



# A “Green” paper for a general sustainability course requirement at the University of Winnipeg



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## Preamble

The purpose of this project was to create a “Green” paper of ideas for a general sustainability requirement (GSR), for the undergraduate level, at the University of Winnipeg. Ideas and understanding of how a GSR could benefit the UWinnipeg faculty, students, and surrounding local and global communities are presented in the Green paper as a basis to initiate further discussion.

In order to create a basis of information that is inclusive of the many stakeholders in a GSR, the Green paper draws from a variety of sources. Online websites from other universities aided in providing a context to view sustainability education in the larger academic community. UWinnipeg policy, mission, reports, and mandate documents were all considered as a basis for the overall sustainability education strategy at UWinnipeg. Attendance at IARP meetings and other working groups helped bring the general thoughts and opinions of the UWinnipeg community into the discussion. Meetings with individual members of administration and faculty identified potential logistic and political considerations that are integrated into the Green paper ideas. Personal observation and experience as a student combined with a review of UWinnipeg literature influenced the ideas in the Green paper. Finally, a review of established curriculum at UWinnipeg and other institutions was included to identify potential existing resources that could influence the creation of a GSR.

Ultimately, this subject has more facets to be explored and all of the points in the ‘Green’ paper could be vastly expanded upon. Indeed, the frustration was trying to pare this down to something manageable for the time frame of our course. Through this process I have gained a new appreciation for the general functioning of the University and for what happens in its background day-to-day administration and management. It is my sincere hope that this ‘Green’ paper will be helpful, and advance the discussion of sustainability education at the UWinnipeg. Hopefully, having a collection of ideas on paper will spark discussion and lead to action in the months and years to come. As this is an early overview of ideas, there are still many options for further study, and other considerations to be addressed in future projects or research. Below is a list of issues and questions which require further study and analysis.

- Funding and compensation options for faculty’s time to create a general sustainability requirement.
- Where does sustainability fit into academic framework for all degree programs?
- What is the outside perception of UWinnipeg grads by employers? What does a sustainability requirement do to the value of a UW degree? Will it help in choosing a UWinnipeg grad over a grad from another University?

- How will it impact UWinnipeg's ability to attract outside interest to collaborate with business etcetera?
- How will it impact UWinnipeg's ability to attract students of great potential (and add to the prestige of obtaining degree from UW)?
- Develop a literacy assessment for before and after taking a sustainability course.
- How will it impact UWinnipeg's ability to influence public policy and government (be known for active research and robust education programs)?
- How can it help attract top faculty at the cutting edge of their respective fields?

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## Executive Summary

### UWinnipeg Leadership in Sustainability

Issues relating to sustainability have become increasingly integrated into almost all aspects of local, regional and global affairs. This has created a need for current and future leaders, and all citizens, to have a comprehensive knowledge of how sustainability issues will impact them in their respective fields. This Green paper focuses on the development of a sustainability course framework with learning objectives and suggested content. The primary objectives of such a course would be to provide a platform for knowledge sharing between students of UWinnipeg and the surrounding community, through sustainability focused activities and projects. This would serve to encourage connective thinking, which could translate to informed decision making on sustainability issues. Other considerations explore cross department integration of the course, learning objectives, and the channels by which the course may become a university-wide degree requirement.

This project is in keeping with the mandates relating to sustainability, indigenization, and knowledge mobilization set forth by the UWinnipeg.<sup>1</sup> The community focus and environment created at the UWinnipeg would be enhanced by the creation of a general sustainability requirement, and provide a unique opportunity for the university to position itself among the leading institutions in sustainability education. The goal being, that graduates of the UWinnipeg may translate sustainability education into equitable and sustainable decisions, emerging as leaders that positively impact the local and global community.

*Sustainability- means the capacity of a thing, action, activity or process to be maintained indefinitely and meeting the needs of the present without compromising the ability of future generations to meet their own needs.<sup>2</sup> – (University of Winnipeg Board of Regents Sustainability Policy)*

## **Sustainability Related Courses at North American Universities**

### **General Requirements**

While most academic institutions in Canada offer sustainability courses, such courses are not typically required on a university-wide basis. Most sustainability courses are part of a department dedicated specifically to sustainability, or specific aspects of sustainability may be included as part of another degree program.<sup>3</sup>

### **Specialized Programs**

Some specialized programs, such as the School of Environment, Enterprise and Development (SEED) at the University of Waterloo, merge environmental and social goals with business and development.<sup>4</sup> While others are exploring options to require that students receive training in sustainability issues for technical degrees, as is the case in engineering at the University of Toronto.<sup>5</sup> As our perception of sustainability becomes more holistic, viewing the economy, environment, and society as interconnected; possessing knowledge of sustainability continues to become integral to the future of business and development.<sup>6</sup>

### **Current Situation**

In Canada, many of the larger universities are exploring ways in which to integrate sustainability into the university learning experience at the undergraduate level.<sup>7</sup> This has been precipitated by growing demand from the private and public sectors for personnel to have training in sustainability-related issues.<sup>6</sup> The increasing responsibility to make business 'greener' that businesses, and in a larger sense, the global economy have to culture, society and the environment continues to become a pressing issue in the global community.<sup>6</sup> Governments and business will have a need for personnel to advise on sustainability relating to environmental impact, corporate responsibility, and environmental policy. Furthermore, sustainability impacts all our lives. Indeed, those having graduated from an institution of higher learning should have the ability to make informed decisions and speak knowledgeably on the issue of sustainability. Whether a person is assessing his or her city's waste disposal plan or voting for a political candidate, having a basic knowledge of sustainability is vital to everyday decision making in today's world. This is analogous to knowledge such as, general health, like eating a balanced diet and exercising to keep one's body fit. This knowledge is imperative as each generation has the power to make decisions which will impact not only their lives, but those of many generations to come.

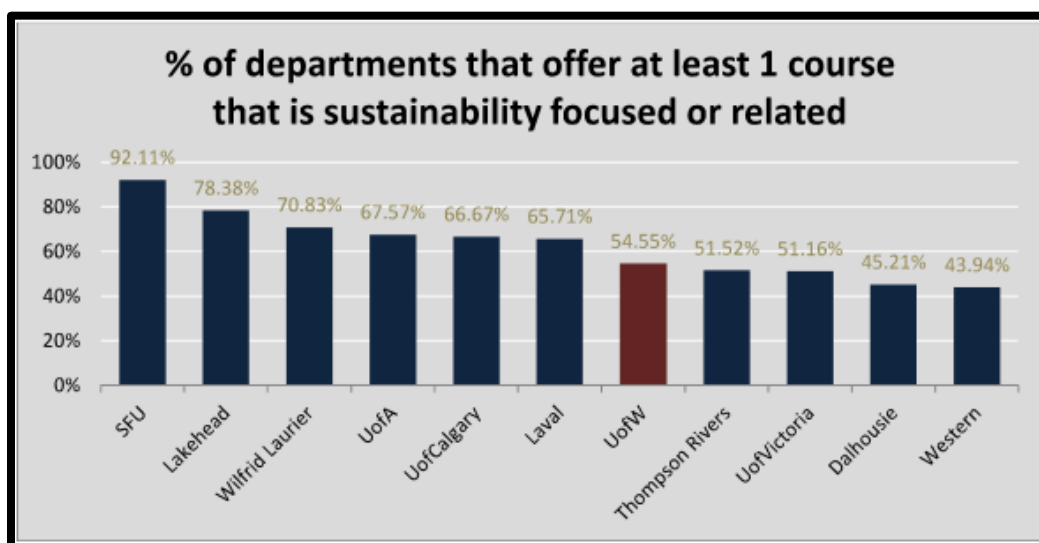
## Current Sustainability Courses at the UWinnipeg

### Courses

Currently the UWinnipeg offers 121 courses across 19 different departments (excluding Masters studies) as compiled by the Academic Working Group on Sustainability.<sup>8</sup> This shows there is a foundation already in place upon which a general sustainability requirement (GSR) could be developed.

### Departments

As can be noted in Figure 1, 54.55%, of UWinnipeg departments offer sustainability focused or related courses. The former are those in which sustainability is the primary focus. The latter are courses in which only a section or topic is related to sustainability but the primary focus is on another topic.<sup>8</sup> This is approximately in the middle of the pack compared with other Sustainability Tracking, Assessment & Rating System (STARS, explained on page 5) members, where the primary focus is on undergraduate programs and at the STARS Gold level.<sup>8</sup> As stated in the Academic Working Group on Sustainability 2014-2015 report, the departments at UWinnipeg which currently have sustainability related or focused courses are as follows, with the corresponding amounts in percent: Anthropology (6.25%), Biology (9.13%), Business (6.25%), Chemistry (1.44%), Economics (2.88%), Environmental Studies (10.10%), Geography (9.13%), History (5.77%), Philosophy (1.92%), Politics (1.92%), Sociology (0.48%)<sup>8</sup>. Depending on the format chosen, one of these departments could host the GSR or lend support to the others, listed and unlisted above, during its development.



**Figure 1:** Percent total of UWinnipeg departments that currently have sustainability related or focused courses, compared with other STARS members.

**Source:** Academic Working Group on Sustainability Annual Report 2014-2015.



## Benefits of a UWinnipeg Sustainability Course Requirement

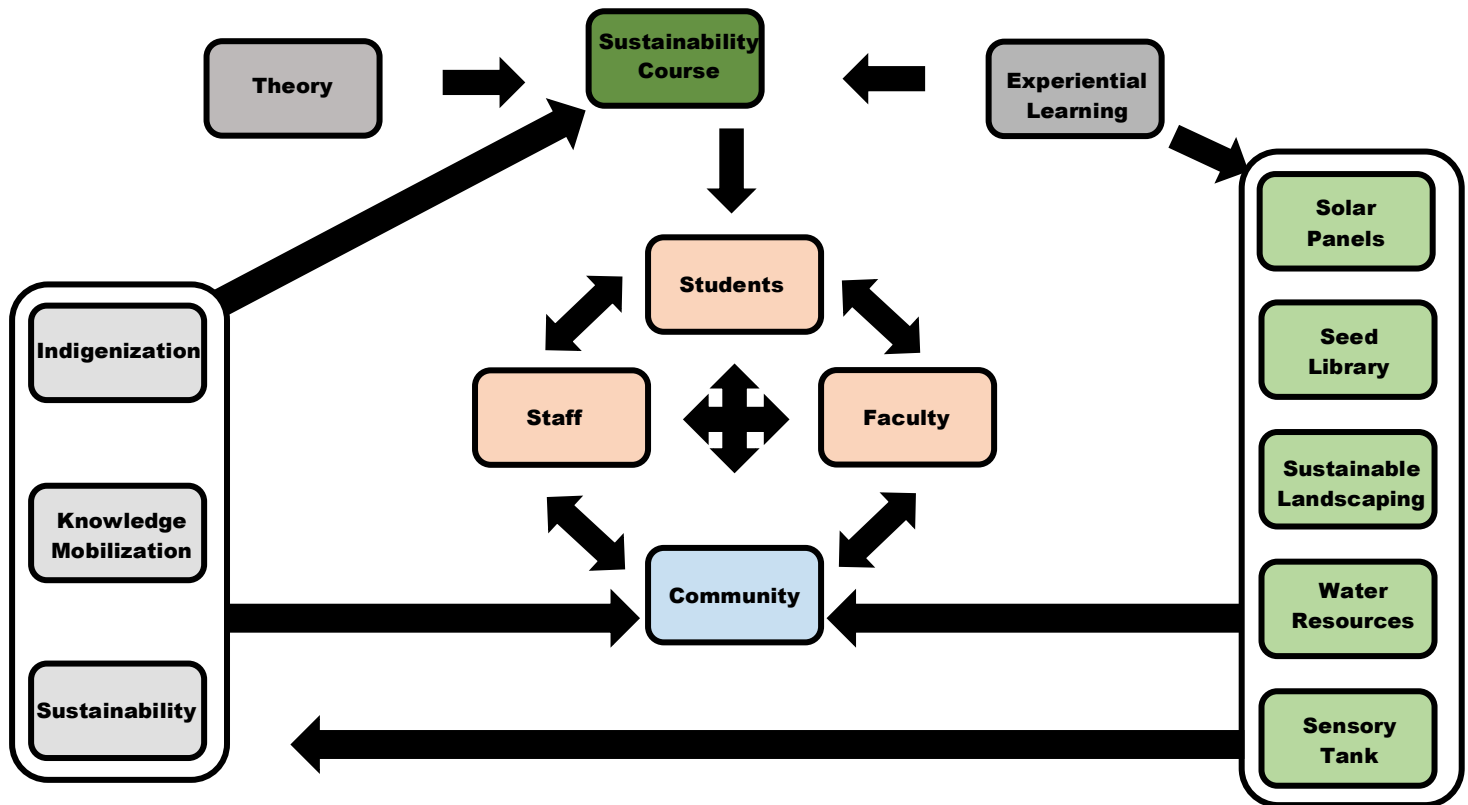
### Unique Environment

Sustainability education is interconnected with culture and geographic location. The UWinnipeg's location on Metis and Treaty One land, in the center of downtown Winnipeg, provides it with an excellent opportunity to be actively engaged with sustainability initiatives in the surrounding community.<sup>2</sup> This has allowed for cultural diversity and the evolution of Community Learning, which enhances UWinnipeg's dedication to high quality undergraduate education. At 10,000 students, the size of the UWinnipeg enables it to maintain a low student to faculty ratio. This reinforces its academic commitment, while allowing it to be flexible, adaptable, and responsive to change.<sup>2</sup> This combined with UWinnipeg's value of liberal arts education, fosters an environment that facilitates creativity and academic excellence. Finally, having a dedicated faculty which is active in research, translates to higher classroom engagement and opportunities for students to become involved in research. This effectively links teaching, research, scholarship, and pedagogy; establishing the UWinnipeg as a leader in both local and global communities.<sup>2</sup> All this creates an environment where sustainability education can be effectively communicated, through inclusive and creative teaching.

### Mission and Mandates

As an academic institution it is important to have a clear vision of how we want to be perceived, what issues will guide our decisions, and how we will translate this to continued future success. The UWinnipeg has identified indigenization, knowledge mobilization, and sustainability as key issues upon which our institutional decisions should be based. Through this, the UWinnipeg is committing its future success to building an institution that values equality, respects the rights and culture of all peoples, shares research with the public in a positive and accessible manner, and continues to find ways to lead in the creation of a more sustainable way of life. Indeed, our Growing Leaders Publication states the following: "In the practice of scholarly enquiry through both teaching and research, we provide students with breadth and depth of knowledge, the skills to communicate effectively and to make informed decisions, and understanding of the ethical problems facing our society, and an appreciation of the full range of human, aesthetic and environmental values".<sup>2</sup> The implementation of a GSR supports this mission. A GSR would allow for a strong experiential learning component (discussed below) fostering group and community interaction, resulting in an environment of inclusion and mutual understanding with a common goal (Figure 2). It would facilitate the exchange of knowledge from the University to the surrounding community in terms of projects and visual initiatives, such as solar panels on the bike

lab (Figure 2). Finally, it would provide an opportunity for students to see how they can have an impact on the world and the future through sustainability.



**Figure 2:** Interconnecting areas of a GSR. The course would link UWinnipeg and community members through campus sustainability projects, such as the current examples presented in the pale green boxes, while supporting UWinnipeg mandates.

**Source:** Created by Nadine Kanik.

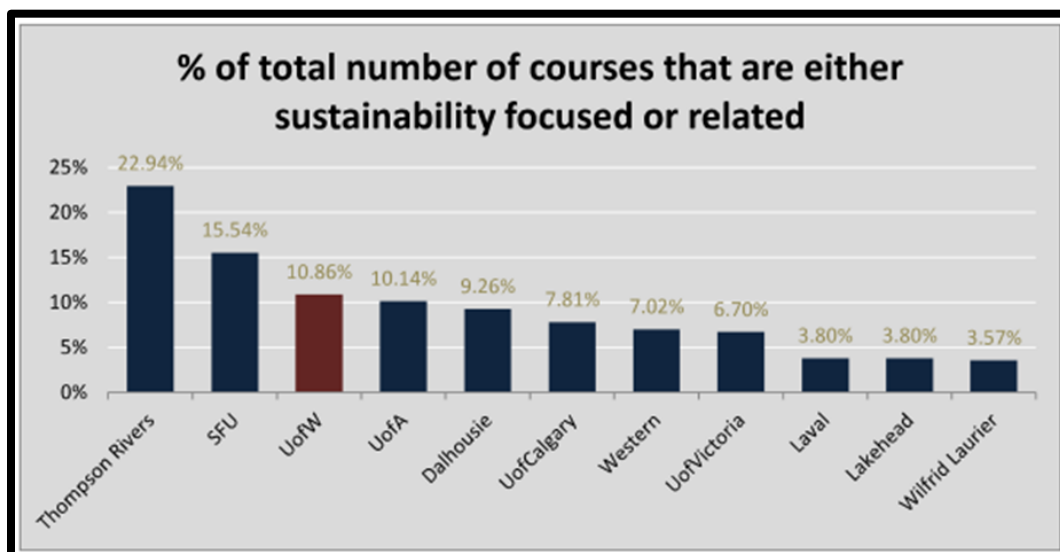
## STARS

Developed by the Association for the Advancement of Sustainability in Higher Education, in conjunction with the higher education community, STARS is a framework which allows colleges and universities to measure their sustainability through self-reporting and transparency. Credits can be received in the areas of Academics, Operations, Engagement, and Planning and Administration in order to achieve a Bronze, Silver, Gold, or Platinum rating. For an institution to receive maximum credits in Academics the following criteria must be met:<sup>10</sup>

- Sustainability courses or courses that have sustainability component must make up at least 20% of all courses offered by the institution;

- At least one sustainability or sustainability related course must be offered by a minimum of 90% of academic departments at the institution;
- The institution must have at least 15% of active researchers engaged in sustainability research;
- Of the departments that are engaged in research, 75% must include sustainability research.<sup>8</sup>

Currently the UWinnipeg has achieved a STARS rating of high silver (57.12). Figure 3 shows where the UWinnipeg ranks in terms of curriculum. While we do have a number of sustainability focused and related courses, these are currently within specific departments, and a GSR would thus expand sustainability education to new departments and audiences. Doing so would contribute to an enhancement of our STARS rating, provided that implementation could be achieved prior to our next STARS assessment in 2018.<sup>9</sup> To achieve full STARS credit, UWinnipeg would need to have 20% of its courses be sustainability related or focused (up from the present level of 10.86%) and 90% of its departments offer at least one such course (up from 54.55%).<sup>(8,10)</sup> Some advantages of an improved STARS rating include greater visibility among sustainability focused organizations, and improved capacity to recruit of faculty, staff and students committed with an interest in and commitment to sustainability.

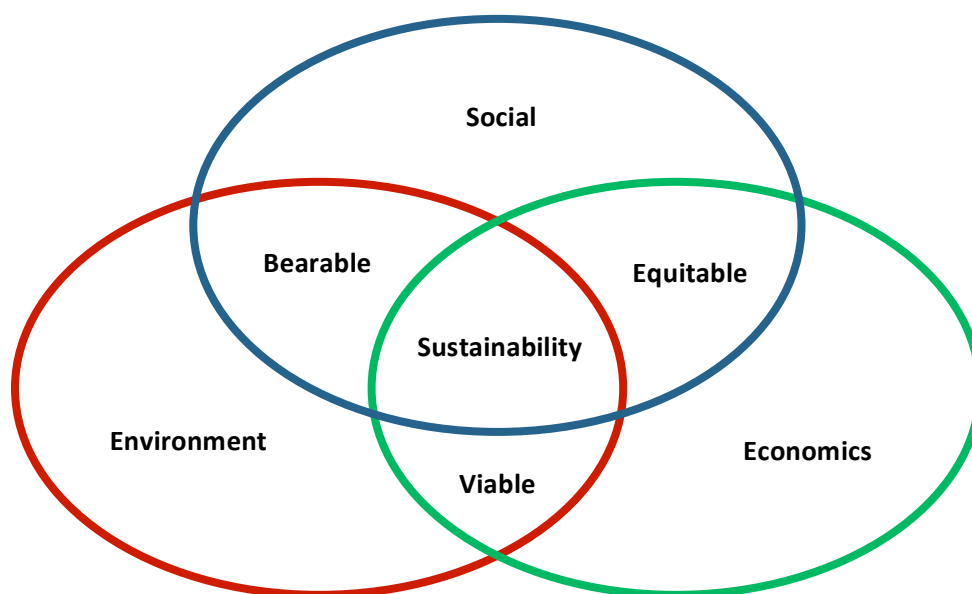


**Figure 3:** Percent of UWinnipeg courses with sustainability content, compared to other STARS members.

**Source:** Academic Working Group on Sustainability Annual Report 2014-2015.

## Collaborative Research

The establishment of a GSR has great potential for multi-disciplinary education, as today's research has a higher focus on collaboration than the specialized approach of the past century.<sup>2</sup> The issues surrounding sustainability are multi-faceted and can benefit from the research and varied perspectives of Arts, Sciences, and Business (Figure 4). As a result, sustainability issues are inter-disciplinary and have the potential to open up new ideas for collaborative research; facilitating an enhanced understanding of other research environments. The integration of community and traditional knowledge, also allows for a trans-disciplinary approach to sustainability education.<sup>18</sup>



**Figure 4:** The interrelated themes of sustainability

**Source:** International Union for the Conservation of Nature.  
In, Sustainability: A Comprehensive Foundation (2013).

## Academic Standards

As part of a larger academic community, both local and international, academic excellence is indeed the UWinnipeg's core strength.<sup>2</sup> This is an opportunity to not simply have another requirement, but to support our commitment to equip students with the analytical skills they will need to make informed sustainable decisions throughout their lives and continuing academic careers\*. By creating discussion in this area, the UWinnipeg's leadership efforts in sustainability will be showcased. Representatives of the UWinnipeg, students, faculty, and staff should all have the ability to communicate key sustainability initiatives happening at the UWinnipeg to the general public. As an institution for higher learning, we have the unique ability to channel information and awareness to the larger community through our own representatives. The impacts of

which would include long-lasting benefits for students, the UWinnipeg community, local and global communities, and ultimately future generations.

\* *“We must be mindful of the work and mandates of other post-secondary institutions in Manitoba and Canada<sup>2</sup>.”-(Strategic Directions, 2015)*

## Basic course content

### Learning Objectives

It is important to have clear learning objectives that meet the academic standards for sustainability education, as well as, addressing issues of importance to the UWinnipeg community. Below are suggested goals for learning outcomes which would be common to all frameworks. They are adapted from David Orr’s insightful thoughts on the essential knowledge that every student should graduate with.<sup>17</sup>

- Focus on higher thinking with regards to how resources and products are connected across space and time, and how society and communities are impacted by global resource management.
- Understanding relationships between actions and decisions at local and global scales, fostering multi-cultural conceptions and considerations.
- Provide basic background knowledge of key ecological, social, and economic processes that relate to current issues of sustainability.
- Bring awareness to the UWinnipeg’s leading initiatives for sustainability.
- Promote an understanding of the relationship between individual contributions and the creation of a more sustainable society. Promoting understanding of how global sustainability can be accomplished through collaboration and cultural understanding.

It should be noted that the amount of time and focus on each of these learning objectives would vary in accordance with the framework chosen, along with, the particular focus of the different degree programs.

### Content Overview

The objective of the course content is to provide students with current and historical perspectives on the roles played by governments, the private sector, individuals, and civil society relating to key aspects of sustainability. The four pillars of sustainability, Environmental, Economic, Cultural, and Social can be addressed in relation to individual student’s degree programs.<sup>13</sup> Figure 5 shows, suggested course content and topics for a GSR that is standard to most introductory sustainability course outlines.<sup>14</sup> While not all

topics need be included, a broad selection of subject material will facilitate greater relevance across disciplines.

Reference material could be developed through interdepartmental collaboration allowing for greater inclusion of UWinnipeg priorities for sustainability education.<sup>15</sup>

<b>Background Issues</b>	Impact formula, Malthusian catastrophe, Point of crisis, Neo-Malthusianism, J-curves, S-curves, Carrying capacity, happiness index
<b>Population and Culture</b>	Demographic transition, Population pyramids, Birth rate, Death rate, socioeconomic influences, impact of cultural heritage
<b>Ecosystems and Climate Change</b>	Tragedy of the Commons, Commons, Property rights, External governance, Climate vs weather, feedback loops, Milankovich cycles, greenhouse gases, insolation, albedo, snowball earth, stable isotopes
<b>Energy</b>	Peak oil, fossil fuels, renewable energy, conventional energy, energy return on energy invested
<b>Water and Agriculture</b>	Hydrologic/water cycles, agricultural yield, Green Revolution, GMOs, Precautionary principle, toxicology
<b>Environmental Policy</b>	Cost benefit/effectiveness, efficiency, social cost/benefit, externality, Pigovian tax
<b>Measuring Sustainability</b>	Sustainability metric, environmental footprint, food mile, biodiversity, ecosystem services, intrinsic value, heuristics
<b>Local Issues</b>	Winnipeg's water and waste programs, local agriculture, culture, UWinnipeg sustainability initiatives, Not in my Backyard, sustainable urbanism

**Figure 5:** Suggested content overview for a GSR.

**Source:** Adapted from, Tomkin J., Introduction to Sustainability course syllabus. University of Illinois.2016

Depending upon the framework chosen, a specific 1000 level course, or individual departmental compilations (as discussed later) at 1000-3000 levels without prerequisites would facilitate access for all UWinnipeg students, or an online program offered at the 1000 level. Regardless of the method of delivery, feedback from other institutions, faculty, students, and other stakeholders supports the use of an multi/trans-disciplinary approach to sustainability education.<sup>16</sup>

## Suggested integrative course frameworks

### Single Three Credit Course Requirement

The UWinnipeg has the unique advantage of being a smaller size, with approximately 10,000 students, and having an inclusive, imaginative environment in which the framework of a general sustainability requirement could take many forms. The most standard of the available options, would be to offer the GSR as a three credit hour course that would be managed under the Environmental or Geography departments, as these departments already include a high amount of sustainability teaching in their courses and curriculum (Figure 6). Logistics could involve assigning a rotating list of faculty to teach the course or alternatively, specific individuals who specialize in the subject matter. Additional resources would need to be allotted to whichever department the course would be assigned, due to the high volume of enrolment that would be associated with a general degree requirement. Fall, winter, and spring time slots would be advantageous to provide students with scheduling options. Content could follow agreed upon learning objectives similar to those previously stated, and be adaptable to both the faculty member's area of research and any associated experiential learning components. The experiential learning component could take the form of a community project, field trip, participation in an ongoing sustainability project, or an original group research project. As this would be required for all students to take, the financial, logistic, and administrative aspects of the experiential learning component would need to be scaled to a practical size. A possibility would be a short class walk to view a campus sustainability project, such as the solar panels soon to be installed on the bike lab or visit to the UWSA Seed Library garden plots.

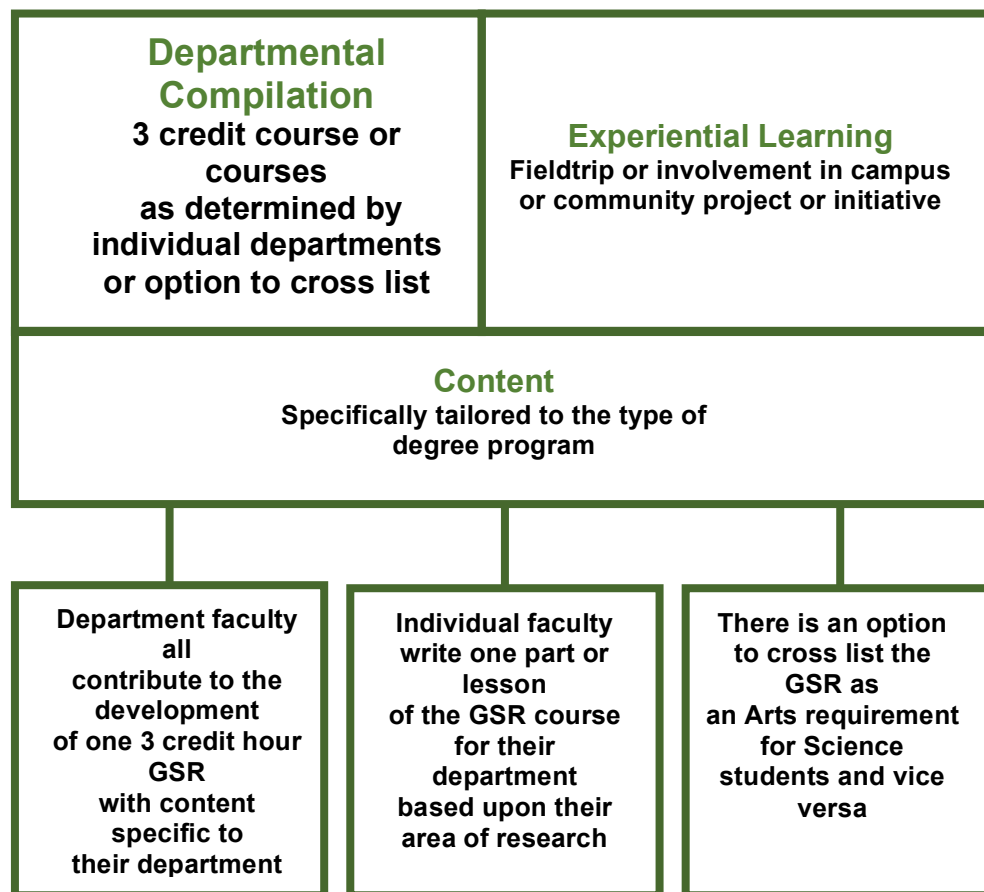
<b>Single 3 credit hour course allotted to a specific department</b>	<b>Content</b> Arts, Sciences, and Business. Developed to be inclusive of all degree programs
	<b>Experiential Learning</b> Field trip or involvement in campus or community project or initiative

Figure 6: Components of standard framework for GSR.

### Departmental Compilation

This type of format would make the development of the GSR, as it specifically relates to a particular degree program, the responsibility of each department. First, a university-wide accepted set of learning outcomes would need to be decided upon. From there, each department would be responsible to construct a course, or adapt existing courses

to facilitate the desired sustainability learning outcomes.<sup>2</sup> Alternatively, the option exists for each department to choose from existing sustainability courses and if necessary cross list with those departments on the courses that most closely relate to the specific degree program (Figure 7). An example of this would be for one course outline shared between two parallel degree programs such as, Business and Economics, and Geography and Environmental Studies. A GSR could also function as an Arts requirement for Science students and vice versa.



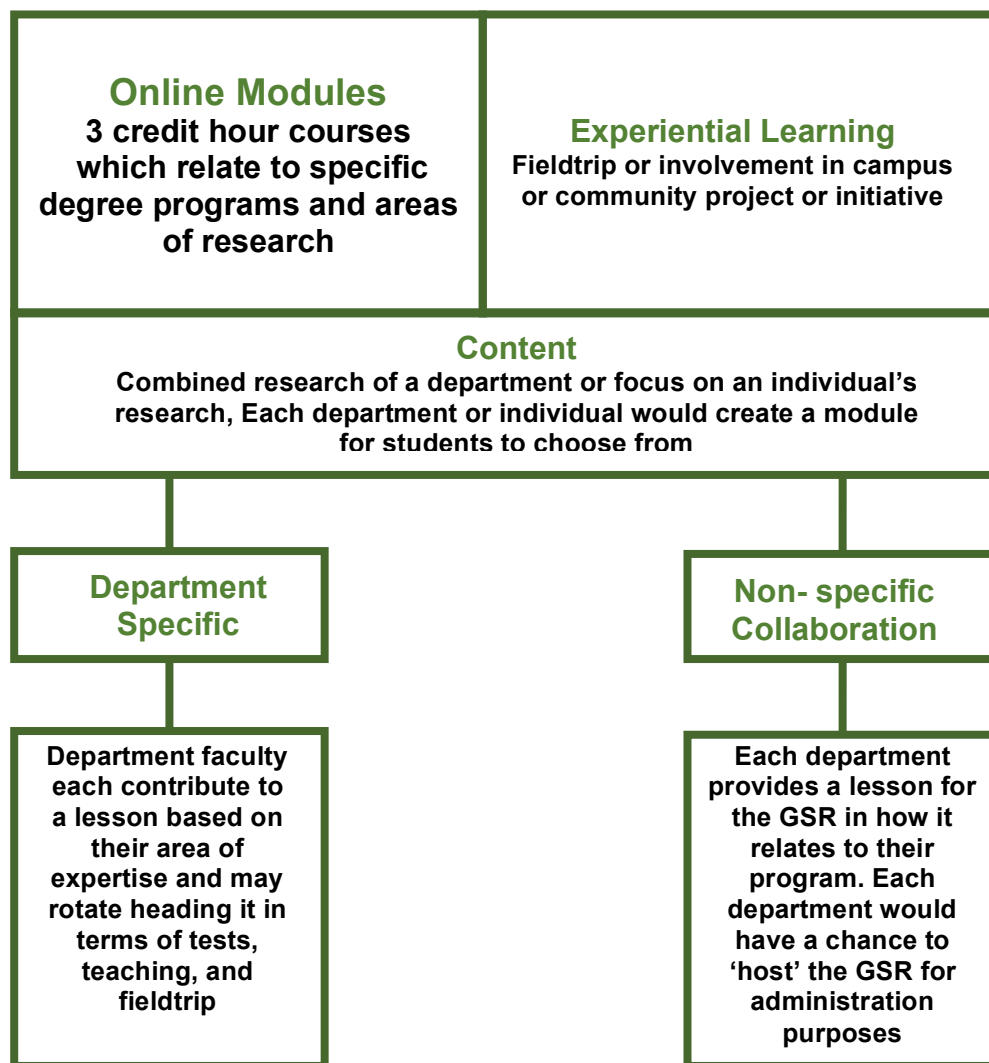
**Figure 7:** Components of Department Compilation framework.

### Online Compilation

Currently, the UWinnipeg has a number of faculty who are directly involved in research relating to sustainability.<sup>8</sup> While still a compilation from various departments, an online modular GSR course would have an emphasis on the individual researchers and their research. This would serve multiple purposes: exposing students to research opportunities, allowing faculty to showcase ongoing research, incorporating online learning, and ultimately providing sustainability education. This format has the added



benefit of being easily adaptable to new material and also having a constant inflow of updated material, as individual research by contributing faculty members progresses. A suggestion to compensate faculty for contributions to the online modules, would be to allot funds to their current research which could be used to hire students or provide other support required to advance research initiatives. In this way, the program, faculty, students, and the larger community all benefit.<sup>8</sup> (Figure 8). Depending if the GSR is department specific or university-wide and collaborative, logistics for the experiential learning component would require consideration of both time and financial resources. As the online framework would allow for prerecording of the lectures, for time and cost savings, a faculty member or facilitator would still be required to oversee the experiential learning portion of the course. This could allow for rotational overseeing of the course by multiple faculty members.



**Figure 8:** Components of an Online Module framework.

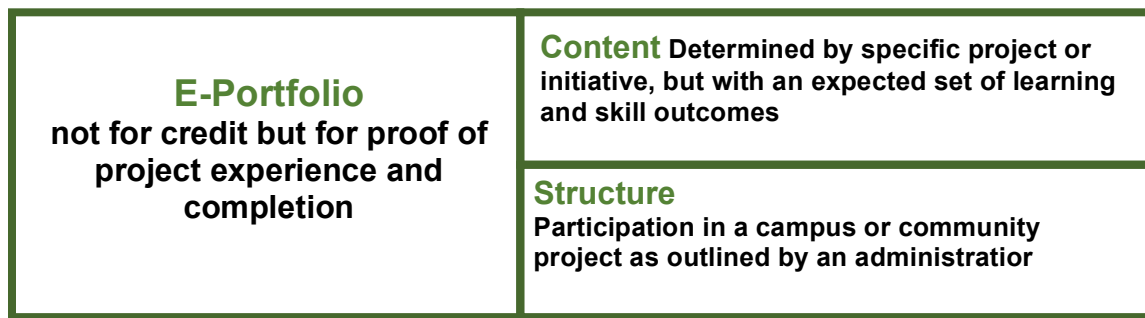
### Integrated Experiential Learning and E-portfolio

In order to prepare our graduates for success upon completion of their programs at the UWinnipeg and to also recognize the skills and abilities of those coming to the UWinnipeg as mature students, a focus on experiential learning is gaining importance. Experiential learning can be incorporated into any of the frameworks for a GSR. The UWinnipeg offers many sustainability opportunities on campus and within the community that students could participate in as part of a GSR. This would provide students the opportunity to work with other student groups, members of the UWinnipeg and also in the larger community on basic to advanced sustainability initiatives, depending on the course level and resources allotted (Figure 9).

<b>Experiential Learning</b> <b>3 credit course</b> <b>or a component of a course</b>	<b>Content</b> Would depend on the framework and degree program
	<b>Structure</b> Could be run as a course itself or as part of a classroom based course

**Figure 9:** Experiential learning course components. However, feasibility is a concern for a full 3 credit course of all experiential learning.

It would also be possible to incorporate sustainability education with the implementation of an E-portfolio, where students could receive documentation for participation and completion of experiential learning to show future employers. An initiative of this kind could involve a set number of hours working on a sustainability project on campus, or in the community under the direction of an administrator (Figure 10). The students' participatory involvement would then be documented by a certificate of completion. Provided that the students' learning meets with the university-wide agreement of sustainability learning outcomes (which would need to be decided upon) the logistics and time involved could be kept to a minimum. For example, if a student were to spend time helping in a community garden and provide documentation of how this has changed or enhanced their understanding of sustainably produced food, and be able to make the connection of how this impacts diet and food production on a global scale- perhaps the ultimate goal will have been achieved. An administrator and criteria for the assessment of each 'sustainability learning experience' would need to be in place, as this would be a large commitment for faculty to take on solely. However, the benefits would be that students gain practical experience from sustainability projects and the projects also benefit from having additional input of help and fresh ideas.. This could also be completed over the course of the students' time at university as opposed to within the convention time frame of a three or six credit hour course.

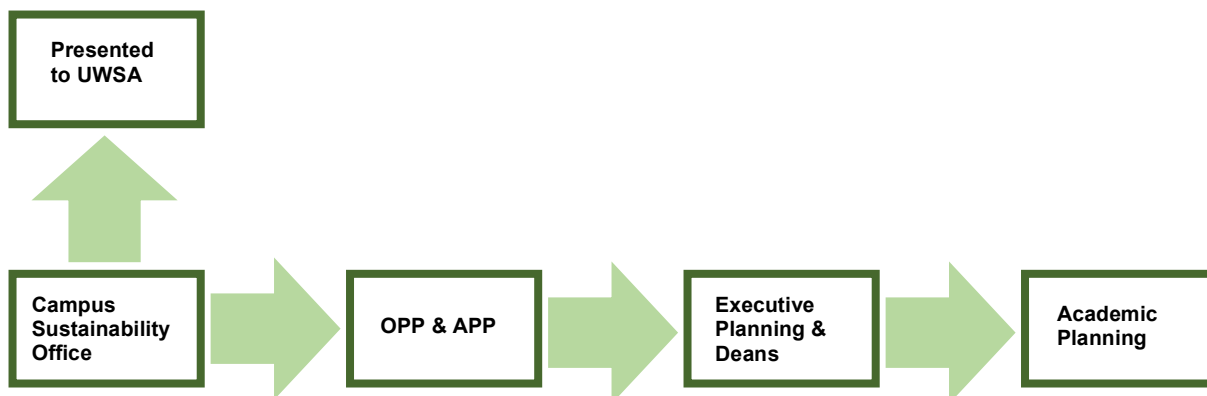


**Figure 10:** Components of an E-Portfolio framework.

## Implementation

### Pathways

In terms of decisions, recommendations, and approvals, a feasible pathway for implementation of a GSR would follow the process outlined in Figure 11 below. Starting with the Campus Sustainability Office, the ideas for a GSR would be passed to the UWSA and to Academic Planning & Priorities (APP) and Operational Planning & Priorities for supports and approvals. Final consultation at the executive and Dean's level would be followed by Academic Planning, for determination of details.



**Figure 11:** Flow of Process for approval and implementation of a GSR at the UWinnipeg.

**Source:** Created by Nadine Kanik, as suggested by Colin Russell.

### Challenges

Initial logistical challenges are to be anticipated, though having a clear picture from the start of what they are will go a long way to overcoming them. While identifying the exact challenges will ultimately depend on the framework chosen, the following are common issues or questions throughout all:

- What level should the course be?
- Where will the course be listed? Which department/ administration will be responsible for it?
- Who will teach it, and how will they be compensated for additional work or given course release from their current course load?
- Who will be involved in ultimately deciding content? For departmental and online framework modules, this will require input from departments and individual.
- Faculty support will be needed to assess the content of current courses and assist in the development of new ones if required.
- For any component involving an experiential learning project, the involvement of students in the project must meet academic and learning standards, and strive to produce tangible skills as learning outcomes. However, logistic, financial, time and teaching considerations must be feasible.

While this is not a complete list of the challenges, it summarizes those which have arisen during meetings and working groups as voiced by members of the UWinnipeg community.<sup>11</sup>

## Concluding Comments

It is vital that we as an institution for higher learning equip our graduates with the knowledge they will need to be community and global leaders. In our modern society, a basic knowledge of sustainability issues is indeed vital as the decisions made by this generation will impact not only themselves but those of generations yet to come.

We pride ourselves as being a modern, civilized and educated society, yet we allow our raw sewage to be dumped into fresh water bodies, we are largely unaware of the toxic waste spread on fields where the food that we feed our families is grown, and we continue to burn fossil fuels despite its cultural and environmental impacts. The terms we apply to our society do not match its actions.

Ultimately, no student, graduating from an institution for higher learning, should be able to plead ignorance to the responsibility that everyone on this earth has, to protect the finite resources available to us. We have one world, we cannot change our planetary address, so we must learn to live sustainably within the Earth we call home. Academia as a whole, cannot afford to miss the opportunity to pass sustainability knowledge on to everyone who passes through its doors, as it has the power to change our world and our future. Indeed, sustainability is not simply a nice idea, but directly relates to humanity's survival, as the foundation upon which all else is standing.

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