



NSRIC International School in Toronto (NIST)

London, ON, Canada

<https://www.nistonline.ca>

Linking Life with Learning

Course of Study

NSRIC International School in Toronto (NIST)

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Course Title: Fundamentals of Sustainability

Course Code: SUS20

Grade: 10

Credit Value: 1.0

Prerequisite: SUS10

Department: Sustainability

Curriculum Policy Document

Introduction to Sustainability, Grade 10

Course Description

This course is a continuation of SUS 10 (Introduction to Sustainability). Students will use their so far accomplished knowledge to understand a richer awareness into the innumerable aspects of the causes, and examples, of the problems and situations raised by climate factors. As the climate factors negatively impact sustainability, the students will learn to research the issues in detail, for example, a) air quality, air pollution and its impact on environment; b) greenhouse gases and their effects; c) water pollution from industries, hospitals, factories etc and thus impacting sustainability, d) Chemical plants, factories and refineries devastating the sustainability etc. Moreover, these days, the unacceptable managing of plastic waste has conducted plastic pollution, in both macroplastic and microplastic form, that has turned out to be pervasive in the environment. Plastic pollution has been discovered on coastlines and in surface waters, residues, soil, groundwater, indoor and outdoor air, drinking water and food. The students will do extensive research and come up with solutions so that the above-mentioned pollutions are reduced and pose positive impact to both human body, environment and overall the sustainability system.

Overall Curriculum Expectations

A. Air Quality, Air Pollution and Its Impact on Sustainability

- This unit describes that air quality, and its emission sources are relentlessly linked to its impacts on climate, human health, and ecosystems, including agriculture.
- The unit clarifies to students that air pollutants cause human health and ecosystem impacts at the community to provincial scale, whereas some of these air pollutants, such as ozone, are also effective at gripping solar radiation and warming the climate.
- The unit facilitates to the students to the link between air quality and sustainability by introducing to them the three key considerations (1) mix of emissions, (2) lifetime, and (3) benefits and trade-offs.

B. Greenhouse Gases and Impacts

- This unit demonstrates about the gradual global warming for various reasons which results in to “the Green House” effects.
- Students in this unit will learn about the possibilities of increased average global temperatures that might be good enough to shift agricultural production areas, raise sea levels to flood coastal cities and disrupt national economies by early next century.
- Along with that, this unit will help the students to learn about the threats caused by industrial gases to diminish the planet’s protective ozone shield.

C. Water Pollution and Remedies

- This unit concentrates on the study and identification of various pollutants like pharmaceuticals, hospital wastes, domestic wastes, industrial wastes, agricultural wastes etc.
- The unit demonstrates the different ways through which surface water and sub-surface water get polluted by the above-mentioned pollutants that affect tremendously both human and aquatic lives and as a consequence loses the balance of sustainability.

- Finally, the unit demonstrates some highly efficient technical methods for remediation of water pollution.

D. Chemical Pollutions in different ways affecting Sustainability

- This unit demonstrates that despite bringing immense benefits to society, chemicals, during their lifecycle, may change into severe pollutants that possibly harms humans and ecosystems.
- This also illustrates that chemical pollution has now been recognized as one of the “planetary boundaries”
- Besides, the unit describes as a first step toward a global understanding of chemical pollution; then teaches the students the on-going contribution to sound management of chemicals.
- Furthermore, it emphasizes on major gaps and challenges, and delivers preliminary thoughts on areas of interest, prospects and key aspects that may be considered in future developments helping sustainability.

E. Plastic Pollution destroying sources of drinking water as well as oceans.

- This unit describes that even the richest countries of the world cannot control widespread fires, deadly flooding due to a global warming of just 1.1 degree Celsius.
- The unit also demonstrates the ways to curb carbon emissions as much as possible through different ways by 2100.

Outline of Course Content

Unit Titles and Descriptions	Time
<p>Air Quality, Air Pollution and Its Impact on Sustainability</p> <p>In this unit, the students will be brought in contact with air quality and air pollution along with their impacts on climate, human health, and sustainability. Students will learn in detail about air pollution, for example, how some of the chemical pollutants go through chemical and physical processes to form polluted air that reflect sunlight and have an overall effect on the climate and thus sustainability.</p>	25 hours
<p>Greenhouse Gases and Impacts</p> <p>This unit is basically designed to understand causes of “Green House” and as a result to the destruction of the Ozone layer to such a level that will raise sharply cancer in human and animals. Moreover, the unit will teach the students to study and research on the disruption of the ocean’s food chain, intrusion of industrial and agricultural toxic substances into human food chain in sub-surface water level that cannot be cleaned.</p>	25 hours
<p>Water Pollution and Remedies</p> <p>Basically, this unit talks about the incidence of emerging or recently recognized pollutants in our water resources that is of great concern to the health and safety of the consuming</p>	15 hours

public and sustainability. Students after learning this unit will get an idea about the very popular remediation techniques to purify the water and reuse the treated water so that they know how to contribute for the future.	
Chemical Pollutions in different ways affecting Sustainability The unit helps the students to understand that Chemical pollution has been identified “Planetary boundary” for which continued impacts could grind down the strength of ecosystems and humanity. Since Earth has a finite capacity for chemical pollution, to control it is very important for the future generation. This is basically discussed in this unit.	25 hours
Plastic Pollution destroying sources of drinking water as well as oceans. This unit basically concentrates on the “The World Economic Forum” that envisages that by 2050 plastic waste in the oceans will overshadow the fish. Students will understand that this is a gigantic problem for marine life as a variety of animals either get entangled in plastic waste or else mistake it for food and ingest it. The unit will also enlighten on the awareness of people to limit their usage of plastic..	18 hours
Final Assessments	
Final Exam This is a proctored exam worth 30% of the final grade.	2 hours
Total	110 hours

Resources required by the student:

This course is entirely online and does not require a textbook.

Students will be required to have:

- A scanner, smart phone camera, or similar device to digitize handwritten or hand-drawn work
- Notebooks

Assessment, Evaluation and Reporting Strategies of Student Performance:

Our method of assessment and evaluation is in accordance with the Ministry of Education's Growing Success document, which serves the best interests of students. We aim to design assessment in such a way as to make it possible to gather and show evidence of learning in a variety of ways to transfer skills and responsibility to students, and to give multiple and varied opportunities to reflect on learning and receive thorough feedback.

Growing Success articulates the vision the Ministry has for the purpose and structure of assessment and evaluation techniques. There are seven fundamental principles that ensure best practices and procedures of assessment and evaluation by NIST teachers. NIST assessments and evaluations,

- are fair, transparent, and equitable for all students.
- support all students, including those with special education needs, those who are learning the language of instruction (English or French), and those who are First Nation, Métis, or Inuit.

- are carefully planned to relate to the curriculum expectations and learning goals and, as much as possible, to the interests, learning styles and preferences, needs, and experiences of all students.
- are communicated clearly to students and parents at the beginning of the course and at other points throughout the school year or course.
- are ongoing, varied in nature, and administered over a period of time to provide multiple opportunities for students to demonstrate the full range of their learning;
- provide ongoing descriptive feedback that is clear, specific, meaningful, and timely to support improved learning and achievement.
- develop students' self-assessment skills to enable them to assess their own learning, set specific goals, and plan next steps for their learning.

Throughout the units, students will complete graded work, (task-based assignments, quizzes, and practical exercises) based on topics of the past week or topical past papers, which allows the teacher to assess the students' progress. Discussions will also be initiated to stimulate the thinking skills of the student. At the end of each unit there will be a summative assessment. This allows us to measure the students' progress throughout the course. A credit is granted and recorded for this course if the student's grade is 50% or higher. The final grade will be determined as follows:

- 70% of the grade will be based upon evaluations conducted throughout the course. This portion of the grade will reflect the student's most consistent level of achievement throughout the course, although special consideration will be given to more recent evidence of achievement.
- 30% of the grade will be based on final evaluations administered at the end of the course. The final assessment may be a final exam, a final project, or a combination of both an exam and a project.

Student achievement will be communicated formally to students via an official report card. Report cards are issued at the midterm point in the course, as well as upon completion of the course. Each report card will focus on two distinct, but related aspects of student achievement. First, the achievement of curriculum expectations is reported as a percentage grade. Additionally, the course median is reported as a percentage. The teacher will also provide written comments concerning the student's strengths, areas for improvement, and next steps. Second, the learning skills are reported as a letter grade, representing one of four levels of accomplishment. The report card also indicates whether an OSSD credit has been earned. Upon completion of a course, NIST will send a copy of the report card back to the student's home school (if in Ontario) where the course will be added to the ongoing list of courses on the student's Ontario Student Transcript. The report card will also be sent to the student's home address.

Program Planning Considerations:

Program for Students with Special Needs:

Teachers who are planning a program in this subject will make an effort to take into account considerations for program planning that align with the Ontario Ministry of Education policy and initiatives in a number of important areas.

NIST is committed to ensuring that all students, especially those with special education needs, are provided with the learning opportunities and supports they require to gain the knowledge, skills, and confidence needed to succeed in a rapidly changing society. The context of special education and the provision of special education programs and services for exceptional students in Ontario are constantly evolving. Provisions included in the Canadian Charter of Rights and Freedoms and the Ontario Human Rights Code have driven some of these changes. Others have resulted from the evolution and sharing of best practices related to the teaching and assessment of students with special educational needs.

NIST pays particular attention to the following beliefs: (1) all students can succeed, (2) each student has his or her own unique patterns of learning, (3) successful instructional practices are founded in evidence-based research, tempered by experience, (4) an open and accessible learning environment with differentiated instruction are effective and interconnected means of meeting the learning or productivity needs of any group of students, (5) classroom teachers are the key educators for a student's literacy and numeracy development,

(6) classroom teachers need the support of the larger community to create a learning environment that supports students with special education needs, and finally, (7) fairness is not sameness.

The provision of special education programs and services for students at NIST rests within a legal framework. The Education Act and the regulations related to it set out the legal responsibilities pertaining to special education. They provide comprehensive procedures for the identification of exceptional pupils, for the placement of those pupils in educational settings where the special education programs and services appropriate to their needs can be delivered, and for the review of the identification of exceptional pupils and their placement.

If the student requires either accommodations, then NIST will take into account these needs of exceptional students as they are set out in the students' existing Individual Education Plan. The online courses offer a vast array of opportunities for students with special education needs to acquire the knowledge and skills required for our evolving society. Students who use alternative techniques for communication may find a venue to use these special skills in these courses. There are a number of technical and learning aids that can assist in meeting the needs of exceptional students as set out in their Individual Education Plan. In the process of taking their online course, students may use a personal amplification system, tele-typewriter (via Bell relay service), an oral or a sign-language interpreter, a scribe, specialized computer programs, time extensions, ability to change font size, oral readers, etc.

Accommodations (instructional, environmental or assessment) allow the student with special education needs access to the curriculum without changes to the course curriculum expectations. NIST will develop a Student Success Action Plan (SSAP) based on the student's existing Individual Education Plan.

Program Considerations for English Language Learners

This NIST online course provides a number of strategies to address the needs of ESL/ELD students. This online course must be flexible in order to accommodate the needs of students who require instruction in English as a second language or English literacy development. The NIST teacher considers it to be his or her responsibility to help students develop their ability to use the English language properly. Appropriate accommodations affecting the teaching, learning, and evaluation strategies in this course may be made in order to help students gain proficiency in English, since students taking English as a second language at the secondary level have limited time in which to develop this proficiency.

NIST determines the student's level of proficiency in the English Language upon registration. This information is communicated to the teacher of the course following the registration and the teacher then invokes a number of strategies and resources to support the student in the course. On a larger scale, well written content will aid ESL students in mastering not only the content of this course, but as well, the English language and all of its idiosyncrasies. NIST has created course content to enrich the student's learning experience. Many occupations in Canada require employees with capabilities in the English language. Enabling students to learn English language skills will contribute to their success in the larger world.

Environmental Education

Helping students become environmentally responsible is a role assumed by NIST. The first goal is to promote learning about environmental issues and solutions. The second goal is to engage students in practicing and promoting environmental stewardship in their community. The third goal stresses the importance of the education system providing leadership by implementing and promoting responsible environmental practices so that all stakeholders become dedicated to living more sustainably. Environmental education teaches students about how the planet's physical and biological systems work, and how we can create a more sustainable future. Good curriculum design following the resource document - The Ontario Curriculum, Grades 9-12: Environmental Education, Scope and Sequence of Expectations, 2011, will assist NIST staff to weave environmental education in and out of the online course content. This ensures that the student will have opportunities to acquire the knowledge, skills, perspectives and practices needed to become an environmentally literate citizen. The online course should provide opportunities for each student to address environmental issues in their home, in their local community, or even at the global level.

Equity & Inclusive Education

The NIST equity and inclusive education strategy focuses on respecting diversity, promoting inclusive education, and identifying and eliminating discriminatory biases, systemic barriers, and power dynamics that limit the ability of students to learn, grow, and contribute to society. Antidiscrimination education continues to be an important and integral component of this strategy.

In an environment based on the principles of inclusive education, all students, parents, caregivers, and other members of the school community - regardless of ancestry, culture, ethnicity, sex, physical or intellectual ability, race, religion, gender identity, sexual orientation, socio-economic status, or other similar factors - are welcomed, included, treated fairly, and respected. Diversity is valued, and all members of the NIST community feel safe, comfortable, and accepted. Every student is supported and inspired to succeed in a culture of high expectations for learning. In an inclusive education system, all students see themselves reflected in the curriculum, their physical surroundings, and the broader environment, so that they can feel engaged in and empowered by their learning experiences.

NIST can give students a variety of opportunities to learn about diversity and diverse perspectives. By drawing attention to the contributions of women, the perspectives of various ethno-cultural, religious, and racial communities, and the beliefs and practices of First Nations, Métis, and Inuit peoples, teachers enable NIST students from a wide range of backgrounds to see themselves reflected in the curriculum. It is essential that learning activities and materials used to support the curriculum reflect the multicultural nature of society that is Canada. In addition, NIST differentiates the instruction and assessment strategies to take into account the background and experiences, as well as the interests, aptitudes, and learning needs, of all students.

Financial Literacy Education

Financial literacy may be defined as having the knowledge and skills needed to make responsible economic and financial decisions with competence and confidence. Since making financial decisions has become an increasingly complex task in the modern world, students need to have knowledge in various areas and a wide range of skills in order to make informed decisions about financial matters. Students need to be aware of risks that accompany various financial choices. They need to develop an understanding of world economic forces as well as ways in which they themselves can respond to those influences and make informed choices. NIST considers it essential that financial literacy be considered an important attribute of a well-educated population. In addition to acquiring knowledge in such specific areas as saving, spending, borrowing, and investing, students need to develop skills in problem solving, inquiry, decision making, critical thinking, and critical literacy related to financial and other issues. The goal is to help students acquire the knowledge and skills that will enable them to understand and respond to complex issues regarding their own personal finances and the finances of their families, as well as to develop an understanding of local and global effects of world economic forces and the social, environmental, and ethical implications of their own choices as consumers. The Ministry of Education and NIST are working to embed financial literacy expectations and opportunities in all courses as appropriate, as part of the ongoing curriculum review process.

Literacy, Mathematical Literacy, and Inquiry Skills

Literacy is defined as the ability to use language and images in rich and varied forms to read, write, listen, view, represent, and think critically about ideas. It involves the capacity to access, manage, and evaluate information; to think imaginatively and analytically; and to communicate thoughts and ideas effectively. Literacy includes critical thinking and reasoning to solve problems and make decisions related to issues of fairness, equity, and social justice. Literacy connects individuals and communities and is an essential tool for personal growth and active participation in a cohesive, democratic society. Literacy involves a range of critical-thinking skills and is essential for learning across the curriculum. Literacy instruction takes different forms of emphasis in different subjects, but in all subjects, literacy needs to be explicitly taught. Literacy, mathematical literacy, and inquiry/research skills are critical to students' success in all subjects of the curriculum and in all areas of their lives.

Many of the activities and tasks that students undertake in the NIST courses involve the literacy skills relating to oral, written, and visual communication. For example, they develop literacy skills by reading, interpreting, and analysing various texts. In addition, they develop the skills needed to construct, extract information from,

and analyse various types of information presented in a variety of media forms. In all NIST courses, students are required to use appropriate and correct terminology, including that related to the concepts of disciplinary thinking, and are encouraged to use language with care and precision in order to communicate effectively. Inquiry and research are at the heart of learning in all subject areas at NIST. Students are encouraged to develop their ability to ask questions and to explore a variety of possible answers to those questions. As they advance through the grades, they acquire the skills to locate relevant information from a variety of print and electronic sources. The questioning they practiced in the early grades becomes more sophisticated as they learn that all sources of information have a particular point of view and that the recipient of the information has a responsibility to evaluate it, determine its validity and relevance, and use it in appropriate ways. The ability to locate, question, and validate information allows a student to become an independent, lifelong learner.

Cooperative Education

By applying the skills they have developed, students will readily connect their classroom learning to real-life activities in the world in which they live. Cooperative education and other workplace experiences will broaden their knowledge of employment opportunities in a wide range of fields. In addition, students will increase their understanding of workplace practices and the nature of the employer-employee relationship. NIST will try to help students link to Ministry programs to ensure that students have information concerning programs and opportunities.

Health and Safety

In order to provide a suitable learning environment for the NIST staff and students, it is critical that classroom practice and the learning environment complies with relevant federal, provincial, and municipal health and safety legislation and by-laws, including, but not limited to, the Workplace Safety and Insurance Act, the Workplace Hazardous Materials Information System (WHMIS), the Food and Drug Act, the Health Protection and Promotion Act, the Ontario Building Code, and the Occupational Health and Safety Act (OHSA). The OHSA requires all schools to provide a safe and productive learning and work environment for both students and employees.

Ethics

NIST courses provide varied opportunities for students to learn about ethical issues and to explore the role of ethics in both public and personal decision making. During the inquiry process, students may need to make ethical judgements when evaluating evidence and positions on various issues, and when drawing their own conclusions about issues, developments, and events. Teachers may need to help students in determining appropriate factors to consider when making such judgements. In addition, it is crucial that NIST teachers provide support and supervision to students throughout the inquiry process, ensuring that students engaged in an inquiry are aware of potential ethical concerns and address them in acceptable ways. Teachers at NIST will ensure that they thoroughly address the issue of plagiarism with students. In a digital world in which there is easy access to abundant information, it is very easy to copy the words of others and present them as one's own. Students need to be reminded, even at the secondary level, of the ethical issues surrounding plagiarism, and the consequences of plagiarism should be clearly discussed before students engage in an inquiry. It is important to discuss not only dishonest plagiarism but also more negligent plagiarism instances. Students often struggle to find a balance between writing in their own voice and acknowledging the work of others in the field. Merely telling students not to plagiarize, and admonishing those who do, is not enough. The skill of writing in one's own voice, while appropriately acknowledging the work of others, must be explicitly taught to all NIST courses. Using accepted forms of documentation to acknowledge sources is a specific expectation within the inquiry and skill development strand for each course.

Information and Communications Technology

Information literacy is the ability to access, select, gather, critically evaluate, and create information. Communication literacy refers to the ability to communicate information and to use the information obtained

to solve problems and make decisions. Information and communications technologies are utilized by all NIST students when the situation is appropriate within their online course. As a result, students will develop transferable skills through their experience with word processing, internet research, presentation software, and telecommunication tools, as would be expected in any other course or any business environment. Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues related to Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.