

# **School of The Environment, Fall 2022**

## **ENV 360F, Is the Internet Green?**

Professor Miriam Diamond  
Dept. of Earth Sciences and School of the Environment  
E-mail: Through Quercus email only.  
Virtual Office hours: Please make an appointment through Quercus

### **Class Meetings: In-person, Tuesday's 14:00-16:00 Room BA 2159**

If you can't attend in-person: Zoom: <https://utoronto.zoom.us/j/88081853671>  
Meeting ID: 880 8185 3671  
Passcode: 997765

### **Tutorial Meeting Time: Tuesday 16:00-17:00 ES 4000**

**Teaching Assistants:** Praveen Siluvai, [praveen.siluvaiantony@mail.utoronto.ca](mailto:praveen.siluvaiantony@mail.utoronto.ca)

**Course information is posted on Quercus. Please contact Prof. Diamond and/or TA through Quercus email.**

### **Course Description:**

We are emerging from a two year plus withdrawal from face-to-face interactions which plunged us, willing or not, into the digital world. We were and continue to be reliant on Internet and Communication Technologies (ICT) to connect with our friends, family, school, work, entertainment, food shopping, etc. It is almost impossible to consider how society would have coped with the COVID-19 pandemic without ICT. And even before the pandemic, ICT was so deeply embedded in our day-to-day lives that its absence causes great stress. This profound dependence on ICT has happened during the past ~30 years – a very short time for such changes to have taken place.

Although we are very familiar with and use ICT extensively, few of us understand the hardware and software that keeps ICT functioning, and importantly, the growing control and commodification of our ICT activities. Further, words such as “cloud computing” and “cyberspace” give ICT an ethereal sense – that ICT has few physical structures. That is not the case! ICT, and all its offshoots, very much have a physical “materiality” that comes along with very real environmental impacts.

As citizens and students in this course, our task is to first, become acquainted with the environmental impacts of ICT. Second, all of us, as a society, need to think critically about the choices and the lack of choices that ICT brings us, and to explore and act on the accompanying intended and unintended consequences and responsibilities this brings. This course intends to help us make informed decisions and choices, and to be active participants rather than passive consumers and objects of ICT.

**Course objectives:**

This course examines and debates the environmental consequences of ICT in the context of environmental sustainability. The course will introduce you to disciplinary and interdisciplinary modes of inquiry and engagement. Most of this course builds on information from the physical, applied and health sciences.

**What you will learn in the course:**

- How to probe the breadth, depth and interconnectedness of a system as complex as ICT; how complex phenomena defy simple explanations, and why it’s important to think and solve problems with the help of multiple disciplines and systems thinking.
- How to think critically and use tools for creative and effective problem solving as individuals and in groups.
- To improve your scientific literacy and communication skills, through: 1) a deeper understanding of how ICT works; 2) how to assess environmental and societal and personal benefits and costs of ICT; and 3) how to clearly communicate your ideas.

**Course Evaluation:**

<b>Assignment 1:</b> Measure the carbon footprint of your ICT devices, includes peer review worth 5%	<b>Due October 11 for peer review (5%); final Oct 18 (25%)</b>	30%
<b>Assignment 2:</b> Compare “unintended consequences” now versus pre-pandemic, includes peer review worth 5%	<b>Due November 22 for peer review (5%); final Nov 29 (30%)</b>	35%
<b>Reading summaries:</b> (5 over the term, 5 marks each)	Throughout the term 1 <sup>st</sup> by Sept 20, 2 <sup>nd</sup> by Oct 4, 3 <sup>rd</sup> by Nov 1, 4 <sup>th</sup> by Nov 15, 5 <sup>th</sup> by Nov 29	25%
<b>Participation</b>	Weekly attendance & participation in classes & tutorials	10%

Note: if an unexpected technical issue occurs with a university system (e.g., Quercus services, network outage) that affects availability or functionality, it may be necessary to revise the timing or weighting of the assessments.

All assignment submissions are through Quercus.

**Coursework Assignments (65% overall):** Each assignment will be discussed in class and then completed outside of class time. You will have the opportunity to improve each assignment through a peer review process conducted on-line through peerScholar.

- Assignment 1 is completed individually. It involves taking an inventory of ICT devices owned and used by yourself and your family. You will then calculate the embodied carbon emissions contained in those devices.

- Assignment 2 may be discussed in groups of 2-3 students but written up individually. You will qualitatively compare and contrast the environmental impacts of working at home during the pandemic versus in-person attendance of classes at the University of Toronto campus.
- Marking rubrics for each assignment will be available one week before the submission date for peer review, i.e., Oct 4 and Nov. 15. The criteria in the rubrics include research depth and breadth, depth of critical analysis, coverage of the literature, and coherence and comprehensibility of the written report.

All assignments will be submitted through Quercus and must include the following information:

- Your name
- Title of assignment
- Course title and number
- Name of Professor and TA
- Double or 1.5 line spacing using 12-point type in black with 2.5 cm (1 inch) margins
- Include page numbers
- **Requests for re-evaluation:** must be submitted in writing to Prof. Diamond with a clear reason to justify your request. Prof. Diamond will respond within a week as to whether your assignment will be remarked. Your assignment will be remarked by the TA.
- **Back-up your work!!!** Save your document often and back-up your work!
- **Late Penalty for assignments:** Late assignments will be accepted up to ONE week after the due date with a penalty levied. You report your absence through the “online absence declaration” available on ACORN; look under Profile and Setting menu. Notes from a physician are temporarily suspended. <https://studentlife.utoronto.ca/covid-19-health-wellness-faqs/> Without a declaration form filed, the late penalty is a lowering of the grade by 4% per day with 4% applying to the weekend.

**Reading summaries (25% or 5 marks each).**

- You will submit a summary of **five REQUIRED readings of your choice over the duration of the term. Summaries of websites or videos are not eligible.**
- The summary should be about 400 words total. The summary should be written in prose and not point form.
- **A summary of a reading is due before it is discussed in class.**
- You are responsible for keeping track of the number of reading summaries you submit.
- An excellent reading summary provides an overview of the key points raised by the author(s) and your critical analysis. The critical analysis is your viewpoint, substantiated, argued and justified by information. The critical analysis is not unsubstantiated opinion.
- **You must submit no later than:** 1<sup>st</sup> by Sept 20, 2<sup>nd</sup> by Oct 4, 3<sup>rd</sup> by Nov 1, 4<sup>th</sup> by Nov 15, 5<sup>th</sup> by Nov 29. Last date for the final reading summary is November 30. A late penalty of 4% per day with 4% applying to the weekend will be applied to summaries submitted after the due date in the absence of an “online absence declaration”

**Your Tutorial Assistant (TA):** This year your TA, Praveen Siluvai, will be available for you weekly to answer questions during office hours and through Quercus email. Your TA will mark all assignments and the final exam.

**Course Policies:**

- **Communication with Prof. Diamond and the TA** is through Quercus email only. We will respond within 1 to 2 days on weekdays. Do not expect immediate responses over weekends and

evenings. Do not expect responses to questions about assignments within 24 hours of the due date.

- **We all need to communicate respectfully.** *“The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another’s differences. U of T does not condone discrimination or harassment against any persons or communities.”*
- **Privacy rights and appropriate use of course material:**
  - This course, including your participation, may be recorded on video and will be available to students in the course for viewing remotely and after each session.
  - Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation, and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose without the explicit permission of the instructor.
- **Technology Requirements:** Please see <https://www.viceprovoststudents.utoronto.ca/covid-19/tech-requirements-online-learning/>

### Academic Integrity:

Very few of us have truly original ideas but rather we almost always build on the ideas and information provided by others. We need to re-emphasize that plagiarism — representing someone else’s words as your own or submitting work that you have previously submitted for marks in another class or program — is a serious offence. Assignments, reading summaries and exams are reviewed for evidence of these infractions. Penalties for these offences can be severe and can be recorded on your transcript.

Trust your own ability to think and write and make use of the resources available at U of T that can help you do so (e.g. professors, TA, writing centres). See the U of T writing website, especially the “How Not To Plagiarize” document at <http://advice.writing.utoronto.ca/using-sources/how-not-to-plagiarize/>.

More information is available at: <http://www.artsci.utoronto.ca/osai>

The following is a list of examples (not complete) of what constitutes an academic offence:

- 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 and not citing the author/source.
- 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 without your permission.
  - Paying for information and/or writing.

Misrepresentation:

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

### Accommodation:

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: [accessibility.services@utoronto.ca](mailto:accessibility.services@utoronto.ca) or <https://studentlife.utoronto.ca/department/accessibility-services/>

### ADDITIONAL SERVICES and SUPPORT

The following are some important links to help you with academic and/or technical service and support:

- General student services and resources at [Student Life](#)
- Full library service through [University of Toronto Libraries](#)
- Resources on conducting online research through [University Libraries Research](#)
- Resources on academic support from the [Academic Success Centre](#)
- Learner support at the [Writing Centre](#)
- Information for [Technical Support/Quercus Support](#)

### Reading/Viewing/Listening hints:

As you read, listen, and/or watch, take notes on the following:

- 1) **Identify the key terms in the reading.** Think about how the author(s) defines these terms and uses them in the broader argument.
- 2) **Note key concepts that relate to other readings/lectures** in the course and that help you to understand the main themes in the course and their interrelationships, i.e., build bridges between the readings and lectures.
- 3) **Note methods used** to investigate the topic or solve the problem. How could you use this method?
- 4) **Write down any questions** that arise when in lecture and reading (no question is stupid!).
- 5) **Look up words/concepts** in the reading that you do not understand. Reading with a dictionary at your side is the best way to expand your vocabulary!
- 6) **Explore the context for the reading.** As you know, the Internet is moving fast! How recently was it published? At what stage in the development of the Internet was it written? What type of publication did it appear in? How does it relate to other readings you have met?

Remember, when writing down a quote, **always put quotation marks around the author's words** and note the page number from which you are quoting. This will provide you with a good basis of quotes for later writing assignments, and will help you to develop responsible practices of note-taking in line with the requirements of academic integrity.

## LECTURE SCHEDULE

Wk	Date	Lecture Topic	Tutorials	Assignments
1	Sept 13	Introduction: Why is this course about the ICT and why the question “is it green”?		
2	Sept 20	A very short history of communication technologies leading to “what is the Internet”? <b>Prof. Robert Soden</b>		<b>1<sup>st</sup> reading summary due</b>
3	Sept 27	Environmental problem solving, systems thinking and ICT; foot-printing		Introduce Assign 1
4	Oct 4	Is ICT “green”? An energy analysis	1. Assign 1	<b>2<sup>nd</sup> reading summary due</b>
5	Oct 11	Beyond the carbon footprint: ICT’s resource use	2. Peer review of Assign 1	<b>Assign 1 peer review due</b>
6	Oct 18	Resources in and e-waste out		<b>Assign 1 final due</b>
7	Oct 25	What about the sharing economy? <b>Dr. Laura Minet</b>		Introduce Assign 2
8	Nov 1	ICT use to help humanity <b>Dr. Cagdas Dedeoglu, Yasaman Rohanifar</b>	3. Assign 2	<b>3<sup>rd</sup> reading summary due</b>
	<b>Reading Week</b>			
9	Nov 15	Individual and societal impacts of digital life	4. Assign 2	<b>4<sup>th</sup> reading summary due</b>
10	Nov 22	From “freedom” to surveillance capitalism	5. Peer review of Assign 2	<b>Assign 2 peer review due</b>
11	Nov 29	From Revolution to solution! Dare to hope!		<b>Assign 2 final due</b> <b>5<sup>th</sup> reading summary due</b>
12	Dec 6	Review	6. Q&A (optional)	