

SUSTAINABILITY IN THE CURRICULUM

Committee Membership¹

Chair: Sandra Gabriele (Vice-Provost, Innovation in Teaching and Learning, Office of the Provost)

Coordinator: Shannon Gilead (Special Projects Coordinator, Office of the Provost)

As of April 2019: Émilie Martel (Special Projects Coordinator, Office of the Provost)

Membership:

- Akira de Carlos (Sustainability Coordinator, CSU)
- Carol Hawthorne (Curriculum Developer, Centre for Teaching and Learning)
- Emily Carson-Apstein (External Coordinator, Sustainable Concordia)
- Govind Gopakumar (Associate Professor and Chair, Centre for Engineering in Society)
- James Grant (Professor, Department of Biology)
- Keroles Riad (Individualized program, Gina Cody School of Engineering and Computer Science)
- Mark Underwood (CEO, Sustainability Action Fund)
- pk langshaw (Professor and Chair, Department of Design and Computation Arts; Fellow, Loyola College for Diversity and Sustainability)

Our Vision for 2040

Concordia will work with faculty members to foster an understanding and practice of sustainability across the curriculum and to immerse students in interdisciplinary settings. Graduates will be able to link their disciplinary training to broader social, environmental, and economic issues, and be ready to enact change.

By 2040, Concordia will equip graduates to be change agents in sustainability in their respective fields.

Current Situation at Concordia

One of the many important goals for the Sustainability in the Curriculum Committee has been to identify where and how sustainability is addressed in the curriculum across the Faculties.

This work was informed by the initial work of the Sustainable Action Fund and its Sustainable Curriculum Project in 2015². This 3-year joint initiative allowed for quantifying the sustainability content based on the

¹ Note that titles reflect members' designated roles at the time of their work on the committee.

2012, 2013, and 2014 course calendars in all four Faculties, as well as facilitating the integration of sustainability content into our **academic departments'** courses and programs. The results provided Concordia's undergraduate students and prospective students with a roadmap of sustainability-related courses offered at Concordia.

The Sustainable Curriculum Project identified sustainability content in courses offered by 37 of our 57 **academic departments** and in 5.5% of all available courses at Concordia. A more recent sustainability curriculum inventory identified sustainability content in 46 out of 57 **academic departments**, and in 11.7 per cent of all available courses at Concordia. As we implement the strategies in this plan, we expect future inventories to yield ever more positive results.

Concordia currently has twenty-three undergraduate, graduate, and certificate programs that enhance sustainability understanding. In 2012, the Minor in Sustainability Studies was offered for the first time through the Loyola College for Diversity and Sustainability. Meanwhile, the **academic department** of Geography, Planning & Environment currently hosts nine interdisciplinary programs related to sustainability. In 2016, Concordia partner with the United Nations Environment Program (UNEP) to develop a Massive Open Online Course (MOOC) entitled *Wicked Problems, Dynamic Solutions: The ecosystem approach and systems thinking*.

Concordia obtained a Gold STARS rating for our 2017 submission, with a total score of 23.15 out of 40 credits in the curriculum category³. Areas for future improvement include increased availability of sustainability-focused and sustainability-related courses, the development of a sustainability-focused Major, a university-wide sustainability literacy assessment, and the identification of learning outcomes on sustainability for students graduating from Concordia; all have been addressed through the Sustainability In the Curriculum Plan.

Furthermore, Concordia University's commitment to facilitating innovative curriculum development through its Centre for Teaching and Learning's professional Curriculum Developers will act as support to the identification of sustainability learning outcomes and inform new program development in sustainability-related fields.

Finally, we recognize the importance of the the Indigenous Directions Action Plan for increasing the sustainability of our curriculum. Concordia's commitment to the decolonization and Indigenization of curriculum and pedagogy at Concordia will lead to significant and positive sustainability learning for our students.

² Sustainability Action Fund (2015). Sustainable curriculum project.
<http://www.concordia.ca/about/sustainability/study-teach/sustainable-courses.html>

³ AASHE (2017). Concordia University.
<https://reports.aashe.org/institutions/concordia-university-qc/report/2017-05-26/>

Five-year Targets and Strategies

2020-2025 | CURRICULUM ADMINISTRATION SUPPORTS

Develop and deliver supports within the administration and delivery of the curriculum

Strategy 1 Prepare resources by the Centre for Teaching and Learning that help support the development and incorporation of sustainability learning outcomes, activities, and assessments. Provide support and assistance to faculty who are seeking to increase and integrate sustainability learning outcomes into their courses.

Strategy 2 Showcase courses with sustainability content and/or faculty members who have successfully incorporated sustainability into their courses. On our website, dedicate space to promote activities that support the promotion of sustainability in the curriculum.

2020-2025 | INCREASE SUSTAINABILITY RELATED COURSES AND PROGRAMS

Achieve a 20% threshold of sustainability-related courses

Increase the number of programs available to students that have a sustainability learning outcome

Strategy 3 In collaboration with students and faculty, identify opportunities to infuse sustainability into new or existing curricula or courses as well as emerging critical themes that can be incorporated into the sustainability curriculum

Strategy 4 Encourage sustainability researchers to include sustainability research content in their courses ([Research Strategy 10](#))

Strategy 5 Develop a multi-disciplinary sustainability major across Faculties

Strategy 6 Develop a new graduate program in sustainability ([Research Strategy 3](#))

Strategy 7 Increase sustainability-related programs that are delivered across multiple formats and/or open to members of the public

Strategy 8 Develop an openly-accessible interdisciplinary course on sustainability for students who otherwise would not have access to sustainability-focused courses

Strategy 9 Create a non-credit based **immersive**, sustainability-focused educational study program

2020-2025 | PROGRESS MEASUREMENT PLAN

Measure progress of sustainability in the curriculum

A	Embed a self-reporting requirement into the course selection process for faculty, in order to map courses with sustainability content as well as sustainability courses that intersect with experiential learning opportunities. Based on the outcome, publish regular sustainable curriculum inventories.
B	Encourage departments to clearly articulate program and course-level learning outcomes, including learning outcomes related to sustainability. Embed a learning outcomes requirement into the program review process.
C	Every two years, perform a curriculum inventory of sustainability course content and program-level sustainability learning outcomes
D	Research and assess options for, and deliver, a University-wide sustainability literacy survey

Appendix A. Information table

Category of strategies		Strategy	Unit(s) responsible	Status	Project start year
Curriculum administration supports	1	Prepare resources by the Centre for Teaching and Learning that help support the development and incorporation of sustainability learning outcomes, activities, and assessments. Provide support and assistance to faculty who are seeking to increase and integrate sustainability learning outcomes into their courses	VP Innovation in Teaching and Learning (VPITL); Centre for Teaching and Learning (CTL)	Ongoing	2020-2021
	2	Showcase courses with sustainability content and/or faculty members who have successfully incorporated sustainability into their courses. On our website, dedicate space to promote activities that support the promotion of sustainability in the curriculum.	VPITL; CTL; Faculties, faculty members; Office of Sustainability	Not Started	2021-2022
Increase sustainability related courses and programs	3	In collaboration with students and faculty, identify opportunities to infuse sustainability into new or existing curricula or courses as well as emerging critical themes that can be incorporated into the sustainability curriculum	VPITL; CTL; student associations	Ongoing	2020-2021
	4	Encourage sustainability researchers to include sustainability research content in their courses	Faculties; Office of the Provost; CTL	Not Started	2021-2021
	5	Develop a multi-disciplinary sustainability major across Faculties	VPITL; Departments; Faculties	Ongoing	2021-2022
	6	Develop a new graduate program in sustainability	VPITL; School of Graduate Studies (SGS); Departments; Faculties	Not Started	2024-2025
	7	Increase sustainability-related programs that are delivered across multiple formats and/or open to members of the public	VPITL; SGS; Departments; Faculties	Ongoing	2022-2023
	8	Develop an openly-accessible interdisciplinary course on sustainability for those students lacking access to sustainability-focused courses	VPITL; Faculties; Departments	Not Started	2022-2023
	9	Create a non-credit based immersive , sustainability-focused educational study program	Office of Sustainability, in collaboration with multiple units	Not Started	2022-2023
Progress measurement plan	A	Embed a self-reporting requirement into the course selection process for faculty, in order to map courses with sustainability content as well as sustainability courses that intersect with experiential learning opportunities.	VPITL; CTL; Office of the Provost	Not started	2021-2022

Sustainability Action Plan 2020-2025 | Curriculum



Category of strategies		Strategy	Unit(s) responsible	Status	Project start year
	B	Encourage departments to clearly articulate program and course-level learning outcomes, including learning outcomes related to sustainability. Embed a learning outcomes requirement into the program review process.	Faculties; Academic Planning and Priorities Committee (APPC);	Not started	2021-2022
	C	Every two years, perform a curriculum inventory of sustainability course content and program-level sustainability learning outcomes	VPITL; Office of Sustainability	Ongoing	2020-2021
	D	Research and assess options for, and deliver, a University-wide sustainability literacy survey	VPITL; Office of Institutional Planning and Analysis (OIPA); Office of Sustainability	Ongoing	2020-2021

Appendix B. Glossary of terms⁴

Academic departments

An academic department is an administrative division of a college, university, or school faculty that is devoted to a particular academic discipline (e.g., Economics, Environmental Science, Sociology) or a closely related set of disciplines (e.g., Asian Studies or Physics & Astronomy). Departments may exist under other nomenclature and with coarser or finer divisions, depending upon each institution's context. Fields of study, programs, subject areas or the equivalent may be considered to be "departments" in the absence of traditional administrative divisions.

Immersive educational programs

Immersive educational programs are learning experiences that are designed to bridge content knowledge, skill of application, societal need, and life-long learning.

The citizen of the 21st century needs qualities and competencies not easily developed in a traditional teacher-centered classroom: the ability to work in multidisciplinary teams; an appreciation for an array of cultures; an understanding of diverse and changing societies. Immersive learning experiences require students to manifest their learning in a tangible outcome that lives on and has utility beyond the duration of the experience itself. Through such transformative experiences students should better understand societal issues in global, local, economic, or environmental contexts.

Immersive learning experiences may exhibit most or all of the following characteristics:

- Engage participants in an active learning process that is student-driven, but guided by a faculty mentor.
- Produce a tangible outcome or product, such as a business plan, policy recommendation, publication, or work of art.
- Involve a team of students, often working on a project that is interdisciplinary in nature.
- Include a community partner(s) and create an impact on the larger community as well as on the student participants.
- Focus on student learning outcomes.
- Help students define a career path or make connections to a profession or industry.

⁴ With the exception of the TLRS sustainability definition below, the definitions were obtained from the Association for the Advancement of Sustainability in Higher Education (AASHE), STARS Technical manual, version 2.2., October 2020

Program-level sustainability learning outcomes

Institution's students graduate from degree programs that require an understanding of the concept of sustainability, i.e., programs that:

- Have been identified as sustainability-focused programs in the Undergraduate Program or Graduate Program credit,
- Have adopted one or more sustainability-focused learning outcomes (i.e., student learning outcomes that explicitly focus on the concept of sustainability or the interdependence of ecological systems and social/economic systems), OR
- Require successful completion of a sustainability-focused course as identified in the Academic Courses credit.

Sustainability

AASHE definition: AASHE defines sustainability in a pluralistic and inclusive way, encompassing human and ecological health, social justice, secure livelihoods, and a better world for all generations. Major sustainability challenges include (but are not limited to) climate change, global poverty and inequality, natural resource depletion, and environmental degradation. To identify additional sustainability challenges, it may be helpful to reference the principles outlined in the Earth Charter and/or the targets embedded in the UN Sustainable Development Goals (SDGs).

Teaching Learning and Research Sustainability (TLRS) committee definition⁵: Sustainability is a mindset, a process and sets of practices that lead to reducing our ecological footprint and enhancing social and economic well-being in ways that meet the needs of the present without compromising the needs of future generations. It is defined in a pluralistic and inclusive way, encompassing human and ecological health, social justice and secure livelihoods. To be sustainable in our decisions and activities is to take a long-term perspective, recognize resource capacities and balance the interconnected nature of our environment, society and economy.

Sustainability course offerings

Sustainability course offerings include A) sustainability-focused courses and B) sustainability-inclusive courses:

- A) To count as sustainability-focused, the course title or description must indicate a primary and explicit focus on sustainability. This includes:
- Foundational courses with a primary and explicit focus on sustainability (e.g., Introduction to Sustainability, Sustainable Development, Sustainability Science).
 - Courses with a primary and explicit focus on the application of sustainability within a field (e.g., Architecture for Sustainability, Green Chemistry, Sustainable Agriculture, Sustainable Business). As sustainability is an interdisciplinary topic, such courses generally incorporate insights from multiple disciplines.
 - Courses with a primary and explicit focus on a major sustainability challenge (e.g., Climate Change Science, Environmental Justice, Global Poverty and Development, Renewable Energy Policy). The focus of such courses might be on providing knowledge and understanding of the problems and/or the tools for solving them. The course title or description does not have to use the term "sustainability" to count as sustainability-focused if the primary and explicit focus of the course is on the interdependence of ecological and social/economic systems or a major sustainability challenge. If the course title and description do not unequivocally indicate such a focus, but it is evident from the

⁵ The TLRS committee is a sub-committee of Concordia's Sustainability Governance Framework

course description or syllabus that the course incorporates sustainability challenges, issues, and concepts in a prominent way, the course may qualify as sustainability-inclusive.

B) Sustainability-inclusive courses

Courses that are not explicitly focused on sustainability may contribute towards scoring if sustainability has clearly been incorporated into course content. To count as sustainability-inclusive, the course description or rationale provided in the course inventory must indicate that the course incorporates a unit or module on sustainability or a sustainability challenge, includes one or more sustainability-focused activities, or integrates sustainability challenges, issues, and concepts throughout the course.

While a foundational course such as chemistry or sociology might provide knowledge that is useful to practitioners of sustainability, it would not be considered “sustainability-inclusive” unless the concept of sustainability or sustainability challenges and issues are specifically integrated into the course. Likewise, although specific tools or practices such as GIS (Geographic Information Systems) or engineering can be applied towards sustainability, such courses would not count unless the description or rationale provided in the inventory clearly indicates that sustainability is integrated into the course.

Appendix C. Initiatives related to the Curriculum Plan

Centre for Teaching and Learning: Curriculum Inventory Tool

Developed by Carol Hawthorne, Curriculum Developer

One of the many important goals for the Sustainability in the Curriculum Committee has been to identify where and how sustainability is addressed in the curriculum across the faculties. To achieve this, we will use the STARS criteria for measuring sustainability content in courses (courses whose primary focus is sustainability, courses with learning outcome(s) related to sustainability, courses that offer students an immersive experience with a sustainability focus) and in programs at both the undergrad and graduate level.

As a means to ensuring we capture a true snapshot of our current sustainability curriculum, we created a Sustainability Inventory Tool that is intended to be easy to use. We are relying on the input of faculty and department chairs to help us gather this data, especially for sustainability content in courses, where it is not always self-evident.

Please see Appendix D to see the entire tool.

Next-Generation Learning Project: Experiential Learning roadmap and course tracking tool

Developed by Nadia F. Bhuiyan and Alice Isac, Office of Experiential Learning

The [roadmap and course tracking tool](#) serve as models for increasing the visibility of sustainability-related courses for students.

EL roadmap

The EL roadmap tool helps students find experiential learning activities to design their own path for hands-on learning. Students can search by department and level of study to see which classes offer a hands on component, a research project or an opportunity to work in the field. Student clubs that offer an experiential learning activities are also available in the search. Once we have a reliable way to assess sustainability content in courses, it would be beneficial for students to have the option to create sustainability roadmaps as well.

Course tracking tool

The data that feeds the EL roadmap comes from a 2018 mapping project that required reporting from each academic department. In the future, the EL office hopes that departments will use a course tracking tool that was developed by IITS to communicate which courses offer EL opportunities for students more easily. With time, we are hoping that the collaboration with IITS will include a sustainability-tracking option, the criteria of which could be developed from the curriculum inventory tool in Appendix D.

Online Certificate in Applied Sustainability

The *Online Certificate in Applied Sustainability: Methods and Metrics for Developing Sustainable Societies (OCAS)* is inspired by some of the greatest advancements in environmental thought and governance in the last 15 years. Rising and unrelenting global environmental pressures require all fields and industries to adopt pragmatic methods for slowing the rate of environmental change. OCAS offers a pragmatic approach to sustainability by focusing on structural and technological fixes that enable sustainability goals to be met. The certificate is also interdisciplinary offering courses from across disciplines *and* by appealing to students from

any academic background. This dual interdisciplinarity played out in an online environment will produce an enriching and intellectually-stimulating experience for both students and faculty. The Loyola College for Diversity and Sustainability will be the home department for this degree.

Major in Leadership in Sustainability

The Department of Geography, Planning and Environment is proposing a new BA Major in Leadership in Sustainability (MiLiS). This program will build on Concordia University's reputation and community engagement and provide students an opportunity to combine transdisciplinary knowledge and leadership skills in sustainability. Graduates of this program should be able to work at the interface of science, social science, policy, and community and as agents and advocates in support of programs related to sustainability. An emphasis on leadership skills will help to separate this program from others that are related to aspects of sustainability alone.

Examples of special initiatives or potential courses offered on a provisional basis

Wasted! A Bike Tour and Advocacy Challenge Across the Montreal Wastescape

The Office of the Provost and VP, Academic sent a call for proposals around Wicked Problems. This will be an ongoing venue for proposals that might include sustainability content. Wasted! is an example of a proposal that was submitted by Elizabeth Miller (Communication Studies) and MJ Thompson (Faculty of Fine Arts). The wicked problem of poorly managed local waste is exacerbated by a global culture of *dispose-ability* and further exacerbated by China's decision to close its doors to much of the world's trash, including Montreal. Cities like Montreal are struggling to address the compounding problem of waste and how to engage the public and businesses in shifting awareness and habits. Educational institutions play a pivotal role in addressing this wicked problem.

Field School initiative: Rwanda Field School in Engineering and Sustainable Development

The Gina Cody School of Engineering and Computer Science has established ENCS 485, which is a course slot dedicated to various field school initiatives. The 2019 intensive summer course ENCS 485 – Field School in Engineering and Sustainable Development is managed by the Gina Cody School of Engineering and Computer Science, the Centre for Engineering in Society, and Concordia International. Brandiff Caron, Associate Professor and Associate Chair of the Centre for Engineering in Society, is a science and technology studies specialist, and will help students look closely at effective strategies, challenges, and lessons learned through Rwanda's ongoing campaign to achieve rapid, environmentally-responsible socioeconomic transformation on a national scale, in a post-trauma, postcolonial context marked by unprecedented climate change, dramatic population growth, and rapid urbanization.

The course will be based on contemporary scholarship around development initiatives that focus on technological intervention. An intensive program of experiential learning will feature site visits in rural and urban settings (many short trips by minibus with hostel and budget hotel accommodation), conversations with Rwandan stakeholders, and interactions with students and professors at University of Rwanda campuses in Kigali and Huye.

Appendix D. Curriculum Inventory Tool

In an effort to accurately identify the range of sustainability content in Concordia University’s curriculum, the following inventory tool could be completed by faculty.

To gather the most accurate data, faculty should fill in **one table for each course taught**, completing all criteria fields to **identify all aspects** of sustainability that exist within each course. An appendix would provide a list of keywords representing aspects of the different topical spheres of sustainability.

Sustainability Curriculum Inventory Tool

Kindly complete all fields of the chart below for **each course**.

Course Title		Required <input type="checkbox"/> Yes <input type="checkbox"/> No	Level <input type="checkbox"/> Ugrad <input type="checkbox"/> Grad
Program		Other programs in which this course is required	
Department(s)		Course Code(s)	
Sustainability Course Criteria		Please provide a brief description of the sustainability-related learning objective(s)	
1. <u>Sustainability Course:</u> A course with a primary & explicit focus on sustainability and/or understanding or solving one or more major sustainability challenges		<input type="checkbox"/> Yes <input type="checkbox"/> No	
2. <u>Course that Includes Sustainability:</u> A course with one or more of the following: <ul style="list-style-type: none"> • Primarily focussed on a topic other than sustainability, but incorporates a unit or module on sustainability or sustainability challenges OR • Includes one or more sustainability-focused activities OR • Integrates sustainability issues through the course 		<input type="checkbox"/> Yes <input type="checkbox"/> No	

Learning Outcome Criteria	<i>Please provide the stated learning outcome(s)</i>	
<p>3. <u>Sustainability Learning Outcomes:</u></p> <p>Statements that describe the specific sustainability knowledge and skills that a student is expected to have gained and demonstrated by the successful completion of a unit, course, or program.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Immersive Experience Criteria	<i>Please provide a brief description of the immersive experience*</i>	
<p>4. <u>Immersive Experience*:</u></p> <p>A study program* of one week or longer that:</p> <ul style="list-style-type: none"> • concentrates on sustainability, including its social, economic, and environmental dimensions; <p>And/or</p> <ul style="list-style-type: none"> • examines an issue or topic using sustainability as a lens. 	<input type="checkbox"/> Yes <input type="checkbox"/> No	

* The program may be credit or non-credit and offered in partnership with an outside entity

*Immersive learning experiences **may** exhibit most or all of the following characteristics:

- ◇ Engage participants in an active learning process that is student-driven, but guided by a faculty mentor.
- ◇ Produce a tangible outcome or product, such as a business plan, policy recommendation, publication, or work of art.
- ◇ Involve a team of students, often working on a project that is interdisciplinary in nature.
- ◇ Include a community partner(s) and create an impact on the larger community as well as on the student participants.
- ◇ Focus on student learning outcomes.
- ◇ Help students define a career path or make connections to a profession or industry.

Appendix E. Linkages with other stream plans

Research strategy 3: Develop an interdisciplinary graduate program in sustainability that allows co-supervision and mentorship from all four Faculties

Research strategy 10: Connect research expertise to develop sustainable practices and curriculum within the University