

UNIVERSITY OF TORONTO  
FACULTY OF ARTS & SCIENCE

*Office of the Dean*

**299Y/399Y RESEARCH OPPORTUNITY PROGRAM Contract –  
Research Project 1  
Fall/Winter 2020/2021**

I am pleased that you are chosen to participate in the Research Opportunities Program “**Studying Complexity in Natural Systems Through Simulation Models**” or “**Simulating the emergence of behavioural change and the impact on the environment**” and were accepted into that course. I look forward to an enjoyable and a fruitful experience as you develop skills in research, mentoring, training and leadership. The purpose of this syllabus is to set out the understanding as to what you will do as well as the evaluation, expectations and assignments.

Students admitted to the Research Opportunity Programs must fulfil all program requirements as established at the beginning of the 299Y/399Y course. When you chose the ROP Course, a description was made available to you, and I am confirming that those arrangements are applicable without any current change. In particular, I want to point to the provisions that set out the assignments to be completed, the timetable for those assignments and the weight to be given to the assignments and other factors in the final mark on the ROP Course; please note there is a small but important weight given to participation.

With respect to the conduct of the course, I hope to meet in person, but we have to be prepared to offer it partially or entirely online. We will have meetings on a weekly basis for all participants for at least the first three months and thereafter we might consider a bi-weekly schedule. We are hoping that there will not be too many time zones involved and that, as a result, we can continue to meet Monday, late in the afternoon. This would include both our regular work session/office hours as well as additional time for ROP matters.

**SUPERVISOR'S NAME Brad Bass**

**DEPARTMENT School of the Environment**

**NUMBER OF HOURS PER WEEK REQUIRED: 8 - 10 hrs/week (240 hours maximum)**

**Course description**

Complexity is an interdisciplinary concern that emerges in every field with interactions between system components as they cope with a change in the gradient of energy or information. The nature of these interactions is often quite simple, but the patterns that emerge in system behaviour can be quite unexpected. The emergence of specific patterns is hard to predict, but software such as COBWEB allows us to represent the system by representing the behaviour and interactions of individual components. To learn about complexity across multiple disciplines requires us to encourage dialogue and collaboration between students in the natural sciences, social sciences, and the humanities. The models that you develop will also be your virtual laboratory, your experimental platform and a visualization of your system. Conducting actual experiments with your systems is costly, time

consuming and in some cases not even possible. Although many of you will not be able to tell me if your model could reproduce an actual system outcome, you will be able to know if you are representing the dynamics of your system. With sufficient experiments, we can extract signals from the noise in many cases, but in others, these models are a very practical means to learn about systems behaviour in light of changing gradients.

Models that can act as virtual labs will be a vital tool in medicine, public policy, economics, ecology and other areas. These models will provide the first, quick answer to the question “What if?” and will provide the answer at no cost. Your future career may involve making or advising on decisions or proposing changes to policy and practice in your field. To be effective as professional in your field, they must know how to answer that “What if” question on the fly, within ranges of uncertainty and with some confidence that you do understand how your system will respond to interventions.

ENV299 and ENV399 are designed as a practical introduction to research in complexity across multiple disciplines. Even though the connections might not seem obvious to you now, these multiple disciplines give us an understanding of the complexity of the environment and how changes to our environment will affect our health and well-being at different scales. More specifically, it aims to familiarize you with the methods and techniques used in research, allow you to develop a basic set of skills to write proposals, literature reviews, develop and conduct experiments, work with other professionals from a myriad of disciplines and communicate results to suitable audiences. The course is inspired by a philosophy of “learning by doing” and collaboration. The main topics discussed include: understanding and explaining modelling, subject selection and the formulation of a research question, using the literature including articles outside of your expertise, design thinking - translating systems into the language of models, model development and assessment, and communication skills in different media. The course consists primarily of working meetings, modelling complexity, designing and completing a large, multipart research project, enhanced by active-learning activities in mentoring, teamwork and communication. By the end of the course, you will have the confidence to generate, evaluate, and communicate reliable and relevant information, either individually, as part of team or as a team leader.

### **Learning Objectives**

This course will allow students to develop basic skills that will enable them to locate and critically assess

existing research, design a model of their system to answer a question, conduct and report on a complex research project on a complex system involving modelling, experimentation and analysis. More concretely, by the end of the course students should be able to:

- Understand how to develop a testable research question that can guide research.
- Design a research project using modelling as the research tool.
- Identify available information and a suitable means for model development
- Synthesizing the available research literature
- Translate a system into model components with causal diagrams.
- Conduct experiments with a model.
- Communicate research results effectively through different forms (orally, written and visually).
- Develop the ability to work collaboratively with a partner or a research team.
- Develop skills in leadership, mentorship and training.

## ***COURSE REQUIREMENTS***

1. Journal - or another mode of documentation of progress agreed upon with the professor
2. Meetings - weekly with ROP supervisor, and record dates and times in the journal.
3. Attend any demonstrations, orientations, etc., that the supervisor may require. Special modules focused on bibliographic searching and citation practices, accessing the map and data library, and developing archival research skills are available at Robarts Library, upon request of faculty supervisors.
4. The supervisor will complete a written assessment of the student's progress and discuss it with the student **BEFORE THE DEADLINE FOR DROPPING COURSES WITHOUT PENALTY.**
5. Students will participate in the Spring 299Y/399Y Undergraduate Research Forum

***MEANS OF EVALUATION and MARKING SCHEME*** (Please describe for both terms the various means of evaluating student progress and providing feedback in relation to the research project; include specifically the role of the faculty supervisor in this evaluation, assignments with weight and due date; **no ONE assignment may be worth more than 50%**).

**Note on modelling software:** Most of you will conduct your research with the COBWEB (Complexity and Organized Behaviour Within Environmental Bounds) software. It is hosted in the Gerstein Library and has a long history of use in this ROP as well as by other students outside of the ROP.

**Note on grading of group work:** The Journal, mental model, start-up guides and annotated bibliography will be completed by each student individually. The Literature Review, Poster and the Final Report can be submitted as a Research Team if you opt to work with a partner or a team (a maximum of 3 students may work together). You will receive a grade for your literature review, poster and final report. Each member of the research team will receive the same grade unless you have not met your commitments to your partner(s). Students who fail to fulfill their commitments with fellow group members will receive a lower grade; group members whose contributions to the project are outstanding will have points added accordingly. There are sufficient opportunities for observation to make his assessment. This discretionary component will be determined at the end of the course; these are not simply bonus points and will be applied at my discretion. Please note that severe lack of participation in group work may lead to an individual zero grade on the group project and, as such, likely a failing grade for the course.

<b>Assignment Description</b>	<b>Due Date</b>	<b>Weight (%)</b>
<b>Journal Fall Semester</b>	<b>Dec 11</b>	<b>5%</b>
<b>Journal Spring Semester</b>	<b>Mar 26</b>	<b>5%</b>
<b>Start-Up Guide with focus on newest tabs in COBWEB</b>	<b>Oct 16</b>	<b>10%</b>
<b>Mental Models Exercise</b>	<b>Sept 25</b>	<b>5%</b>
<b>Annotated Bibliography</b>	<b>Oct 30</b>	<b>10%</b>
<b>Literature Review</b>	<b>Dec 11</b>	<b>20%</b>
<b>Final Report Draft</b>	<b>Mar 13</b>	<b>25%</b>
<b>Final Report Revised with Guide to COBWEB model included</b>	<b>Apr 10</b>	<b>10%</b>
<b>Participation</b>	<b>Ongoing</b>	<b>5%</b>

UNDERGRADUATE RESEARCH FORUM Research Poster	Spring 2021; Date TBD	5%
TOTAL	N/A	100%

## COURSE POLICIES AND STUDENT RESPONSABILITIES

### Meeting policies

- Punctuality: Our meetings will start on time. If you have to come into class late, please do so in the least disruptive manner possible. As a sign of respect to the instructor and the rest of the class, please let the instructor know if you need to arrive late.
- Attendance: Students are expected to come to class meetings. Attendance will be noted. Please let the instructor know if you have to arrive late or depart early.
- Class preparation and student participation: Physical/virtual presence in the lab will earn 1/5. Students are expected to engage in the course, work outside of the meetings and be prepared to participate in discussions and provide help to others. I want this class to foster an environment that encourages student participation and questions. Student participation in class and in-class activities counts towards your evaluation.
- Course manners: Students are expected to handle themselves with respect toward the instructor, peer assistants, and your peers in all matters related to the course, including participation in class, group work, student presentations, communications regarding course content or evaluation, and assisting other students.
- Etiquette regarding the use of computers and other electronic devices: The use of your own computers is required in the Fall Semester. If we are able to return to the Instructional Lab in Gerstein you will be able to bring your own computers and this has been a common practice. While we are in the Lab, phones ringing, wearing earphones, web surfing, watching unrelated videos and texting are disruptive to your peers and the instructor. As such, they are unacceptable.
- During the Fall Semester we will be meeting online, and we may have the option to meet in person. This ROP is designed to be run in person as this improves your experience and the experience of the instructor. Current online meetings take place on Monday from 4:30 – 6:00. Additional time will be added before and/or after the meeting for ROP student concerns and for the Instructor to discuss ROP specific matters.

### Written assignments

- Formatting: Coursework must be word processed double-spaced, 12 point font size, unless otherwise noted. Assignments must be proofread prior to submission to insure that they are free of grammatical and spelling errors, and must include a list of all references cited in the text, using the APA citation style (see “UofT Libraries Research Services” link in the resources section below). All coursework must also include the student’s name and the last 5 digits of your ID number, the course’s code and name and that of the instructor in order to avoid loss or improper identification. Note, however, that there is no need to use cover page to do so.

### Submission guidelines:

- Submission guidelines: All assignments must be submitted electronically through Quercus **by 11:59 PM** on the date specified by the instructor, **unless otherwise noted**. It is recommended that you keep copies of your assignments and early drafts until you receive your graded assignment.

- Late submissions: Work submitted late will be accepted with a **5% daily penalty (including weekend days), up to seven days** after the due date. If needed, you may submit your assignment during the weekend as a way to minimize late penalties. In such cases, the date/time of submission will be considered, using 11:59 PM as time of reference. In case of an outstanding **valid** situation you must contact me, preferably in advance. I cannot consider a particular situation unless I know about it, so do not wait until the end of the term to communicate with me if something did come up. For health reasons, a completed University of Toronto Verification of Student Illness or Injury form must be submitted (<http://www.illnessverification.utoronto.ca/>) except for flu-like symptoms; other proof may be required by the instructor for nonmedical reasons (see general guidelines and form put together by FAS available at: <http://www.artsci.utoronto.ca/current/petitions/process#documentation>). The required form must be submitted within a week of the missed deadline. No extensions will be granted unless you have communicated with the instructor and your reasons have been deemed valid.

### **Communication with the instructor**

I will make myself available for you on Monday evenings and occasionally we will arrange other online meetings. For urgent matters or simple questions, you may also contact me via email, but the rule of thumb is that email should not be a substitute for lab meetings. I will make an effort to respond to you within 48 hours. If I am not available, you will find that I am very committed to your success and your ability to complete your research.

### **Email**

Please make sure to use your University of Toronto email account (i.e., @mail.utoronto.ca). I will accept email from other e-mail addresses, but they may be filtered as spam and thus I may be unable to respond to them. If you have to use another another email account, that is not readily identifiable to your name, let me know when you need to do this, and I will look out for your message. I will be sending you messages from my utoronto account and my cobweb.ca account.

### **Quercus**

A Quercus site will be set up for this course. I will use the site to post primarily for grades, but it can be used for additional readings, assignments and other useful materials. Quercus will also be used by the instructor to communicate with the class. Please make sure to check it regularly. To access the ENV299 and 399 Quercus, go to the UofT login page at: <https://q.utoronto.ca/> and login using your UTORid and password. Once you have logged in, click on the Dashboard module on the right margin of your screen. You will then be able to see the tab for ENV299 and 399 (along with all your other Quercus-based courses).

### **Accessibility Needs**

Accessibility Needs: The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services as soon as possible: [disability.services@utoronto.ca](mailto:disability.services@utoronto.ca) or <http://studentlife.utoronto.ca/as> You may also want to contact Accessibility Services Office if you have problems arising from chronic issues or injuries sustained during the term that affect your ability to do tests or course work.

## **Academic integrity**

Academic integrity is fundamental to learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the U of T degree that you earn will be valued as a true indication of your individual academic achievement, and will continue to receive the respect and recognition it deserves. Familiarize yourself with the University of Toronto's Code of Behaviour on Academic Matters (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) It is the rule book for academic behaviour at the U of T, and you are expected to know the rules.

Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement
- Copying material word-for-word from a source (including lecture and study group notes) and not placing the words within quotation marks
- Submitting your own work in more than one course without the permission of the instructor
- Making up sources or facts
- Including references to sources that you did not use
- Obtaining or providing unauthorized assistance on any assignment including:
  - working in groups on assignments that are supposed to be individual work
  - having someone rewrite or add material to your work while "editing"
  - Lending your work to a classmate who submits it as his/her own

Misrepresentation:

- Falsifying or altering any documentation required by the University, including doctor's notes
- Falsifying institutional documents or grades

Please note that potential offences will be addressed in accordance with institutional procedures.

## **Useful UofT Resources**

### **UofT Libraries**

- Library Catalogue (search for books, journal articles, documents, databases):  
<http://search1.library.utoronto.ca/UTL/search.jsp>
- Research services for students (e.g., research guides, citation resources, refworks, etc.):  
<https://onesearch.library.utoronto.ca/research>

**UofT Writing** (for advice on: planning and organizing, reading and researching, using sources, types of writing, style and editing and English as a second language):

- <http://advice.writing.utoronto.ca/> ; <http://writing.utoronto.ca/support/english-language-support/>

### **Evaluation criteria for written work**

The primary criteria used in evaluating written work are the following:

Mechanics:

- Your work must be completely free of grammatical and spelling errors.

- You must pay attention to sentence and paragraph structure and minimize the use of run-on sentences and overly long paragraphs.
  - Students are expected to include thorough, accurate and consistent references in an established academic referencing style that includes page numbering.
2. Writing style: Your papers should be written in a clear, concise and unambiguous style, which assists, rather than impedes, communication with the reader.
  3. Structure: Defined as coherence of the organization of the paper. The logic of the structure is determined by the purpose, which is to answer a research question, communicate instruction/information or defend a thesis statement. Instructions on appropriate structure for the literature review and final report will be discussed in the meetings.
  4. Precision and accuracy: Precision means saying exactly and specifically what you mean, avoiding vague generalities. Accuracy refers to absence of major factual errors.
  5. Analysis: Student essays are expected to include critical distance and originality of thought.

#### **Evaluation criteria for poster presentations**

The primary criteria used in evaluating presentations are the following:

1. Success in communicating key concepts succinctly and accurately, thereby demonstrating sound understanding of the work being presented, both in the poster and orally.
2. Mechanics of communication, such as manner of speaking (including good diction and tone), structure of the poster and level of organization, neatness, effective use of color and visuals and proper referencing.
3. Ability to respond appropriately to questions.

## **299Y/399Y RESEARCH OPPORTUNITY PROGRAM Contract – Research Project 2 Fall/Winter 2020/2021**

We are pleased that you are chosen to participate in the Research Opportunities Program “**Reviewing the University of Toronto’s Climate Change Plan to Increase Campus Participation in Addressing Climate Change**” and were accepted into that course. We look forward to an enjoyable and a fruitful experience as you develop skills in research and communication. The purpose of this syllabus is to set out the understanding as to what you will do as well as the evaluation, expectations and assignments.

Students admitted to the Research Opportunity Programs must fulfil all program requirements as established at the beginning of the 299Y/399Y course. When you chose the ROP Course, a description was made available to you, and I am confirming that those arrangements are applicable without any current change. In particular, we want to point to the provisions that set out the assignments to be completed, the timetable for those assignments and the weight to be given to the assignments and other factors in the final mark on the ROP Course; please note there is a small but important weight given to participation.

With respect to the conduct of the course, I hope to hold the course entirely online. We will have meetings on a weekly basis for all participants. We are planning to meet Thursday, late in the afternoon, from 4:00 PM to 5:30 PM.

**SUPERVISOR'S NAME** Brad Bass, Status Professor with assistance from Gray Taylor, Distinguished Visiting Fellow

**DEPARTMENT** School of the Environment

**NUMBER OF HOURS PER WEEK REQUIRED:** 8 - 10 hrs/week (240 hours maximum)

### ***COURSE DESCRIPTION***

This ROP offers you a chance to engage in a research experience but also in a professional experience. The topic of this review, climate change, will underlie every other public policy in your lifetime, but the activities that we have laid out for the review of the University's Low-carbon Action Plan are germane to work in the public sector and several other types of organizations. The activities involved in this ROP, writing a summary of the Plan, a literature review and a jurisdictional scan, speaking to key people, thinking of engaging stakeholders (students) and writing a final report are experiences that are at the core of any policy development and analysis exercise.

### **Learning Objectives**

This course will allow students to develop basic skills that will enable them to locate and critically assess existing research, design a model of their system to answer a question, conduct and report on a complex research project on a complex system involving modelling, experimentation and analysis. More concretely, by the end of the course students should be able to:

- Understand the review process.
- Identify available information to guide the review.
- Synthesizing the available research literature
- Conduct a jurisdictional scan.
- Write a group report.
- Communicate research results effectively through different forms (orally, written and visually).
- Develop the ability to work collaboratively with a partner or a research team.

### ***COURSE REQUIREMENTS***

6. Journal - or another mode of documentation of progress agreed upon with the professor to be reviewed with the professor on a regular basis.
7. Meetings - weekly with ROP supervisor, and record dates and times in the journal.
8. Attend any guest presentations, orientations, etc., that the supervisor may require. Special modules focused on bibliographic searching and citation practices, accessing the map and data library, and developing archival research skills may be arranged for students in this ROP at Robarts Library.
4. The supervisor will complete a written assessment of the student's progress and discuss it with the student **BEFORE THE DEADLINE FOR DROPPING COURSES WITHOUT PENALTY.**
5. Students will participate in the Spring 299Y/399Y Undergraduate Research Forum

**MEANS OF EVALUATION and MARKING SCHEME** (Please describe for both terms the various means of evaluating student progress and providing feedback in relation to the research project; include specifically the role of the faculty supervisor in this evaluation, assignments with weight and due date; **no ONE assignment may be worth more than 50%**).

**Note on grading of group work:** The summary, annotated bibliography, literature and the jurisdictional scan will be completed by each student individually. The Poster and the Final Report can be submitted as a Group. You will receive an individual grade for the poster and final report. Each member of the research team will receive the same grade unless you have not met your commitments to your partner(s). Students who fail to fulfill their commitments with fellow group members will receive a lower grade; group members whose contributions to the project are outstanding will have points added accordingly. There are sufficient opportunities for observation to make his assessment. This discretionary component will be determined at the end of the course; these are not simply bonus points and will be applied at the discretion of the professor. Please note that severe lack of participation in the final report may lead to an individual zero grade on the group project and, as such, likely a failing grade for the course.

Assignment Description	Due Date	Weight (%)
Summarize the Plan and select focus for research	Oct. 02, 2020	5%
2-page annotated bibliography	Oct. 30, 2020	10%
Journal	Apr. 8, 2021	10%
Literature Review	Dec. 11, 2020	20%
Jurisdictional Scan	Feb 05, 2021	15%
Poster	Mar.17, 2021	5%
Final Report	Apr. 2, 2021	30%
Participation	Ongoing	5%
UNDERGRADUATE RESEARCH FORUM Research Poster	Spring 2021; Date TBD	5%
<b>TOTAL</b>	<b>N/A</b>	<b>100%</b>

#### DISCUSSION OF AN ANNOTATED BIBLIOGRAPHY VERSUS A LITERATURE REVIEW

Annotations should **summarize the source**, typically in 3-5 sentences, and **reflect on the source's possible uses** for the project at hand. Important considerations for written assignments are presented below. A literature review summarizes and synthesizes the **existing scholarly** research on a particular topic. It discusses major themes and knowledge gaps that are relevant to your research. It should lead the reader into your research question. The Literature Review is not organized by article, but by theme and the ideas that contribute

to the theme. When cite on of the major findings that contributes to this theme, you should be able to reference 2-3 sources.

## COURSE POLICIES AND STUDENT RESPONSABILITIES

### Meeting policies

- Punctuality: Our meetings will start on time. If you have to come into class late, please do so in the least disruptive manner possible. As a sign of respect to the instructor and the rest of the class, please let the instructor know if you need to arrive late.
- Attendance: Students are expected to come to class meetings. Attendance will be noted. Please let the instructor know if you have to arrive late or depart early.
- Class preparation and student participation: Students are expected to engage in the course, work outside of the meetings and be prepared to participate in discussions and provide help to others. I want this class to foster an environment that encourages student participation and questions. Student participation in class and in-class activities counts towards your evaluation.
- Course manners: Students are expected to handle themselves with respect toward the instructor, visitors, and your peers in all matters related to the course, including participation in class, group work, student presentations, communications regarding course content or evaluation, and assisting other students.
- During the Fall Semester we will be meeting online. Current online meetings take place on Thursday from 4:00 – 5:30.

### Written assignments

- Formatting: Coursework must be word processed double-spaced, 12 point font size, unless otherwise noted. Assignments must be proofread prior to submission to insure that they are free of grammatical and spelling errors, and must include a list of all references cited in the text, using the APA citation style (see “UofT Libraries Research Services” link in the resources section below). All coursework must also include the student’s name and the last 5 digits of your ID number, the course’s code and name and that of the instructor in order to avoid loss or improper identification. Note, however, that there is no need to use cover page to do so.

#### Submission guidelines:

- Submission guidelines: All assignments must be submitted electronically through Quercus **by 11:59 PM** on the date specified by the instructor, **unless otherwise noted**. It is recommended that you keep copies of your assignments and early drafts until you receive your graded assignment.
- Late submissions: Work submitted late will be accepted with a **5% daily penalty (including weekend days), up to seven days** after the due date. If needed, you may submit your assignment during the weekend as a way to minimize late penalties. In such cases, the date/time of submission will be considered, using 11:59 PM as time of reference. In case of an outstanding **valid** situation you must contact me, preferably in advance. I cannot consider a particular situation unless I know about it, so do not wait until the end of the term to communicate with me if something did come up. For health reasons, due to the unique circumstances imposed by COVID-19, a completed

University of Toronto Verification of Student Illness or Injury form (<http://www.illnessverification.utoronto.ca/>) is **currently not required for flu-like symptoms**. However, you should prepare this form for other illnesses. Other proof may be required by the instructor for nonmedical reasons (see general guidelines and form put together by FAS available at: <http://www.artsci.utoronto.ca/current/petitions/process#documentation>). The required form must be submitted within a week of the missed deadline. No extensions will be granted unless you have communicated with the instructor and your reasons have been deemed valid.

### **Communication with the instructor**

Both Gray Taylor and myself will be available in online meetings. For urgent matters or simple questions, you may also contact us by email, but the rule of thumb is that email should not be a substitute for our Thursday afternoon meetings. We will make an effort to respond to you within 48 hours. You will find that we are very committed to your success and your ability to complete your research.

### **Email**

Please make sure to use your University of Toronto email account (i.e., @mail.utoronto.ca). I will accept email from other e-mail addresses, but they may be filtered as spam and thus I may be unable to respond to them. If you have to use another another email account, that is not readily identifiable to your name, let me know when you need to do this, and I will look out for your message. I will be sending you messages from my utoronto account and my cobweb.ca account. Gray Taylor will likely use his gmail account with the address iamgraytaylor@gmail.com

### **Quercus**

A Quercus site will be set up for this course. I will use the site to post primarily for grades, but it can be used for additional readings, assignments and other useful materials. Quercus will also be used by the instructor to communicate with the class. Please make sure to check it regularly. To access the ENV299 and 399 Quercus, go to the UofT login page at: <https://q.utoronto.ca/> and login using your UTORid and password. Once you have logged in, click on the Dashboard module on the right margin of your screen. You will then be able to see the tab for ENV299 or ENV399 (along with all your other Quercus-based courses).

### **Accessibility Needs**

Accessibility Needs: The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services as soon as possible: [disability.services@utoronto.ca](mailto:disability.services@utoronto.ca) or <http://studentlife.utoronto.ca/as> You may also want to contact Accessibility Services Office if you have problems arising from chronic issues or injuries sustained during the term that affect your ability to do tests or course work.

### **Academic integrity**

Academic integrity is fundamental to learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the U of T degree that you earn will be valued as a true indication of your individual academic achievement, and will continue to receive the respect and recognition it

deserves. Familiarize yourself with the University of Toronto's Code of Behaviour on Academic Matters (<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) It is the rule book for academic behaviour at the U of T, and you are expected to know the rules. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement
- Copying material word-for-word from a source (including lecture and study group notes) and not placing the words within quotation marks
- Submitting your own work in more than one course without the permission of the instructor
- Making up sources or facts
- Including references to sources that you did not use
- Obtaining or providing unauthorized assistance on any assignment including:
  - working in groups on assignments that are supposed to be individual work
  - having someone rewrite or add material to your work while "editing"
  - Lending your work to a classmate who submits it as his/her own

Misrepresentation:

- Falsifying or altering any documentation required by the University, including doctor's notes
- Falsifying institutional documents or grades

Please note that potential offences will be addressed in accordance with institutional procedures.

## **Useful UofT Resources**

### **UofT Libraries**

- Library Catalogue (search for books, journal articles, documents, databases):  
<http://search1.library.utoronto.ca/UTL/search.jsp>
- Research services for students (e.g., research guides, citation resources, refworks, etc.):  
<https://onesearch.library.utoronto.ca/research>

**UofT Writing** (for advice on: planning and organizing, reading and researching, using sources, types of writing, style and editing and English as a second language):

- <http://advice.writing.utoronto.ca/> ; <http://writing.utoronto.ca/support/english-language-support/>

### **Evaluation criteria for written work**

The primary criteria used in evaluating written work are the following:

Mechanics:

- Your work must be completely free of grammatical and spelling errors.
  - You must pay attention to sentence and paragraph structure and minimize the use of run-on sentences and overly long paragraphs.
  - Students are expected to include thorough, accurate and consistent references in an established academic referencing style that includes page numbering.
2. Writing style: Your papers should be written in a clear, concise and unambiguous style, which assists, rather than impedes, communication with the reader.

9. Structure: Defined as coherence of the organization of the paper. The logic of the structure is determined by the purpose, which is to answer a research question, communicate instruction/information or defend a thesis statement. Instructions on appropriate structure for the literature review and final report will be discussed in the meetings.
10. Precision and accuracy: Precision means saying exactly and specifically what you mean, avoiding vague generalities. Accuracy refers to absence of major factual errors.
11. Analysis: Student essays are expected to include critical distance and originality of thought.

### **Evaluation criteria for poster presentations**

The primary criteria used in evaluating presentations are the following:

4. Success in communicating key concepts succinctly and accurately, thereby demonstrating sound understanding of the work being presented, both in the poster and orally.
5. Mechanics of communication, such as manner of speaking (including good diction and tone), structure of the poster and level of organization, neatness, effective use of color and visuals and proper referencing.
6. Ability to respond appropriately to questions.

**The detailed description below is a guide only with very significant flexibility being retained to direct each session towards topics and subjects of interest to the participants in the Course, it being the case however that the assignment structure and the allocation of credit towards grades would change only in very exceptional circumstances.**

**Part 1:** (Sept 10 to Oct 2, 2020)

**Assignment:** Summarize the Plan and select focus for research **due Oct 2**

*Session 1 (Sept 10)* introduction of each participant and discussion of general characteristics of the course {please note that dates and times of Session meetings are to be recorded in each student's journal}.

*Session 2 (Sept 17)* discussion of the University of Toronto's Climate Change Plan published in the fall of 2019 (the "Plan"), its origins and whatever else each student can contribute at that time; similar discussion related to the Landmark Project (the "Project"); allocation of categories of institutions to be reviewed for "jurisdictional scan" purposes to identify emission reduction (including energy consumption reduction) plans; potentially engagement with a knowledgeable climate change scientist to focus on the scope of emissions that have climate change impacts and an understanding of the nature/scope of those impacts, thereby leading to the emissions that need to be reduced (Guest Speaker)

*Session 3 (Sept 24)* discussion of each participant's take on the Plan and potential areas of investigation such as trees, divestment, project landmark, co-gen, steam plant, building revitalization, focus on St George campus?, Scarborough campus?, Mississauga campus?, target, 1990 emissions, emissions measurement, behavioral consequences, finance for emission reductions, scope two and scope three emissions, emissions from student travel and other activities, waste management.

Session 4 (*Oct 1*) submission of summary of the Plan due the next day so continue the discussion from the last session of the take of the students on the Plan; selection by each student of a topic for further review in Part 2 of the course.

**Part 2:** (Oct 3 to Oct 30)

Assignment: 2-page annotated bibliography due **Oct. 30, 2020**

The course outline indicates that in the fall semester, students will spend time reviewing literature in areas of the requisite science, behavioural change, systems theory and other areas that may emerge as relevant to examining The Plan and the Landmark Project. The annotated bibliography is a precursor to the production of the Literature Review which is due approximately 6 weeks after the annotated bibliography.

Session 5 (Oct 8)

Discussion of an annotated bibliography encompasses.

If possible, we will have a guest panel of knowledgeable persons talk about what they think should be in a document like the Plan and their reaction to the Plan

Session 6 (Oct 15)

Meeting with the Sustainability Office to discuss sources known to them and how they were used in developing the Plan. This will also give us an opportunity to discover data collection and analysis opportunities for students who are interested in this aspect of the Review.

Session 7 (Oct 22)

Group session creating a first draft of an annotated bibliography of one of the topics not chosen by any of the students such as geoexchange, solar, waste heat capture, steam plant or co-gen.

Session 8 (Oct 29)

Annotated bibliography due the next day so concluding discussion on that assignment; preliminary discussion of what a Literature Review is and how it is created

Each student is asked to locate over the following week at least one example of a literature review that can be considered at the next session (Session 9)

**Part 3:** (Nov 1 to Dec 11)

Assignment: Literature Review due **Dec. 11, 2020.**

Note the outline of the Course indicates that “The literature review and the jurisdictional scan will be used to develop an evaluation framework to assist in the review of the University of Toronto Plan.”

Session 9 (Nov 5)

Detailed discussion of what a literature review encompasses, including review of examples provided from other ROPs and the tabling of at least one example of a literature review chosen by each student for group discussion

Reading Week (Nov 12)

Session 10 (Nov 19)

Impact of Covid on the Plan. Continue detailed discussion of what a literature review encompasses, including review of examples provided by students at the previous session or subsequently identified and tabled for discussion

#### Session 11 (Nov 26)

Discussion with U of T officials knowledgeable about the Plan and the Project with a view to understanding its origins, the goal, the approval process, the effect of the fossil fuel divestment initiative, finance, role of campus as a living lab and the Committee for Environment, Climate Change and Sustainability.

#### Session 12 (Dec 3)

Discussion with persons knowledgeable about specific topics in the Plan and/ or the Project such as (i) buildings on campuses (proposed wood tower, the Daniels building, the proposed SRITS building), Hart House, Trinity, UC, etc as historic buildings); (ii) Carbon Capture Use and Storage (David Sinton) and other research initiatives, (iii) pilot initiatives (eg fume hoods, Net-Zero Laneway) (iv) trees, (v) social aspects of the Project and/or the Plan

#### Session 13 (Dec 10?)

Literature review assignment is due the next day. Final discussion of the student experiences to that date in constructing a literature review; also a discussion of how the jurisdictional scan is to be conducted and allocated amongst students, noting the relevance of University Climate Change Coalition (UC3) universities, GRASFI universities, other universities in geographies similar to U of T, other educational institutions (eg George Brown and other colleges), the City of Toronto, Shopify, Microsoft, Shell, etc.

#### **Part 4:** (Dec 12 to Feb 5, 2021)

Assignment: Jurisdictional Scan due **Feb 05, 2021**

#### Session 14 (Dec 17)

Discussion of structure of Jurisdictional Scan reports to be submitted by students, with the example of the UC3 universities and their plans

#### Session 15 (Jan 7)

Welcome to 2021! Pickup the discussion from Session 14 and begin a discussion of what "an evaluation framework to assist in the review of the University of Toronto Plan" would encompass; also begin a discussion of the final output from the course due April 2 including the question of how to integrate the contributions of the students into the final report

#### Session 16 (Jan 14)

Presentations on plans comparable to the Plan, including the UC3 universities: Queen's University, The University of British Columbia and The University of California being obvious choices and Toronto universities (York and Ryerson if they have plans) and other Ontario universities worthy of consideration and also the City of Toronto being relevant

#### Session 15 (Jan 21)

Discussion of lessons learned from jurisdictional scans conducted to date; discussion with the University's Sustainability Office again with the information gained to date now being part of the discussion

Session 16 (Jan 28)

Discussion of the evaluation framework and an effort to document it in preliminary draft form

Session 17 (Feb 4)

The jurisdiction scan is due the next day so final discussion of what has been discovered and what the work product will encompass. Also as the literature review and the jurisdictional scan will be used to develop an evaluation framework to assist in the review of the University of Toronto Plan, efforts in the direction of creating such a framework will be part of the Session.

**Part 5:** (Feb 6 to April 2)

Assignment: Final Report due Apr. 2, 2021 and Poster **due Mar.17**

Session 17 (Feb 11)

An outline of the final report to be created in this session. Review of requirements for Poster due Mar.17 as well as the issue of how to "Increase Campus Participation in Addressing Climate Change"; assignment of poster responsibilities.

Reading Week

Session 18 (Feb 25)

A point form outline of each student section of the final report to be produced for the next session so this session will delve into its construction, by creating an outline for one section.

Session 19 (March 4)

Review of the poster. This session will focus on the final report structure and content including how to move beyond the point form outline into something that can be used in the final report

Session 20 (March 11)

Work on producing final report sections and integrating them all into a final report. Again the issue of how to "Increase Campus Participation in Addressing Climate Change" to be discussed and position of the group on whether or not to address that issue to be determined and, if "yes", the manner in which it will be done

Session 21 (March 18; subject to change based on the requirements for the Research Fair that will be provided by the Office for Experiential Education)

Poster due the next day so the session will focus on the posters and how they relate to the final report and perhaps their integration into "how to 'Increase Campus Participation in Addressing Climate Change'";

Session 22 (March 25)

Discussion and work on obtaining and integrating the various sections of the final report

Sessions over but Final Report due Apr. 2, 2021

