

Methods for Sustainable Development Practice: A Systems Approach (INDEV 607)

Course Outline (Winter 2020)

Instructor: Cameron McCordic, Assistant Professor, SEED
Office: EV3, Room 4239 | Tel: 519.888.4567 (Ext. 31898)
Office hours: By appointment
Email: c2mccordic@uwaterloo.ca

Times and location

This course is scheduled once a week: Thursdays, 2.30 – 5.20pm. Room HH-227

Course Description

In this course, we will learn to conceptualize development and sustainability problems using system thinking. ‘Systems thinking’ has been defined as an approach to problem solving, by viewing ‘problems’ as parts of an overall system. We will learn key system concepts and apply them to real cases. We will also learn to identify leverage points for intervention. The second part of the course will focus on the ‘power’ of indicators, as they are an important aspect of sustainable development (goals). What goes into calculating an indicator, what stays out, who decides? You will be confronted with data challenges, how and why certain data exist, why others not? As an illustration, we will work with “time-use” data to illustrate some of these challenges from a systems perspective. We will conduct hands on exercises to get a sense of working with real data as well as learn how to generate data. Developing methodological and analytical skills require a hands-on experience. Hence, this course will take the approach of ‘guide on the side’ (instead of ‘sage on the stage’). In this course, taking the online certificate Course on Research Ethics (CORE) is mandatory.

Note on the readings: Most of the readings listed here are either open access or available through UW library while on campus, but also remotely by logging onto the library system. As graduate students, you are expected to search and download these readings yourself. Those not available online will be uploaded on LEARN. You are also encouraged to look for additional literature for your assignments. If you encounter problems in accessing the readings, please contact our liaison librarian, Agnes Zientarska-Kayko: azientarskakayko@uwaterloo.ca

Schedule of topics and readings

Unit 1: January 9th

Introduction to the course content, structure, standards, expectations, deliverables, readings, and addressing any concerns that may arise thereof;

What is Systems Thinking? (The 'Tip of the Iceberg')

Readings (relevant to units 1 – 7):

Meadows, D (2008). *Thinking in Systems*. Chelsea Green. (available as ebook from the UW library)

Spangenberg, J. (2015). *Sustainability and the challenge of complex systems*. In: Enders, J. and Remig, M. (eds). *Theories of sustainable development*. Routledge Studies in Sustainable Development. Routledge, Taylor & Francis Group.

Ramalingam, B. (2013). *Aid on the edge of chaos: Rethinking International Cooperation in a complex world*. Oxford University Press. (available as ebook from the UW library)

Note: *Shorter articles, handouts and other resources will be distributed in class as relevant to the in-class exercises.*

Unit 2: January 16th

What is a System?

- Systems and sub-systems
- What is 'Systems Thinking'?
- In-class exercise

Unit 3: January 23rd

What gives rise to systems?

- Relationship between structure and behavior
- The Iceberg Model
- Behavior over time graphs (BOTG)
- In-class exercise

Unit 4: January 30th

How the system runs itself?

- Reinforcing and Balancing loops (illustrated through living loops)
- Causal Loop Diagrams (CLD)
- In-class exercise
- Introduce Assignment 1 (cases from [Complexity Labs](#))

Unit 5: February 6th

Group presentations: Assignment 1 (20 marks)

Groups will be formed, and assignment details will be uploaded on LEARN the previous week.

Unit 6: February 13th

- *Triple Benefit* concept by Dr. Klaus Renoldner, Austria (documentary)
- Interview with Dr. Renoldner (on Skype)
- Introduction to Assignment 2

<https://www.thinkingtoolsstudio.org/home>

Reading week – no class on 20th February

Unit 7: February 27th

The role of “perspective” in systems thinking

- Participation in development practice
- Participatory tools in space / time representation

Unit 8: March 5th

Group presentations: Assignment 2 (20 marks)

Systems thinking applied to a problem

Unit 9: March 12th

A systems approach to time-use in sustainable development practice

- Time-use studies (and time poverty) in development practice
- Time use study in sustainability science
- Introducing time use data sheets – 2 cases (for Assignment 3)

Readings:

1. Wiedenhofer, D., Smetschka, B., Akenji, L., Jalas, M., Haberl, H. (2018). *Household time use, carbon footprints, and urban form: a review of the potential contributions of everyday living to the 1.5 C climate target*. *Current Opinion in Environmental Sustainability*, Environmental change assessment 30, 7-17.
<https://doi.org/10.1016/j.cosust.2018.02.007>
2. Blackden, M. & Wodon, Q. (2006). *Gender, Time Use, and Poverty in Sub-Saharan Africa*. World Bank Working Paper 73. The World Bank, Washington D.C.
3. UNDP (2008). *Making Invisible Work More Visible: Gender and Time Use Surveys with a focus on the Pacific and Unpaid Care Work*. UNDP Pacific Centre.
4. Parker, S.W. & Skoufias, E. (2000). *The Impact of PROGRESSA on Work, Leisure, and Time Allocation*. International Food Policy Research Institute (IFPRI).
5. Bardasi, E. & Wodon, Q. (2009). *Working Long Hours and Having no Choice. Time Poverty in Guinea*. The World Bank and Human Development Network.
6. Hobbes, M., de Groot, W., van der Voet, E., & Sarkhel, S. (2011). *Freely Disposable Time: A Time and Money Integrated Measure of Poverty and Freedom*. *World Development* 39 (12), p. 2055 – 2068.

Unit 10: March 19th

(Class Cancelled due to COVID-19)

Unit 11: March 26th

(Class Cancelled due to COVID-19)

The challenges of data | Designing a time-use survey (Lecture Slides Posted Online)

- Introduction to time-use data generation methods
- Designing a time-use data collection method (for Assignment 4)

UN (2005). *Guide to Producing Statistics on Time Use. Measuring Paid and Unpaid Work*.

Department of Economic and Social Affairs. Download from:

http://unstats.un.org/unsd/publication/SeriesF/SeriesF_93e.pdf

Links – for your curiosity:

UN Statistics Division - Time Use Surveys

<http://unstats.un.org/unsd/demographic/sconcerns/tuse/default.aspx>

International Classification of Activities for Time Use Statistics (ICATUS)

<https://unstats.un.org/unsd/statcom/48th-session/documents/BG-3h-ICATUS-2016-13-February-2017-E.pdf>

Center for Time Use Research (CTUR)

<http://www.timeuse.org/home>

Multinational Time Use Study (MTUS), University of Oxford

<http://www.timeuse.org/mtus>

International Association for Time Use Research (IATUR)

<https://www.iatur.org/>

American Time Use Survey - FAQ

<http://www.bls.gov/tus/atusfaqs.htm>

Course on Research Ethics (CORE): The government Tri-Council Policy Statement Course on Research Ethics is to be taken by each student individually. This is mandatory for undertaking a time use interviews. This is an online course (including tutorials) and takes about 2-3 hours. Once you have the certificate, it is valid for 5 years. Here is the link to the online course: <https://tcps2core.ca/welcome>

Due 2nd April 2019. Please drop the completion certificate into LEARN dropbox (5 marks)

Unit 12: April 2nd

(Class Cancelled due to COVID-19)

Group presentation submission: Assignment 3 - Time use data analysis (20 marks)

- Groups submit analysis of time-use data in the context of sustainability and international development (time poverty, invisible/unpaid work, child labor, health and well-being); identifying leverage points

Reading:

1. Spangenberg, Joachim (2018). *Worldviews, interests and indicator choices*. In: Simon Bell and Stephen Morse (eds.). *Routledge Handbook of Sustainability Indicators and Indices*. Chapter: ch 9. Routledge, Taylor & Francis Group.

**This schedule may change if unforeseen circumstances arise. Notice of changes will be announced through LEARN.*

Evaluation

For a graduate level course, I lay emphasis on critical thinking and integration of course material in all the products. I aim to look at the cumulative outcome of your piece of work. Does the whole stand out as a strong piece of work? Were there some outstanding aspects that should receive additional weighting and be taken into account? In trying out the methods in this course, I look not only at outcomes, but also the process and efforts to learn and try out novel ideas. It's more about what you have learnt with hands on experience, rather than the outcome alone. In assessing the quality of the products, I follow the marking scheme and performance criteria as developed by Prof. Ascough that can be accessed online: <http://post.queensu.ca/~rsa/assessment.htm>

Below is the breakdown of marks:

1. Assignment 1 (cases from Complexity Labs): 15 marks (+5 marks for group process) = 20 marks (25% weight)
2. Assignment 2 (Systems case study): 15 marks (+5 marks for group process) = 20 marks (25% weight)
3. Assignment 3 (Time use data analysis): 15 marks (+5 marks for group process) = 20 marks (25% weight)
4. CORE certificate milestone: 5 marks (5% weight)
5. Class participation: 15 marks (20% weight)

Note on presentations: All assignments are presentations in class. Thus, PowerPoint slides and supporting documentation (speaking notes, sources, calculations) need to be submitted to dropbox by the end of the day when the presentations were made.

Class participation includes being present in the class, constructive participation (attentiveness, asking questions, responding to ideas, discussion, etc.), contributions that demonstrate your engagement and connection with the course materials/readings and prior experience, demonstrating improvement and initiative, and openness in challenging your own assumptions and knowledge (critical thinking). Class participation also includes interacting with your classmates in a constructive and respectful manner, as well as maintaining general discipline.

Expectations

- | | |
|-------|---|
| 13+ | <ul style="list-style-type: none">- able to initiate and facilitate the development of ideas- comments are consistently insightful and raise questions or ideas that stimulate the learning of others- demonstrates critical reflection on readings- brings relevant and interesting resources (media, cases, articles) to the attention of others |
| 10-12 | <ul style="list-style-type: none">- comments and questions demonstrate some critical analysis |

- consistently shares ideas
 - effort made to build on ideas of others
- 7-9
- raises occasional clarifying questions and comments
 - comments often not of a critical nature and do not demonstrate integration of material
- Below 7
- no consistent contribution
 - little evidence of integrated learning
 - absent from class

Unless evidence of extenuating circumstances is presented (illness, family emergency), a 2 marks deduction will be in effect for each class missed (after class participation marks have been graded using the above scheme).

Group process marks (or making invisible work visible): All assignments in this course are worked on as a group. Group efforts and process remains largely invisible to the instructor but must be compensated for. The group members themselves therefore determine these marks in a consensus based on the contributions of each member (see example below). Please consider tasks such as literature search, analyzing the literature, preparing slides for presentation, maintaining group coordination, presentation, contribution to writing in terms of quantity and quality, or work that goes into editing parts written by others to ensure the overall quality, proof reading, referencing, etc. Group members should maintain a log of work done individually. Assessing sub-tasks will only be done in case of a situation of no-consensus on the distribution of pool of marks.

Example for distribution of a pool of marks

- Total mark for a group process: 5
- Number of group members: 3
- Total pool of marks to the group: 15 (5 x 3)
- Group members divide marks by consensus as follows:

<i>Student</i>	<i>Ann</i>	<i>Bob</i>	<i>Chris</i>	<i>Total</i>
<i>Mark</i>	6	5	4	= 15

The instructor can either take the mark as they have been divided up to add to the individual total, or use them as a ratio, depending on how the totals look like. Deadline for submitting group decision on the sharing of this pool of marks is by the end of day of each presentation via email to me, with copy to all the group members. In case I do not receive an email to this effect, the instructor will assume that all group members receive equal marks.

Teaching tools, communication and general class policies

LEARN: For this course, we will use LEARN - a web-based teaching and interacting tool that has a number of features. We will use only basic features of LEARN for the purpose of new announcements, access to course materials and readings, dropbox, and discussion. Not all presentation slides will be made available on LEARN, nor is recording of lectures permitted, so note-taking is encouraged. However, in most cases the inputs are supplemented with readings.

Laptop use in-class: Laptops are permitted in class for course-related purposes only, and not for any other purposes such as checking email, chatting, Facebook, non-course sites, games, movies, music, etc.

Cell phones and other mobile devices: Please make sure that your cell/smart phones, iPods or similar devices are inactivated during active sessions in class.

Electronic communication policy: I will only be using your UW email account to communicate to you, especially when sending group mails via LEARN. So please remember to check your UW account frequently, or set up a forwarding system to an account you use most. New announcements on LEARN will automatically be notified to you via email. You can choose to deactivate this function if you do not wish to be notified of new announcements automatically. However, in case of individual queries, I will respond (within 3 working days) by using the reply function to the email id you are writing from. I will not respond to any requests or messages sent via Facebook, SMS, or other social media.

Policy on note sharing: Teaching material uploaded on LEARN is restricted to the course participants only. Please do not circulate the same on any course note sharing websites or the like without permission.

Unclaimed assignments will be retained for two months after term grades become official in quest. After that time, they will be destroyed in compliance with UW's confidential shredding procedures.

University/Faculty Academic Policies

Academic integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check [the Office of Academic Integrity](#) for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70, Student Petitions and Grievances, Section 4](#). When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. [Check [the Office of Academic Integrity](#) for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to [Policy 71, Student Discipline](#). For typical penalties, check [Guidelines for the Assessment of Penalties](#).

Appeals: A decision made or penalty imposed under [Policy 70, Student Petitions and Grievances](#) (other than a petition) or [Policy 71, Student Discipline](#) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to [Policy 72, Student Appeals](#).

Note for students with disabilities: [AccessAbility Services](#), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with [AccessAbility Services](#) at the beginning of each academic term.

Turnitin.com: Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are

documented. Students' submissions are stored on a U.S. server, therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin® in this course.

It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit the alternate assignment.

Mental health: *The University of Waterloo, the Faculty of Environment and our Departments consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. **Please note that help is available.** Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services <http://www.uwaterloo.ca/counselling-services> is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counseling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.*

Religious observances: *Student needs to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.*

Unclaimed assignments: *Unclaimed assignments will be retained until one month after term grades become official in quest. After that time, they will be destroyed in compliance with UW's confidential shredding procedures.*

Communications with Instructor and Teaching Assistants: *All communication with students must be through either the student's University of Waterloo email account or via Learn. If a student emails the instructor or TA from a personal account they will be requested to resend the email using their personal University of Waterloo email account.*

Intellectual Property: *Students should be aware that this course contains the intellectual*

property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);*
- Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides);*
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and*
- Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).*

Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

Recording Lectures:

- Use of recording devices during lectures is only allowed with explicit permission of the instructor of the course.*
- If allowed, video recordings may only include images of the instructor and not fellow classmates.*
- Posting of videos or links to the video to any website, including but not limited to social media sites such as: facebook, twitter, etc., is strictly prohibited.*

Co-op Interviews and Class Attendance: *Co-op students are encouraged to try and choose interview time slots that result in the least amount of disruption to class schedules. When this is challenging, or not possible, a student may miss a portion of a class meeting for an interview. Instructors are asked for leniency in these situations; but, a co-op interview does not relieve the student of any requirements associated with that class meeting. When a co-op interview conflicts with an in-class evaluation mechanism (e.g., test, quiz, presentation, critique), class attendance takes precedence and the onus is on the student to reschedule the interview. CECA provides an interview conflict procedure to manage these situations. Students will be required to provide copies of their interview schedules (they may be printed from WaterlooWorks) should there be a need to verify class absence due to co-op interviews.*

Research Ethics: *The University of Waterloo requires all research conducted by its students, staff, and faculty which involves humans as participants to undergo prior ethics review and clearance through the Director, Office of Human Research and Animal Care (Office). The ethics review and clearance processes are intended to ensure that projects comply with the Office's Guidelines for Research with Human Participants (Guidelines) as well as those of provincial and federal agencies, and that the safety, rights and welfare of participants are adequately protected. The Guidelines inform researchers about ethical issues and procedures which are of concern when conducting research with humans (e.g. confidentiality, risks and benefits, informed consent process, etc.). If the development of your research proposal consists of research that involves humans as participants, then please contact the course instructor for guidance and see <https://uwaterloo.ca/research/office-research-ethics>*

LEARN: *Users can login to LEARN via: <http://learn.uwaterloo.ca/>. Use your WatIAM/Quest username and password.*