Course Syllabus

Course description
BIOB38H provides an introduction to the scientific foundation and practice of food production. How do plants directly and indirectly feed the human population? Students will learn about the origin of agriculture and what traits people have been altering in domesticated plants over the course of the last 10,000 years. Emphasis will be on an understanding of the changes in how crops are grown since the 20th century, i.e. the Green Revolution and its legacy. A good portion of the lectures will be dedicated to a discussion of the most important plants that feed the world (‘the top 20’). Since ancient times, people have used herbs and spices to add interest to their meals and the course will discuss the (historical) importance of these plants. Often, it is a fine line between healing plants and plants of addiction and we will learn about plant secondary compounds involved in both these purposes. Plants are also used to produce alcoholic beverages and the course will showcase how beer is brewed and from what plants. Lastly, plants are also very important for the fibers that keep us warm and also for the production of paper, which triggered the development of our culture and complex societies.

Instruction team
Prof. Ivana Stehlik
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Feel free to contact me any question you might have

TA, Roxy Fournier
Roxy.fournier@mail.utoronto.ca
Roxy is your go-to person for questions related to the food distance assignment

Teaching mode and course times
BIOC60 uses what is called a modified version of a flipped classroom approach with three integral components to the course delivery: (1) prerecorded lectures, (2) two weekly quizzes, and (3) interactive and live Q and A sessions about hard quiz questions.

(1) Lectures will be prerecorded (PPT plus audio) and students are encouraged to listen to them at their own pace. Should any explanations in these lectures be unclear, I encourage you to write me an email or drop by during virtual office hours.

(2) Each lecture is associated with its own quiz, with at least one question targeting each slide. All quizzes, if solved correctly, are worth a maximum of 12%. To get credit for taking quizzes, students need to do the quizzes within 7 days of the associated lectures (incentive to keep up with the lecture material!), and there is just one attempt per question per quiz. Afterwards, the quizzes will open up again to practice for exams with unlimited attempts and students will be able to see the correct answers.

(3) For each quiz, I will compile a file of the hardest questions (those solved by 75% or fewer students correctly) and in a BB Collaborate approach, I will host a Q and A for quizzes, in which I will explain why which answer is right or wrong. I encourage you to actively participate to make sure you understand any issues.

Course lecture time and place (asynchronous): Tue, 3 – 5 pm
Interactive Q and A on weekly quizzes (synchronous; BB Collaborate): Thu, 3 – 5 pm
Breakdown of marks (for students without the 2nd year poster assignment)
Quercus practice quizzes on lecture material ................................................. 12%
Food travel distance assignment* .................................................................. 13%
Midterm exam (lectures 1-12) ........................................................................ 37%
Final exam (cumulative 1-24) ........................................................................ 38%

*0.5% for data collection/submission, 0.5% for correct figures/averages, 12% for actual assignment

Breakdown of marks (for students with the 2nd year poster assignment)
Quercus practice quizzes on lecture material ................................................. 12%
Food travel distance assignment* .................................................................. 13%
Midterm exam (lectures 1-12) ........................................................................ 32%
Final exam (cumulative 1-24) ........................................................................ 33%
Poster ............................................................................................................. 10%

*0.5% for data collection/submission, 0.5% for correct figures/averages, 12% for actual assignment

Teaching mode and course time
BIOB38 uses what is called a modified version of a flipped classroom approach with three integral components to the course delivery: (1) prerecorded lectures, (2) two weekly quizzes, and (3) interactive and live Q and A sessions about hard quiz questions.

(4) Lectures will be prerecorded (PPT plus audio) and students are encouraged to listen to them at their own pace. Should any explanations in these lectures be unclear, I encourage you to write me an email or drop by during virtual office hours.

(5) Each lecture is associated with its own quiz, with at least one question targeting each slide. All quizzes, if solved correctly, are worth a maximum of 12%. To get credit for taking quizzes, students need to do the quizzes within 7 days of the associated lectures (incentive to keep up with the lecture material!), and there is just one attempt per question per quiz. Afterwards, the quizzes will open up again to practice for exams with unlimited attempts and students will be able to see the correct answers.

(6) For each quiz, I will compile a file of the hardest questions (those solved by 75% or fewer students correctly) and in a BB Collaborate approach, I will host a Q and A for quizzes, in which I will explain why which answer is right or wrong. I encourage you to actively participate to make sure you understand any issues.

Q and A times for quizzes: Tue, 3 PM

Lectures and other course material
Lectures will be posted on Quercus as PDF files, typically 24 h before class.
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lectures</th>
<th>Lecture topic/presentations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/12</td>
<td>1/2</td>
<td>Origin of agriculture</td>
</tr>
<tr>
<td>2</td>
<td>1/19</td>
<td>3/4</td>
<td>Plant domestication</td>
</tr>
<tr>
<td>2</td>
<td>1/19</td>
<td>Q &amp; A: quizzes 1/2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1/21</td>
<td></td>
<td>Introduction to food distance assignment (5/7 pm; live)</td>
</tr>
<tr>
<td>3</td>
<td>1/26</td>
<td>5/6</td>
<td>Methods of domestication</td>
</tr>
<tr>
<td>3</td>
<td>1/26</td>
<td>Q &amp; A: quizzes 3/4</td>
<td></td>
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<tr>
<td>4</td>
<td>2/2</td>
<td>7/8</td>
<td>Green Revolution I</td>
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<tr>
<td>4</td>
<td>2/2</td>
<td>Q &amp; A: quizzes 5/6</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2/9</td>
<td>9/10</td>
<td>Green Revolution II</td>
</tr>
<tr>
<td>5</td>
<td>2/9</td>
<td>Q &amp; A: quizzes 7/8</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2/23</td>
<td>11/12</td>
<td>Plants that feed the world I</td>
</tr>
<tr>
<td>6</td>
<td>2/23</td>
<td>Q &amp; A: quizzes 9/10</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>3/2</td>
<td>13/14</td>
<td>Plants that feed the world II</td>
</tr>
<tr>
<td>7</td>
<td>3/2</td>
<td>Q &amp; A: quizzes 11/12</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>3/4</td>
<td></td>
<td>Midterm exam (lectures 1-12)</td>
</tr>
<tr>
<td>8</td>
<td>3/9</td>
<td>15/16</td>
<td>Plants that please the palate</td>
</tr>
<tr>
<td>8</td>
<td>3/9</td>
<td>Q &amp; A: quizzes 13/14</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>3/16</td>
<td>17/18</td>
<td>Plants that heal the sick</td>
</tr>
<tr>
<td>9</td>
<td>3/16</td>
<td>Q &amp; A: quizzes 15/16</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>3/23</td>
<td>19/20</td>
<td>Plants that hook the mind and body</td>
</tr>
<tr>
<td>10</td>
<td>3/23</td>
<td>Q &amp; A: quizzes 17/18</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>3/30</td>
<td>21/22</td>
<td>Plants the world thirsts after</td>
</tr>
<tr>
<td>11</td>
<td>3/30</td>
<td>Q &amp; A: quizzes 19/20</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>4/6</td>
<td>23/24</td>
<td>Plants of warmth and strength</td>
</tr>
<tr>
<td>12</td>
<td>4/6</td>
<td>Q &amp; A: quizzes 21/22</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4/12</td>
<td>Q &amp; A: quizzes 23/24</td>
<td></td>
</tr>
</tbody>
</table>

April TBA (exam period) Final exam (cumulative; lectures 1-24)
Communication policy
Students are required to regularly and often check their UTOR email to receive announcements or updates relating to the course. To inquire about course-related issues, students are strongly encouraged to solely use their UTOR email, as hotmail or other email providers are spam-filtered on a regular basis. It is the responsibility of you as the student to make sure your email reaches the instructor.

The instructor will not answer any questions related to material discussed in class or during the tutorials by email (unless it is a clear yes-no answer), but the student is encouraged to ask these questions before or after class or the tutorial, during official office hours or to schedule a meeting outside office hours by email.

Accessibility
Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach the course instructor and/or the AccessAbility Services Office as soon as possible. Enquiries are confidential. The UTSC AccessAbility Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or ability@utsc.utoronto.ca.

Readings
There is no required reading, but most topics introduced in the lectures are covered in the book (Levetin and McMahon. 2007. Plants and Society. McGraw-Hill), which is the recommended course book. The book is available at UTSC’s book store (hopefully both new and used books). The course’s approach in regard to exam questions is as follows: questions will only cover material introduced in class. If you do not understand certain concepts, the recommended sections of Levetin and McMahon’s book should be consulted, but anything present in the book yet not covered in the lectures will not be on the exam.

In case a certain topic is not covered in Levetin and McMahon’s book, the lecture material originated most probably from primary scientific literature. In each such case, there is a reference provided on the slide along with e.g. a table or figure. This reference will help you to find the article using either ISI web of science (with your UTOR ID and password, on the website of the Gerstein library; http://www.library.utoronto.ca/gerstein/) or through Google scholar (does not work in all cases).

Penalty for late assignments
You can only get a copy of the quiz, in person and one per person, and hand it in on the day of the movie. This is non-negotiable unless you bring a valid doctor’s note. There will be a penalty of 5% per day for the long-answer assignment received late. There are two days during which you can do the spice walk. Weekend days count as individual days. Unless there are extenuating circumstances (e.g. medical reasons with a medical certificate), a mark of zero will be applied to assignments submitted one week late or more. Heavy workloads or malfunctioning computer equipment are not legitimate reasons for late submission. If you know ahead of time that you have a legitimate reason why you cannot hand in the assignment, let the course instructor know before the due date.

Missed exams or assignments
Students who miss an exam or a deadline of an assignment for reasons entirely beyond their control must notify the instructor within 3 days that you missed the exam or deadline of the assignment. In case you do not do this, you will receive a 0 on the exam or assignment. Then submit your doctor’s note or
other documentation to Jennifer Campbell in SW421D. You may submit the doctor’s note or other documentation for the reason AFTER you notify the instructor, ie you need to first and foremost notify the instructor for missing the exam or assignment. A make-up will be scheduled within 10 days of the original date, unless you provide a second form indicating that your problem has persisted. The appropriate documentation is the official University of Toronto medical certificate (www.utoronto.ca/health/form/medcert.pdf).

**Academic integrity policy**

According to Section B of the University of Toronto's *Code of Behaviour on Academic Matters*, it is an offence for students to:

- use someone else's ideas or words in their own work without acknowledging that those ideas/words are not their own with a citation and quotation marks, i.e. to commit plagiarism.
- include false, misleading or concocted citations in their work.
- obtain unauthorized assistance on any assignment.
- provide unauthorized assistance to another student. This includes showing another student completed work.
- submit their own work for credit in more than one course without the permission of the instructor.
- falsify or alter any documentation required by the University. This includes, but is not limited to, doctor’s notes.
- use or possess an unauthorized aid in any test or exam.

Violation of the Code of Behaviour on Academic Matters will force the instructor to provide a written report of the matter to the Chair/DeanProvost's and a penalty according to the U of T’s guidelines on sanctions will be put into place.

**Travel distance of your food and travel distance to your food**

1. **Introduction**

Access to food has been defined as a fundamental human right for example by the Universal Declaration of Human Rights. There are several components to access to food: availability (to avoid malnutrition or starvation), physical and economic access, and adequacy to cover different human needs based on age or culture. Food production has become an international business and food gets shipped widely across the globe, creating large and intricate supply chains which are prone to collapse in times of (international) uncertainty (think Covid-19). This complex assignment will investigate access to food in all BIOB38 students, wherever they might live (nationally and internationally).

2. **Overview**

In a fieldwork-based approach, all students will investigate the distance of their own homes to their closest grocery store (access to fresh food; *travel distance to food*). In this store, each student will investigate where 18 most common, fresh, plant-based foods were produced (*travel distance of food to grocery store*). The collection and correct submission of this data is worth a maximum of 1% of the final course grade.

This anonymous, collated information (class-based data set) will be accessible to every student. Based on this data set, each student will construct a set of figures using clearly outlined guidelines. The correct formatting of these figures is worth a maximum of 1% of the final course grade.

Based on these figures, two types of simulated press releases will be written (maximum of 500 words; ‘first draft’), one press release on the travel distance *of* food and the other on the travel distance *to* food. Each student
will either write a press release on travel distance to food (A) or travel distance of food (B), thus, the class will be split in two halves (groups A and B). Each student is required to submit this ‘first draft’ to Quercus (this draft will not be graded, just inspected by the TA). Non-compliance will result in an automatic penalty of -10% on the final assignment for any non-compliant student.

After individually writing the ‘first draft’ of the press release, students will be put into groups of two: two A-group students (for example: Aniqa and Arvind) will be matched up and two B-group students (for example: Belinda and Benson) will be matched up. In these pairs, Aniqa will read Arvind’s ‘first draft’ and Arvind will read Aniqa’s ‘first draft.’ Aniqa and Arvind will then together decide on the best joint version of a press release draft, called the ‘optimized joint draft.’ Non-compliance will result in an automatic penalty of -10% on the final assignment for any non-compliant student.

In a next step, two A-group students will be paired with two B-group students (for example: Aniqa, Arvind, Belinda and Benson). Aniqa and Arvind will get access to and read through the ‘optimized joint draft’ of Belinda and Benson and vice versa. Based on this text, Aniqa and Arvind (A-group) will together write a summary (maximum of 150 words) of the ‘optimized joint draft’ of Belinda and Benson (B-group) and add this summary to their own ‘optimized joint draft’ (and vice versa for the B-group). This process will result in the ‘final joint draft,’ one for Aniqa and Arvind (group A) and a different one for Belinda and Benson (group B). Non-compliance will result in an automatic penalty of -10% on the final assignment for any non-compliant student. At this stage, both A and B groups are encouraged to improve the quality of their main text once again based on what they might have learned from reading the other group’s main text (do not plagiarize, Quercus will pick up on that!).

The simulated press release, the ‘final joint draft,’ hence takes two basic forms: (1) A-group students (Aniqa and Arvind) will jointly submit a 500-word press release focusing on travel distance to food PLUS a 150-word summary on the travel distance of food (based on Belinda and Benson’s text), and (2) B-group students (Belinda and Benson) will submit a 500-word press release focusing on travel distance of food PLUS a 150-word summary on the travel distance to food (based on Aniqa and Arvind’s text). Please find an overview flow chart of all steps, partnerships, grades/penalties and timelines involved in this assignment in figure 1.
3. Purpose of this assignment
This assignment has several learning outcomes:
(1) Investigate, at the level of the whole student population of BIOB38, travel distances of the most common fresh foods (key issues: ecological footprint of food, supply chain in our northern Canada)
(2) Investigate, at the level of the whole student population of BIOB38, personal access to fresh and healthy foods (distance to grocery stores; key issues: Plants and SOCIETY aspect, equity issues)
(3) Advance Excel skills to construct scientific figures (calculate averages and standard errors, construct bar graphs with standard errors, format axes etc.)
(4) Develop writing skills: (i) long text, 500-word limit, focus on content and language; (ii) summary, 150-word limit; paraphrasing and shortening somebody else’s text; focus on language
(5) Advance writing skills using a peer-approach, with a mix of individual and group work
Discover the power of iterative writing, where the quality of your text increases with each visit.

4. **Field work**

4.1. How to find your store (aka travel distance to food)

Based on where you live, go to your closest ONE local food store which carries at least 16 of all following 18 items (10 veggies, 8 fruits; Table 1; any store which carries at least 16 of these food items qualifies; it can be a large chain store or a small mom-and-pop store).

Table 1. Virtual shopping list of ten most common fresh vegetables and eight fresh fruits.

<table>
<thead>
<tr>
<th>Bell pepper</th>
<th>Apple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broccoli</td>
<td>Avocado</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Banana</td>
</tr>
<tr>
<td>Carrot</td>
<td>Blueberry</td>
</tr>
<tr>
<td>Celery (green)</td>
<td>Grape</td>
</tr>
<tr>
<td>Cucumber</td>
<td>Lemon</td>
</tr>
<tr>
<td>Green bean</td>
<td>Orange</td>
</tr>
<tr>
<td>Onion</td>
<td>Strawberry</td>
</tr>
<tr>
<td>Potato</td>
<td></td>
</tr>
<tr>
<td>Tomato</td>
<td></td>
</tr>
</tbody>
</table>

4.2. In the store (aka travel distance of food)

In the store, do your best to figure out where the food items were grown. Read the labels on the food packages or on the shelves where the food items are on display. I have noticed that the information displayed on the shelf (for example: ‘California’) might not represent the location indicated on the sticker of a particular food item (for example: ‘Chile’). Trust the label on a food more than on the shelf. Identification of the place of production should be easier in chain stores, as they are required to provide this information, while it might be harder in a small store (you could always ask to speak to the manager, as non-packaged foods on open display still come in larger containers with the shipping information).

In many cases, you might have the choice between several different versions of the same food item: open, packaged, different varieties, conventionally produced, or organic. Based on my own experience, open, unpackaged food often is labelled vaguely at best, while the same food item wrapped in plastic might have a more specific declaration of origin. **Always choose the food version per crop type with the most specific description. If more than one specific version exists per food item, choose the cheapest one!** Even where locations are provided, the differ a lot in terms of geographic detail, for example Okanagan valley/BC; Ontario; Canada; California; Peru; China), while in some cases, it might be more specific (actual name of a municipality). That is completely fine and we have ways to deal with this. Keep track of the locations (vague or specific) per food item by taking a photo (see 4.3.).

4.3. Proof that you did the ‘field work’
For each food, take a picture of it including your student ID card and the information on where the food was produced. Assemble the photos showing the food, its origin and your student ID in for example PPT on one single page, save as a PDF and submit to Quercus (Fig. 2).

Fig. 2. Example (with fake student ID card 😊) of what the PDF file with photos of all 18 (minimum of 16) food types should look like. Essentially, take a picture per food, showing what food it is, where it was produced (for your own information for the calculation of the food travel distance) and your official student ID as proof that you indeed did the ‘field work’ in the store. Assemble and cut to desirable size all pictures in PPT and save them as a pdf file. Do not submit 18 individual photos!

5. Estimation of travel distances

5.1. Estimation of travel distance of food with a clear geographic origin
If you have the geographic information of the actual municipality or farm, that is the best because least ambiguous! For each individual food item, calculate the distance in kilometers between your home municipality and the origin of the food item, using ‘air line’ in the result output (as the crow flies as opposed to ‘driving route’), and using this link: https://www.distance.to/

5.2. Estimation of travel distance of food with a vague geographic origin
In most cases, the information of where the food was produced will be vague, in which case you will have to extrapolate and simplify (for an overview on how to do that, see Table 2). Once this is done, use the same link as in 5.1.

If the location is a country (other than Canada or the US; examples: China, Peru), a province within Canada (other than Ontario; example: British Columbia), a larger agricultural area within Canada (such as Okanagan valley) or the USA (such as Central Valley in California), a state within the USA (California), choose, as a stand-in for the actual location of the farm, the capital of the respective area; for example, China → Beijing; Peru → Lima; British Columbia → Victoria; Okanagan valley → Kelowna; California → Sacramento.

If the description is ‘USA,’ there are two most likely locations of fresh fruit and vegetables for export: California and Florida. For the benefit of the doubt and for students in Ontario, choose the shorter travel distance: Florida → Tallahassee.

If the description is ‘Ontario’ or ‘Canada’ and you are living in Ontario, it gets a little trickier. These are foods have been produced ‘locally’ and you need to pay special consideration to these local foods for the calculation of distance.
In a case where a label only states ‘Ontario,’ there are two most likely options for where these foods were produced (to use for the calculation of the travel distance of the food items): (1) the largest proportion of vegetables in Ontario are produced in the Holland Marsh (near Barrie/Newmarket): use ‘Gwillimbury’ as a location for calculation of the distance; (2) the largest proportion of fruits in Ontario are produced on the Niagara peninsula: use ‘Niagara-on-the-lake’ as a location for calculation of the distance. Even if Ontarian vegetables and fruits were produced somewhere else, the distance is probably relatively similar.

If the location states ‘Canada’ and you live in Ontario, assume that this food was likewise produced in Ontario (being the furthest south of any area in Canada and thus having a climate conducive for food production), thus again Holland Marsh if a vegetable (Gwillimbury) or on the Niagara Peninsula if a fruit (Niagara-on-the-lake).

Table 2. Method of assigning the production location of foods in the case of a ‘vague geographic description.’ This assigned production location is important to calculate the distance of food travel. See the text for more detailed explanations on the assigned production location (subchapter 5.2.).

<table>
<thead>
<tr>
<th>Type of geographic description</th>
<th>Examples</th>
<th>Assigned production location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important, larger farming area</td>
<td>Okanagan valley (BC)</td>
<td>Local capital: Kelowna</td>
</tr>
<tr>
<td></td>
<td>Central Valley (California)</td>
<td>Local capital: Sacramento</td>
</tr>
<tr>
<td>US state</td>
<td>Washington</td>
<td>Capital: Olympia</td>
</tr>
<tr>
<td>Country</td>
<td>China</td>
<td>Capital: Beijing</td>
</tr>
<tr>
<td></td>
<td>Peru</td>
<td>Capital: Lima</td>
</tr>
<tr>
<td></td>
<td>USA</td>
<td>Florida: Tallahassee</td>
</tr>
<tr>
<td>Canadian province</td>
<td>British Columbia</td>
<td>Capital: Victoria</td>
</tr>
<tr>
<td>(other than ON for ON students)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ontario (for local students)</td>
<td>Vegetables: Gwillimbury</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fruits: Niagara-on-the-lake</td>
</tr>
<tr>
<td></td>
<td>Canada (for local students)</td>
<td>Vegetables: Gwillimbury</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fruits: Niagara-on-the-lake</td>
</tr>
</tbody>
</table>

5.3. Estimation of travel distance to food
Determine the street address of your grocery store where you did your ‘field work’ and use the same online link (5.1.) to calculate the distance in kilometers between your exact home address and the store, this time using ‘driving route’ in the result output (as opposed to ‘air line’).

6. Submission and analysis of distances (by week 2)
All students will contribute anonymously to a class data set online, to which everybody will then get access for further analysis. Submitting the correct data in time is worth 1% of your final course grade.

6.1. Submission of travel distances of food
Submit the travel distances in kilometers of all food items into an online Google sheets file (TBA; will be sent to you by your instructor). Besides entering the distances, also submit the last five digits of your student ID.

6.2. Submission of travel distances to food
Submit the travel distance between your home and the grocery store in kilometers to another online Google sheets file (TBA; will be sent to you by your instructor). Besides entering the distance to your local grocery store, again submit your student ID.

Besides the average travel distance per BIOB38 student to their closest grocery stores, this part of the assignment will also result in a map of travel distances to grocery stores of all students of BIOB38 living in Greater Toronto Area. You will get access to a Google slides file with a map spanning Mississauga in the southwest, Gwillimbury in the northwest, Port Perry in the northeast and Port Darlington in the southeast (Fig. 3). If you do not live in the area encompassed by the map, you do not need to contribute to this part of the assignment, but you will still get access to it for your assignment. In the Google sheets file, students will populate the map using one of five different dots. The colors of the five types of dots stand for different distances to a grocery store from close (green) to far (red): dark green: <0.5 km; light green: 0.5-1 km; yellow: 1-2 km; orange: 2-5 km; and red: >5km. In the Google sheets file, simply copy-paste the appropriate dot and place it where you live.

Fig. 3. Map of the Greater Toronto area as it will be accessible in the Google sheets file (TBA). All students living in the GTA should anonymously place a dot of the correct color (depending on the distance to their grocery store) on the map where they live. To ‘get’ your appropriate dot, simply copy and paste the correct dot from the dots in the inset (upper left corner). If the location where you live has already been occupied by a dot of another student, please place your dot slightly next to the first dot creating a partial overlap. We want the map to be populated by as many dots as possible!

7. Calculations of distances based on the entire class data and construction of figures (by week 3)
7.1. Calculations of distances to food and associated figure
For your text, you will need to provide the reader with the average travel distance across all students in BIOB38. Calculate this in Excel the same way as average travel distance of veggies or fruits (including standard errors; see subchapter 6). Also provide the shortest and the longest travel distance. For the figure, you will simply use the fully populated figure 3, where all students pasted their correctly color-coded dots (see fake final example in Fig. 5).

7.2. Calculations of distances of food and construction of associated figures
Go to the Google sheets class data set, copy the whole file and paste it into a regular, offline Excel spreadsheet. For each fresh food item, calculate the average travel distance and standard errors, based on all individual student values per fresh food item.

Use these averages and standard errors to construct two bar graph figures, one for vegetables and one for fruits (see Fig. 4). Please read the legend of figure 4 attentively to see what exactly is expected in terms of formatting. If you do not know how to produce bar graphs, calculate standard errors, add the individual standard errors to the bar graphs or manipulate axes in Excel, ask Dr. Google or Dr. YouTube for help (there are lots of good tutorials out there).

For your text, you will also need to provide the reader with the average travel distance across all vegetables and, separately, all fruits. Calculate these likewise in Excel (including standard errors). Note that the estimation of standard errors of all vegetable (fruits) will be based on a very large number of data points (all individual entries for all vegetables (fruits); not just across the ten (eight) averages per vegetable (fruit)).

Fig. 4. Overview of types of figures expected from you for your assignment of this project. Note that the figures above are based on fake data and that you will have to create your figures based on the data in the Google sheets file as based on the
field work of the whole BIOB38 class. Food items should be presented in sequence from largest to smallest travel distance. After making a standard bar graph, make sure to add the labels of axes. Add solid and black lines to the x and y axes. Remove the ugly and unnecessary background lines in the chart by clicking on them and deleting them. Add major tick marks to the inside of the vertical Y-axis. Most importantly, calculate and add individual standard error bars (in Excel). Note that travel distances for individual food items will have differently sized standard error bars! If you do not know how to do any of these steps described above, look for and watch any of the many available Youtube tutorials describing in detail how to do this.

7.3. Submission of the needed figures and averages
Gather all needed figures and averages for both travel distances (of food and to food) and paste them onto one page in Powerpoint, following the outline in figure 5. Once you have pasted all the necessary information, save the PPT file as a PDF for submission to Quercus, due by the end of week 3. The TA will check all the values and the quality/formatting of the figures, for a maximum of 1% of your final course grade.

As a reminder (Fig. 5), you will need the fully populated map with dots representing travel distances to grocery stores of all BIOB38 students (Fig. 3), the average travel distance of each student (± standard error), including the shortest and longest travel distance. You will also need the two bar graphs for the travel distances of food items, along with the average travel distance per vegetable and per fruit (± standard error).

Fig. 5. Overview of what is needed of each individual student by the end of week 3. Please note that all subfigures in this example are fake. Take screenshots of all needed subunits, assemble them in PPT and save the file as a PDF. DO not submit 3 individual files.

8. Writing assignment: simulated press release
8.1. Nature of the assignment and target audience
The press release should be minimum of 400 and a maximum of 500 words and be composed of several short paragraphs, with one main topic per paragraph. You will be notified whether you will write the main text of your assignment on the distance to food (topic A) or the distance of food (topic B). In either case, write a short article in the style of the Globe and Mail, Toronto Star, New York Times or other similar serious newspapers. Your target audience hence is an educated general public.
8.2. Writing of the ‘first draft’ (by week 5)
You need to write and submit the ‘first draft’ to Quercus by the end of week 5. The TA will superficially check your
text and should there be a problem with it (too long, too short, obviously copy-pasted, non-sensical or too late),
you will lose 10% of your final grade of this assignment. This check-in is in place to help you comply with the
following team-process of writing the assignment (Fig. 1).

Cite a minimum of two and a maximum of four articles. The articles could be scientific papers or scientific
reviews, but can also include (online) newspaper articles or governmental websites. Blogs posts or tweets do not
count. Make sure to properly paraphrase your text sources; do not use any direct quotes (Turnitin in Quercus will
pick up plagiarism).

Below, find a list of topics worthwhile to cover in a comparative way (in relation to other large cities or
published case studies). Feel free to come up with your own meaningful and critical ideas (no need for approval
by TA or prof, but your partner will need to buy your text; subchapter 9). You are thus free to focus on one or
several of my suggested topics within A or B or on your own topics. Please note that it is better to cover fewer
topics more thoroughly than to gloss over many topics superficially.

**Travel distance to food (A)**
- Geographic/sociological patterns of access to fresh and healthy food
- Implications for lifestyle and health
- Comparison of the situation in the GTA to other North-American mega cities

**Travel distance of food (B)**
- Ecological footprint of food
- Reliance of Ontarians on food produced locally versus out of the province/country (supply chain issues)
- Differences between important fresh foods in terms of their travel distance and reasons for these

Make sure to refer to the figures and averages in your text where appropriate. Do not paste the figures into your
text, but provide them on a last page (after your citations), adding a figure legend.

9. Writing of the ‘optimized joint draft’ in groups of two students (by week 6)
You will be notified by your TA who your partner will be for the writing of the ‘optimized joint draft,’ however, it
will be a student who wrote their ‘first draft’ on the same topic as you. Due to the large class size and the online
nature of the course, you will unfortunately not be able to choose your partner. Once you have your partner’s
contact info, get in touch as soon as possible by using your UTor email and exchange your ‘first drafts.’

Read your partner’s ‘first draft’ carefully and with an open heart. Beyond the quality of the writing, there
might be differences in what your partner decided to focus on compared to your own text. While reading, take
notes about what you like and what works less well, so that you have something to hold on to when talking about
your two texts.

Organize a virtual get-together and decide how to distill the best of the two ‘first drafts’ into an
‘optimized joint draft.’ Work together according to your best abilities and by using a friendly and collegial tone,
allowing a potentially weaker student to learn from a stronger student. As much as possible, play a game of virtual
ping-pong, sending each other helpful comments, feedback and new wording of your growing joint text. Your
‘optimized joint draft’ is due by the end of week 6. Please submit it to Quercus. Again, the TA will only inspect the
text for superficial compliance in order to maximize the workflow and timing of this assignment (Fig. 1).

Should your partner be incommunicado after several attempted rounds of communication by you, please
notify the TA, so that the TA can later implement a penalty of 10% for the non-compliant student. Should your
partner not put in adequate work to the best of their abilities (‘free-loading’), also notify the TA. A case of possible
Freeloading will be investigated by the TA (through a phone call to each individual partner and by looking at ‘first drafts’ and the ‘optimized joint draft’) and possibly resolved by a 5% penalty to the freeloader.

10. Writing of the ‘final joint draft’ (by week 8)
You will be notified which two new students will join your current partnership for a text exchange. As a reminder, these two new students will have written their 500-word ‘optimized joint draft’ on the other topic compared to yourself (A versus B). Thus, if you wrote your ‘optimized joint draft’ on A, you will be paired with a duo which wrote their ‘optimized joint draft’ on B (and vice versa). Once you have your new partners’ contact info, get in touch as soon as possible by using their UTor email and exchange your ‘optimized joint drafts.’

Read your new partners’ ‘optimized joint draft.’ There is no need for feedback, but for your own sake, notice if their technique or style is possibly superior to your own, and, if necessary, give your own text another round of polishing. Do not plagiarize the actual writing of the other group (Turnitin via Quercus will pick up on that), but use this as a chance to optimize your flow or style of argumentation.

With your original partner, you now need to distill the other group’s 500-word ‘optimized joint draft’ into a 150-word synopsis (one paragraph). This synopsis should contain the necessary distance averages other than your own (+ standard errors) and refer to the relevant figures. Paste this synopsis to the bottom of your own ‘optimized joint draft’ to form the ‘final joint draft.’ Do not forget to add the necessary figures on a separate last page. Once you are happy with your whole text, submit it to Quercus by the end of week 8. For the submission and to make the marking job of the TA as easy as possible, name your ‘final joint draft’ file by using your two names along with A or B indicating which topic you wrote your main text about. For example, Aniqa Akbal and Arvind Abbas (working on A) would name their file Akbal-Abbas-A.doc.

11. Grading scheme for the written assignment
The two units, the 500-word limit (maximum of 24 points) plus the 150-word summary (maximum of 6 points) are worth a total of 30 points, translating into 12% of your final grade.

11.1. The main 500-word limit press release
In this part of your assignment, you and your partner are responsible for both content AND language (see Table 3 for the grading scheme). You thus need to write a good introduction, explaining why and how the overall topic (travel of or to food; A or B) is important and then string together elegantly and soundly the individual topics you have chosen to focus on, with individual topics most likely separated into individual paragraphs. You will also be graded based on the quality of your language/grammar and the adherence to the word limit. Make sure you cite 2-4 good sources, mention the relevant averages (± SE) and refer to all figures in the text.

11.2. The 150-word limit summary
For the summary, you are not responsible for the contents. Your task is to shorten and properly paraphrase. Thus even if you disagree with the reasoning of the ‘optimized joint draft’ of your partner duo, do not change anything conceptually, but just paraphrase and summarize.

Table 3. Grading scheme for the main 500-word limit press release.

<table>
<thead>
<tr>
<th>Introductory paragraph</th>
<th>Exemplary (A; 4 pts): Presents the background information in a concise manner that directly leads into the topic(s) being addressed and the purpose of the press release.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum of 4 pts</td>
<td>Accomplished (B; 3 pts): Gives a listing of the facts and previous work but does not tie them together and show how they lead to the purpose of the present work and the questions being addressed. It does have the question(s) being addressed and some purpose for doing them.</td>
</tr>
<tr>
<td>Category</td>
<td>Exemplary (A; 4 pts)</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Discussion</td>
<td>Presents a logical discussion for findings and elegantly connects to introduction.</td>
</tr>
<tr>
<td>Clarity and language/grammar</td>
<td>The text is easy to read and flows expertly. Language is sophisticated without being jargonistic. Terms of press release and argumentation are clearly laid out and well-defined. The text is fully paraphrased and hence does not plagiarize any external sources.</td>
</tr>
<tr>
<td>Formatting</td>
<td>Refers to relevant figures and averages. Overall cites good comparative literature (min. of 2, max. of 4 sources). Btw 400 and 500 words. Figures are properly inserted AFTER the text with one figure per page (thus not in the text). Figures are accompanied by a proper figure caption.</td>
</tr>
</tbody>
</table>

Table 4. Grading scheme for the main 150-word limit summary.
| Clarity and language/grammar | Exemplary (A; 4 pts): The text is easy to read and flows expertly. Language is sophisticated without being jargonistic. The topics of the summary are clearly laid out and well-defined. The text is fully paraphrased.  
Accomplished (B; 3 pts): The text is well written but suffers from some significant grammatical inconsistencies or spelling errors. Language is clear but lacks scholarly depth. There are some lapses in definition and explication of terms. Segue between points in the analysis are weak.  
Developing (C; 2 pts): There are significant but not quite major problems in grammar and spelling. Language is unclear and/or shallow. Terms are not well defined and analysis leaps erratically from point to point.  
Beginning (D; 1 pt): Major problems with grammar and spelling. Language is murky, confused and difficult to follow. There is a paucity of definitions or context for analysis.  
Fail (F; 0 pts): Language is sub-par for university, riddled with grammatical and spelling errors. The argumentation is difficult to follow and lacks any sense of flow. |
| Formatting | Exemplary (A; 2 pts): Refers to relevant figures and averages. Overall cites good comparative literature (min. of 2, max. of 4 sources). Between 400 and 500 words. Figures are properly inserted AFTER the text with one figure per page (thus not in the text). Figures are accompanied by a proper figure caption.  
Developing (C; 1 pt): Fails to refer to some or all relevant figures or averages. Subpar sources. Too long or too short. There is a problem with the placement of the figures or the nature of the figure captions.  
Fail (F; 0 pts): Fails to refer to relevant figures and tables. Inadequate sources. Too long or too short. Figures are not implemented and/or figure captions are missing. |