedule updates and announcements about tests and assignments. We will post program information including the class schedules, information about quizzes and exams, and answer keys to quizzes. Class information will be organized under a series of folders. Your marks and grades for Integrated Science will also be posted here, visible only to you.

**Student Resources**

Dalhousie Science Society (DSS)

The Dalhousie Science Society is a coalition of all student societies in the various Science departments. They provide a forum to discuss student interests while co-operating with the administration and faculty. The Society is the official voice of science students in every area of academic and political life at the university. The DSS also organizes social and academic events such as Coffee Talks and Science Expo. They encourage all science students to participate in general meetings, DSS Committees and functions.

E-mail: [dss@dal.ca](mailto:dss@dal.ca) Location: Room 314 Student Union Building;

Web: wix.com/dalsciencesociety/dss

Dalhousie Writing Centre

Writing expectations at university are higher than you will have experienced at high school. The Writing Centre is an academic unit of Student Services that supports your writing development. Make an appointment to discuss your writing. Learning more about the writing process and discipline-specific practices and conventions will allow you to adapt more easily to your field of study.

Main Location - Learning Commons, Main Floor. For hours of operation see their website.

([www.dal.ca/campus\_life/student\_services/academic-support/writing-and-study-skills.html](http://www.dal.ca/campus_life/student_services/academic-support/writing-and-study-skills.html))

Studying For Success

The transition from high school to university life can often be a challenging one. However, with help from the Studying for Success program, you too can become a more effective learner. Attend our workshops or drop in for individual study skills sessions, where we can help you with Time Management, Critical Reading, Note taking, Preparing for Exams, and much more. Don’t wait until it’s too late! Let Studying for Success help you find smarter ways to study.

For more information or to make appointments, please:

- Visit our website: www.dal.ca/sfs

- Visit our main office in the Killam Library, Room G28 (main floor)

- Call 494-3077 or Email the Coordinator at: [sfs@dal.ca](mailto:sfs@dal.ca)

Counselling and Psychological Services

*"Life at university can sometimes challenge you in unexpected ways. This office has a lot to offer in helping you to meet the challenges you are facing, whether they are personal, academic or career-related in nature."*

Staff provide help with personal management, crisis management, career counselling, and study skills. During the term, staff offer several workshops free to Dal students. 2nd Floor, LeMarchant Place, 1246 LeMarchant Street Phone: 494-2081. Director: Joanne Mills, e-mail: [Joanne.Mills@Dal.Ca](mailto:Joanne.Mills@Dal.Ca) Web: www.counsellingservices.dal.ca

Student Accessibility Services

"*Dalhousie University recognises that qualified students with disabilities have a right to assistance that is individualised with respect to scope and pace, consistent with the students' needs, legitimate academic demands, and the University's capacity to respond.*"

If you have a disability, you may qualify for certain special services or accommodation. Contact them to make arrangements BEFORE classes begin. Office: Killam Library, Room G28; Phone: 494-2836; e-mail [access@dal.ca](mailto:access@dal.ca) Web: www.studentaccessibility.dal.ca

Computer Help Desk

For general computer help (e.g., forgotten username or password, need to register a laptop for roaming access to Ethernet connections in the classrooms or buildings other than dorm rooms, need to solve problems you are having using your computer).

Killam Library, South Learning Commons, G45; Mon- Fri, 08:00-24:00; weekends 10:00-24:00; Phone: 494-2376. E-mail: [HelpDesk@dal.ca](mailto:HelpDesk@dal.ca).

**What to Bring**

**Clickers**

We recommend that you obtain a Turning Technolgies ‘clicker’ and bring to class every day. Bonus marks are available for clicker responses in class. You can purchase a new clicker from the bookstore or a buy a used clicker from other students. These are used in many second-year classes as well. This clicker device is called:

Response Card Rflcd-03. Publisher: Turning Techonologies

**Books**

The following books are required texts, meaning there will be assigned readings to help you prepare for specific class meetings. It does not mean you must own a copy. The textbooks mainly serve primarily as references for class material. You do not need to bring these books to class; instead you should complete assigned readings before the class meeting. Students are encouraged to save money by buying used texts, sharing texts with classmates or room mates, or by reading from copies available in the Integrated Science home room.

To save money, consider purchasing used copies of the texts from the bookstore, other Dal students, or various online bookstores. On the first two days of class, SCIE 1505 students will come to your classes to sell their used texts. It is perfectly fine to wait until the first weekend after classes start to get your books.

**List of textbooks for Integrated Science 2015-2016**

|  |  |  |
| --- | --- | --- |
| **Core Component** | **Required Text** (**Author,** *Title,* Edition, Publisher) | **Notes** |
| **Biology** | **Reece et al.***Campbell Biology*,1st Canadian Edition, with Mastering Biology (online resources) and e-text. | This same text is used by all first-year Biology classes at Dal. Previous editions (9th or 8th or Dal editions) are OK. Used copies should be easy to find on campus. E-text by itself is OK. Online resources and e-text are not required. |
| **Earth Sciences** | **Marshak.** *Portrait of a Planet*. 5th Ed. W.W. Norton. | Previous editions of this text are OK and should be available. The same text was used last year by SCIE 1505 and was used by other first year Earth Science classes. You will need this text in winter term. |
| **Philosophy**  (PHIL 1050) | **Briggle and Mitcham.** *Ethics and Science: An Introduction.* Cambridge Univ Press. | Not used previously. |
| **Psychology** | **Feist, Rosenberg, Stamp & Poole.** *Psychology Making Connections:1st Canadian Edition Packaged w/ Connect.* McGraw-Hill. | Used last year in SCIE 1505. Also available as an e-text with Connect (recommended). Need a version with Connect, which is required to access the required online material. |
| **Statistics** | No required textbook. | Required readings will be posted on OWL. A list of optional, supplemental texts will be provided for those who want to read more. |
| **Writing Class** | **Knisley.** *A Student Handbook For Writing In Biology*, 4th Ed. WH Freeman/Sinauer.  **Messenger et al.** *The Canadian Writer's Handbook - Essentials Edition.* Oxford Univ Press. | These two books are required for our integrated writing class and will be used in SCIE 1505 and PHIL 1050, as a resource to prepare essays and formal reports. Knisley has been used by SCIE 1505 and 2nd-year Biology classes for several years, so used copies should be available. Previous editions are OK. |

Note: Co-requisites will also require texts and other materials. Wait until your first class meeting or check online at <http://www.bookstore.dal.ca/eSolution/course.php?campus=SUB> .

**Other items you will need:**

1. You will need a basic, inexpensive ($10-15), non-programmable scientific calculator for Integrated Science tests. Bring a calculator to all classes, labs, field trips, tests and exams.

2. Also bring to classes, labs and field trips: (1) lined and unlined paper in a clipboard with a cover; (2) pencils, pencil sharpener, and eraser; and (3) ruler.

1. To keep your papers neat and organized in your room, it helps to have (1) several binders in which to store class notes and handouts; (2) a stapler; and (3) a 3-ring hole punch.
2. Several field trips depend on tides, so we will go on them, rain or shine. You will need: (1) rain gear (jacket, pants); (2) warm, grubby clothes, gloves, hat, sweater or sweatshirt (e.g. polyester fleece), and wind-proof jacket; (3) daypack; (4) water bottle; and (5) snacks. For some trips you will also need knee-high rubber boots. A few field trips leave campus before lunch, so you’ll need to bring a lunch and snacks on those days. If you live in residence, make prior arrangements with the dining hall for a bag lunch on field trip days.
3. Optional items include a camera, hand lens, and binoculars.
4. It is not necessary, but very handy, to have your own computer. Many of our class resources are on-line, so you will need to use a computer to access class outlines, schedules, updates, assignments, and other materials. The computers in the open labs at Dalhousie University are mostly PCs. If you have your own computer, you will need Microsoft Office, which is widely used for class work, especially Excel, Word, and PowerPoint. Office is available free to Dal students. Access your Dal e-mail using Dalhousie’s web page.
5. If you want to use less paper in class, but don’t have a laptop or don’t want to bring it to class, consider a bringing a tablet. A tablet would also allow you to take digital notes and also to annotate lecture slides, which are posted on OWL as pdf documents before class.
6. Dress at Dalhousie is informal. In addition, you will be doing lab work. Jeans and T-shirts are thus entirely appropriate. There will be times, however, when you might want to dress up, so you should bring one or two good outfits. For example, we have an end-of-fall-term party which can be attended in semi-formal attire. For the Research Project presentations and Poster Session in April, you should dress in a professional manner.
7. Bring cash on the first few days of class to purchase used textbooks from last year's students.
8. You will find an inexpensive watch or clock handy. Cell phones and other communication or recording devices will not be allowed at quizzes or exams.
9. You may need safety equipment (lab coat and safety goggles) for your lab work in Integrated Science and your co-requisites. You will find out about these in the first day of class (labs start in the second or third week).

1. Note: SCIE 1505 with PHIL 1050.03 satisfy the *entire* Writing Class requirement but only *half* of the first-year Humanities/Language requirement. The Integrated Science Writing Class is accepted by the School of Pharmacy in lieu of their requirement of first-year English. Note that some Medical Schools still require first-year English. Before graduating with a BSc, Integrated Science students will need to take another course in any Humanities/Language to fulfil their requirement. [↑](#footnote-ref-1)