Main Criteria: Forward Education

Secondary Criteria: Ontario Curriculum

Subjects: Mathematics, Science, Technology Education

Grades: 7, 8, Key Stage 3

Forward Education

Wildfire detection with Autonomous Vehicles

Ontario Curriculum

Science

Grade **7** - Adopted: **2022**

STRAND / COURSE		**Science and Technology Grade 7**
STRAND / OVERALL EXPECTATION	**STRAND A:**	**STEM Skills and Connections - Throughout Grade 7, in connection with the learning in the Life Systems, Matter and Energy, Structures and Mechanisms, and Earth and Space Systems strands, students will:**
STAGE / SKILLS	**A1.**	**STEM Investigation and Communication Skills: use a scientific research process, a scientific experimentation process, and an engineering design process to conduct investigations, following appropriate health and safety procedures**
SUB-ORGANIZER / SPECIFIC EXPECTATION	A1.3.	use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems
SUB-ORGANIZER / SPECIFIC EXPECTATION	A1.5.	communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes

STRAND / COURSE		**Science and Technology Grade 7**
STRAND / OVERALL EXPECTATION	**STRAND A:**	**STEM Skills and Connections - Throughout Grade 7, in connection with the learning in the Life Systems, Matter and Energy, Structures and Mechanisms, and Earth and Space Systems strands, students will:**
STAGE / SKILLS	**A2.**	**Coding and Emerging Technologies: use coding in investigations and to model concepts, and assess the impact of coding and of emerging technologies on everyday life and in STEM-related fields**
SUB-ORGANIZER / SPECIFIC EXPECTATION	A2.1.	write and execute code in investigations and when modelling concepts, with a focus on planning and designing programs
SUB-ORGANIZER / SPECIFIC EXPECTATION	A2.2.	identify and describe impacts of coding and of emerging technologies, such as artificial intelligence systems, on everyday life, including skilled trades

STRAND / COURSE		**Science and Technology Grade 7**
STRAND / OVERALL EXPECTATION	**STRAND A:**	**STEM Skills and Connections - Throughout Grade 7, in connection with the learning in the Life Systems, Matter and Energy, Structures and Mechanisms, and Earth and Space Systems strands, students will:**
STAGE / SKILLS	**A3.**	**Applications, Connections, and Contributions: demonstrate an understanding of the practical applications of science and technology, and of contributions to science and technology from people with diverse lived experiences**

SUB-ORGANIZER / SPECIFIC EXPECTATION	A3.2.	investigate how science and technology can be used with other subject areas to address real-world problems

STRAND / COURSE		**Science and Technology Grade 7**
STRAND / OVERALL EXPECTATION	**STRAND B:**	**Life Systems - Interactions in the Environment By the end of Grade 7, students will:**
STAGE / SKILLS	**B1.**	**Relating Science and Technology to Our Changing World: assess the impact of human activities and technologies on the environment, and analyse ways to mitigate negative impacts and contribute to environmental sustainability**
SUB-ORGANIZER / SPECIFIC EXPECTATION	B1.2.	assess the effectiveness of various ways of mitigating the negative and enhancing the positive impact of human activities on the environment
SUB-ORGANIZER / SPECIFIC EXPECTATION	B1.3.	analyse how diverse First Nations, Métis, and Inuit practices and perspectives contribute to environmental sustainability, including by using approaches such as Two-Eyed Seeing

STRAND / COURSE		**Science and Technology Grade 7**
STRAND / OVERALL EXPECTATION	**STRAND B:**	**Life Systems - Interactions in the Environment By the end of Grade 7, students will:**
STAGE / SKILLS	**B2.**	**Exploring and Understanding Concepts: demonstrate an understanding of interactions between and among biotic and abiotic components in the environment**
SUB-ORGANIZER / SPECIFIC EXPECTATION	B2.6.	explain the differences between primary succession and secondary succession in ecosystems
SUB-ORGANIZER / SPECIFIC EXPECTATION	B2.8.	describe how different approaches to agriculture and to harvesting food from the natural environment can impact an ecosystem, and identify strategies that can be used to maintain and/or restore balance to ecosystems

STRAND / COURSE		**Science and Technology Grade 7**
STRAND / OVERALL EXPECTATION	**STRAND E:**	**Earth and Space Systems - Heat in the Environment By the end of Grade 7, students will:**
STAGE / SKILLS	**E1.**	**Relating Science and Technology to Our Changing World: assess the benefits of technologies that reduce heat loss, and analyse various social and environmental impacts of the use of energy from renewable and non-renewable sources**
SUB-ORGANIZER / SPECIFIC EXPECTATION	E1.1.	assess the social and environmental benefits of technologies that reduce heat loss in enclosed spaces or heat transfer to surrounding spaces

STRAND / COURSE		**Science and Technology Grade 7**

STRAND / OVERALL EXPECTATION	**STRAND E:**	**Earth and Space Systems - Heat in the Environment By the end of Grade 7, students will:**
STAGE / SKILLS	**E2.**	**Exploring and Understanding Concepts: demonstrate an understanding of heat as a form of energy that is associated with the movement of particles and is essential for many natural processes within Earth's systems**
SUB-ORGANIZER / SPECIFIC EXPECTATION	E2.7.	describe the role of radiation in heating and cooling Earth, and explain how greenhouse gases affect the transmission of radiated heat through the atmosphere
SUB-ORGANIZER / SPECIFIC EXPECTATION	E2.8.	identify common sources of greenhouse gases, including sources resulting from human activity, and describe how humans can reduce emissions of these gases

Ontario Curriculum

Science

Grade **8** - Adopted: **2022**

STRAND / COURSE		**Science and Technology Grade 8**
STRAND / OVERALL EXPECTATION	**STRAND A:**	**STEM Skills and Connections - Throughout Grade 8, in connection with the learning in the Life Systems, Matter and Energy, Structures and Mechanisms, and Earth and Space Systems strands, students will:**
STAGE / SKILLS	**A1.**	**STEM Investigation and Communication Skills: use a scientific research process, a scientific experimentation process, and an engineering design process to conduct investigations, following appropriate health and safety procedures**
SUB-ORGANIZER / SPECIFIC EXPECTATION	A1.3.	use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems
SUB-ORGANIZER / SPECIFIC EXPECTATION	A1.5.	communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes

STRAND / COURSE		**Science and Technology Grade 8**
STRAND / OVERALL EXPECTATION	**STRAND A:**	**STEM Skills and Connections - Throughout Grade 8, in connection with the learning in the Life Systems, Matter and Energy, Structures and Mechanisms, and Earth and Space Systems strands, students will:**
STAGE / SKILLS	**A2.**	**Coding and Emerging Technologies: use coding in investigations and to model concepts, and assess the impact of coding and of emerging technologies on everyday life and in STEM-related fields**
SUB-ORGANIZER / SPECIFIC EXPECTATION	A2.1.	write and execute code in investigations and when modelling concepts, with a focus on automating large systems in action
SUB-ORGANIZER / SPECIFIC EXPECTATION	A2.2.	identify and describe impacts of coding and of emerging technologies, such as artificial intelligence systems, on everyday life, including skilled trades

STRAND / COURSE		Science and Technology Grade 8
STRAND / OVERALL EXPECTATION	**STRAND A:**	**STEM Skills and Connections - Throughout Grade 8, in connection with the learning in the Life Systems, Matter and Energy, Structures and Mechanisms, and Earth and Space Systems strands, students will:**
STAGE / SKILLS	**A3.**	**Applications, Connections, and Contributions: demonstrate an understanding of the practical applications of science and technology, and of contributions to science and technology from people with diverse lived experiences**
SUB-ORGANIZER / SPECIFIC EXPECTATION	A3.2.	investigate how science and technology can be used with other subject areas to address real-world problems

STRAND / COURSE		Science and Technology Grade 8
STRAND / OVERALL EXPECTATION	**STRAND E:**	**Earth and Space Systems - Water Systems - By the end of Grade 8, students will:**
STAGE / SKILLS	**E2.**	**Exploring and Understanding Concepts: demonstrate an understanding of the characteristics of Earth's water systems and of factors that affect these systems**
SUB-ORGANIZER / SPECIFIC EXPECTATION	E2.4.	identify factors, including climate change, that have contributed to the melting of glaciers and polar ice-caps, and describe the effects of this phenomenon on local and global water systems