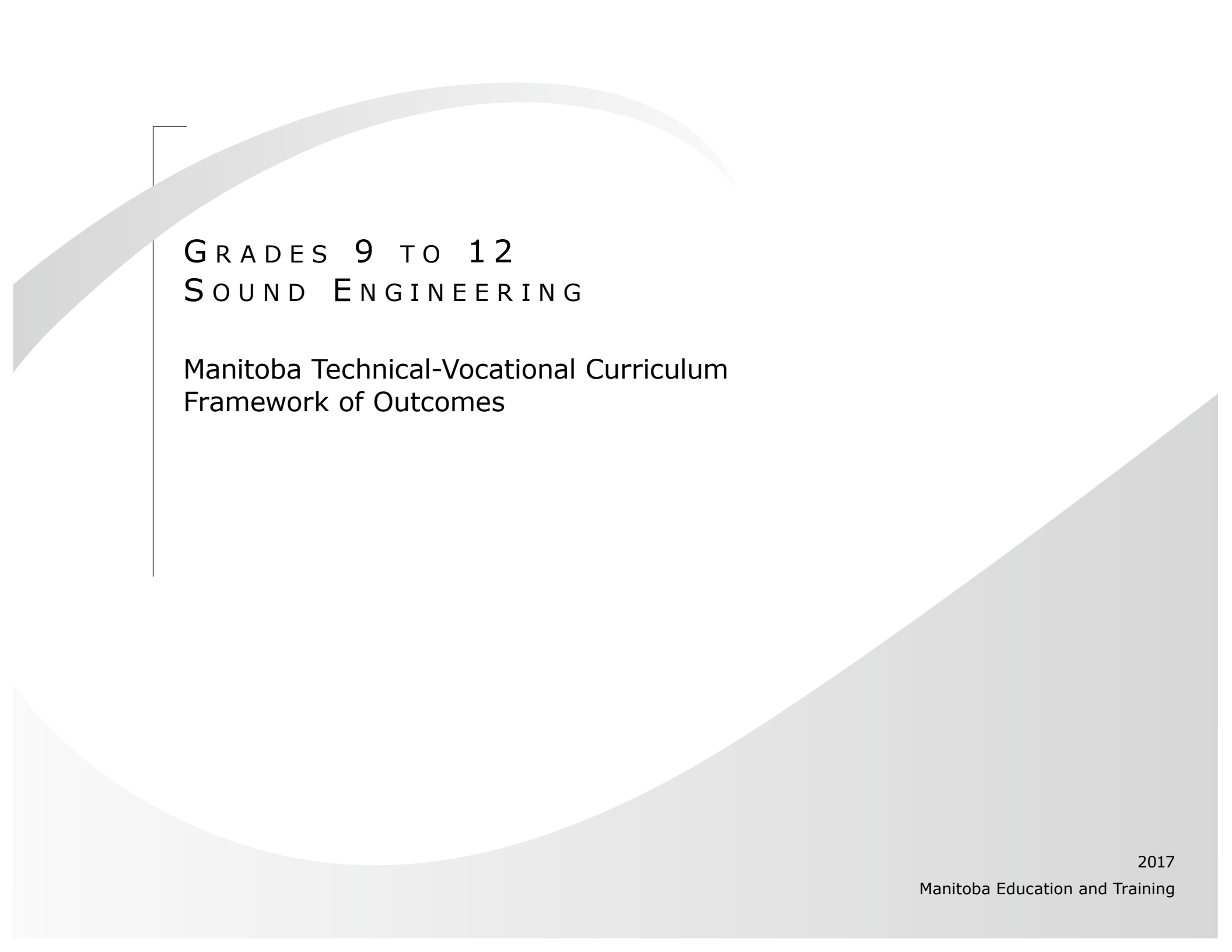


# Grades 9 to 12 Sound Engineering

Manitoba Technical-Vocational  
Curriculum Framework  
of Outcomes





GRADES 9 TO 12  
SOUND ENGINEERING

Manitoba Technical-Vocational Curriculum  
Framework of Outcomes

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This resource is available on the Manitoba Education and Training website at [www.edu.gov.mb.ca/k12/cur/teched/sy\\_tech\\_program.html](http://www.edu.gov.mb.ca/k12/cur/teched/sy_tech_program.html).

Available in alternate formats upon request.

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# TECHNICAL-VOCATIONAL EDUCATION OVERVIEW

In 2013, Manitoba Education released the document *Technical-Vocational Education Overview* (available at [www.edu.gov.mb.ca/k12/cur/teched/sy\\_tech\\_program.html](http://www.edu.gov.mb.ca/k12/cur/teched/sy_tech_program.html)) to provide the philosophical and pedagogical underpinnings for curriculum development and the teaching of courses in the Senior Years Technology Education Program.

This overview presents educators with the vision and goals of technical-vocational education (TVE) in Manitoba. Topics include the following:

- curriculum revitalization and renewal
- curriculum framework and implementation
- articulation
- assessment and reporting
- safety
- employability/essential skills and career development
- sustainable development

The TVE curriculum includes Grades 9 to 12 courses in a variety of areas, including sound engineering.

# SOUND ENGINEERING OVERVIEW

## Introduction

*Grades 9 to 12 Sound Engineering: Manitoba Technical-Vocational Curriculum Framework of Outcomes* identifies the goals, general learning outcomes (GLOs), and specific learning outcomes (SLOs) for nine sound engineering courses. This framework is intended for use in all Manitoba schools teaching sound engineering as part of the Senior Years Technology Education Program.

## Curriculum Description

This curriculum gives students the opportunity to learn the skills and knowledge required to function within the audio industry. Students will be able to block and strike a stage, perform all of the technical functions, and manage the recording of a concert or studio session.

Because sound engineers need a fundamental understanding of music and audio theory, these topics are an integral part of the curriculum. Students will study music composition and learn to play a musical instrument at an introductory level. They will also participate in a live performance in order to experience the technical aspects of sound engineering.

Students will learn the use of standard industry equipment such as microphones, mixing consoles, audio editing software, cabling, and routing equipment for front-of-house and monitoring systems.

Students who complete the curriculum will be prepared for entry-level employment in the audio industry as sound engineers, producers, arrangers, and stage technicians. Students also have the opportunity to continue their studies in sound engineering at the post-secondary level.

## Delivery of the Sound Engineering Subject Area

To receive a Senior Years Technical Education diploma, a student must complete eight departmentally developed courses from an approved technical-vocational cluster, together with 16 compulsory credits and six optional credits. The grade level in which the courses are offered are a local school-based decision, but it is highly recommended that the sequencing of credits follow the schedule set out at the end of this overview.

In most courses, the emphasis is on applied activities. For instructional purposes, the sequence of outcomes can vary based on the activities within the course. Teachers are advised to select the activities best suited to teach the outcomes, based on a variety of factors including access to resources or regional needs.

1. The curriculum is not sequential. In other words, outcomes might be taught in an order different from how they appear in the document.
2. In light of rapid changes in technology, teachers are encouraged to update their activities in order to meet the needs of students.

## Sound Engineering Goals, General Learning Outcomes (GLOs), and Specific Learning Outcomes (SLOs)

*Grades 9 to 12 Sound Engineering: Manitoba Technical-Vocational Curriculum Framework of Outcomes* identifies specific learning outcomes (SLOs) for use in all Manitoba schools teaching Grades 9 to 12 sound engineering as part of the Senior Years Technology Education Program. SLO statements define what students are expected to achieve by the end of a course.

It is essential for students to learn and to demonstrate safety practices and employability skills; therefore, some SLOs related to health and safety, as well as to employability skills, are repeated in several courses.

Please note that SLOs are not identified for the goals and GLOs that are not addressed in a given course.

The learning outcomes for each sound engineering course were developed based on the following goals and general learning outcomes:

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**Goal 1:** Describe and apply appropriate **health and safety** practices.

**GLO 1.1:** Describe and apply appropriate **health and safety** practices.

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**Goal 2:** Demonstrate an understanding of **audio theory** and **music theory**.

**GLO 2.1:** Demonstrate an understanding of **audio theory**.

**GLO 2.2:** Demonstrate an understanding of **music theory**.

---

**Goal 3:** Communicate by **making music**.

**GLO 3.1:** Communicate by **making music**.

**GLO 3.2:** Participate in a **musical performance**.

---

**Goal 4: Engineer** studio sessions and live performances.

**GLO 4.1:** Demonstrate the identification, selection, and management of **musical instruments** and **recording equipment**.

**GLO 4.2:** Perform **pre-production** sound engineering duties.

**GLO 4.3:** Demonstrate **blocking** a live performance.

**GLO 4.4: Engineer** studio sessions and live performances.

**GLO 4.5:** Perform **post-production** sound engineering duties.

**GLO 4.6:** Demonstrate **striking** a live performance.

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**Goal 5:** Describe and demonstrate the transferable **cross-curricular** knowledge and skills that are relevant to sound engineering.

**GLO 5.1: Read, interpret, and communicate** information that is relevant to sound engineering.

**GLO 5.2:** Apply the knowledge and skills from **mathematics** that are relevant to sound engineering.

**GLO 5.3:** Apply the knowledge and skills from **the sciences** that are relevant to sound engineering.

**GLO 5.4:** Apply the knowledge and skills from **other subject areas** (e.g., information and communication technology, electronics, the arts) that are relevant to sound engineering.

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**Goal 6:** Demonstrate an awareness of **sustainability** as it pertains to sound engineering.

**GLO 6.1:** Describe the impact of **human sustainability** on the well-being of those employed in the music industry and their consumers.

**GLO 6.2:** Describe the industry's **sustainability practices** and impact on the environment.

**GLO 6.3:** Describe **sustainable business practices** within the industry.

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**Goal 7:** Demonstrate an awareness of the **ethical and legal standards** as they pertain to sound engineering.

**GLO 7.1:** Demonstrate an awareness of the **ethical and legal standards** as they pertain to sound engineering.

---

**Goal 8:** Demonstrate **employability skills**.

**GLO 8.1:** Demonstrate **fundamental employability skills**.

**GLO 8.2:** Demonstrate an awareness of **cultural proficiency** and its importance in the workplace.

**GLO 8.3:** Demonstrate **critical thinking skills**.

**GLO 8.4:** Demonstrate an understanding of the **business operation** of a music organization.

---

**Goal 9:** Demonstrate an understanding of the **industry**.

**GLO 9.1:** Demonstrate an understanding of the **scope** of the music industry.

**GLO 9.2:** Demonstrate an understanding of the **educational and career opportunities**, as well as **industry associations**, in the sound engineering industry.

**GLO 9.3:** Demonstrate an understanding of **working conditions** in sound engineering.

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**Goal 10:** Demonstrate an awareness of the **evolution, technological progression, and emerging trends** in sound engineering.

**GLO 10.1:** Describe the **history, technological progression**, and **emerging trends** in sound engineering.

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## Course Descriptions

9165 Exploration of Sound Engineering  
15S/15E/15M  
10S/10E/10M

This optional course is intended for students wishing to explore sound engineering. Students will learn the importance of safe practices while performing entry-level activities related to live performances and studio work. They will also learn to play a musical instrument at an introductory level.

9166 Introduction to Sound Engineering  
20S/20E/20M

This course introduces students to the field of sound engineering. Students will learn the importance of safe practices while performing entry-level activities related to live performances and studio work. Students will learn music and audio theory, as well as how to play a musical instrument at an introductory level and participate in a live performance.

9167 Music Theory for Sound Engineering  
30S/30E/30M

Students will learn the audio and music theory required to perform the functions of a sound engineer. Topics include acoustics, frequency, pitch, psychoacoustic phenomena, Fletcher-Munson curves, intervals, and rhythms, etc. Students will incorporate the music theory into an

original composition and participate in an entry-level live performance.

9168 Sound Engineering for Studio Productions  
30S/30E/30M

Students will learn the knowledge and skills required to manage a studio recording session, including pre-production and editing.

9169 Sound Engineering for Live Performances  
30S/30E/30M

Students will learn the knowledge and skills required to manage a live performance, including blocking and striking a stage, as well as the pre-production and editing of the performance.

9170 Advanced Music Theory for Sound Engineering  
40S/40E/40M

This course expands on the knowledge and skills students acquired in 9167 Music Theory for Sound Engineering and participate in the engineering of a live performance at an intermediate level.

9171 Advanced Sound Engineering for  
Studio Productions 40S/40E/40M

This course expands on the knowledge and skills students acquired in 9168 Sound Engineering for Studio Productions.

Students will, with a minimum of supervision, initiate and manage a studio session, assuming the role of a technical director. Students will demonstrate the use of advanced techniques in editing the production.

9172 Advanced Sound Engineering for  
Live Performances 40S/40E/40M

This course expands on the knowledge and skills students acquired in 9169 Sound Engineering for Live Performances. Students will, with a minimum of supervision, initiate and manage a live performance, assuming the role of a technical director. Students will demonstrate the use of advanced techniques in editing the performance.

9173 Applied Sound Engineering 40S/40E/40M

In this course, students apply the knowledge and skills learned in previous courses to initiate and manage all aspects of studio productions and live performances at an advanced level.

## Curriculum Implementation Dates

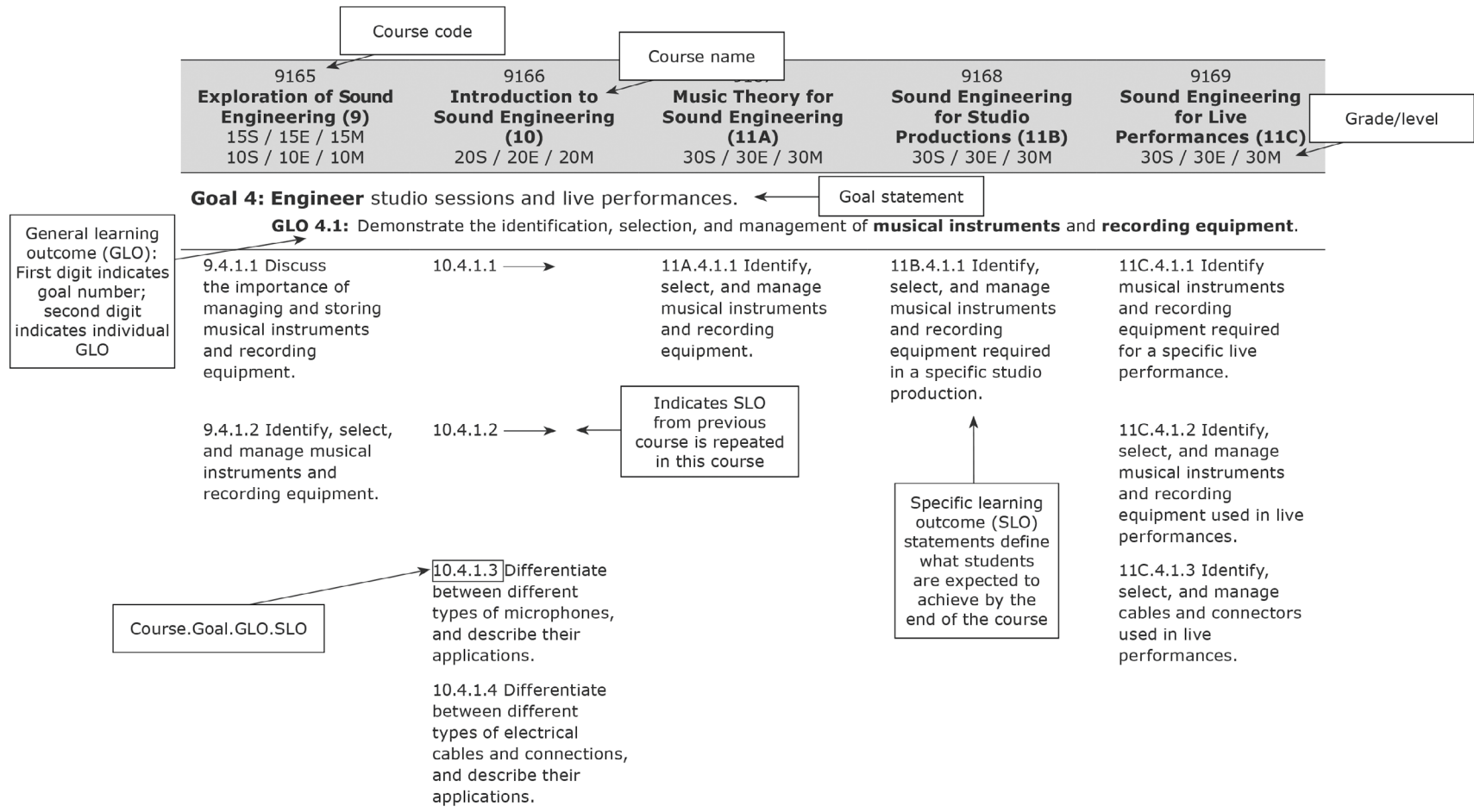
During **voluntary implementation**, teachers have the option of teaching the entire new draft curriculum as soon as Manitoba Education and Training releases it on the Technology Education website at [www.edu.gov.mb.ca/k12/cur/teched/sy\\_tech\\_program.html](http://www.edu.gov.mb.ca/k12/cur/teched/sy_tech_program.html).

They also have the option of teaching the courses from the previous curriculum. Teachers who implement courses before system-wide implementation need to ensure that students who are already taking courses from the previous curriculum achieve all SLOs with a minimum of redundancy.

Voluntary implementation of all courses began in the fall of 2015 and will continue until their respective system-wide implementation dates.

Date	System-Wide Implementation
Fall 2016	Grade 9 (optional)
Fall 2017	Grade 10
Fall 2018	Grade 11
Fall 2019	Grade 12

Under **system-wide implementation**, all teachers in Manitoba teach the new curriculum and use the new course codes. Teachers will no longer be able to use the previous course codes. Course codes are found in the *Subject Table Handbook: Technology Education* at [www.edu.gov.mb.ca/k12/docs/policy/sthte/index.html](http://www.edu.gov.mb.ca/k12/docs/policy/sthte/index.html).









GRADES 9 TO 12  
SOUND ENGINEERING

General and Specific Learning  
Outcomes by Goal



# GRADES 9–11 SOUND ENGINEERING: MANITOBA TECHNICAL- VOCATIONAL CURRICULUM FRAMEWORK OF OUTCOMES

9165 <b>Exploration of Sound Engineering (9)</b> 15S / 15E / 15M 10S / 10E / 10M	9166 <b>Introduction to Sound Engineering (10)</b> 20S / 20E / 20M	9167 <b>Music Theory for Sound Engineering (11A)</b> 30S / 30E / 30M	9168 <b>Sound Engineering for Studio Productions (11B)</b> 30S / 30E / 30M	9169 <b>Sound Engineering for Live Performances (11C)</b> 30S / 30E / 30M
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**Goal 1:** Describe and apply appropriate **health and safety** practices.

**GLO 1.1:** Describe and apply appropriate **health and safety** practices.

9.1.1.1 Create and maintain a safe and organized working environment.	10.1.1.1 →	11A.1.1.1 →	11B.1.1.1 →	11C.1.1.1 →
9.1.1.2 Give examples of workplace safety and health hazards related to sound engineering.	10.1.1.2 →	11A.1.1.2 →	11B.1.1.2 →	11C.1.1.2 →
9.1.1.3 Discuss sound pressure levels and their relationships to hearing loss.	10.1.1.3 →	11A.1.1.3 →	11B.1.1.3 →	11C.1.1.3 →
9.1.1.4 Use hearing protection as required.	10.1.1.4 →	11A.1.1.4 →	11B.1.1.4 →	11C.1.1.4 →
9.1.1.5 Demonstrate proper selection and use of a variety of personal protective equipment (PPE).	10.1.1.5 →	11A.1.1.5 →	11B.1.1.5 →	11C.1.1.5 →

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**Goal 1:** Describe and apply appropriate **health and safety** practices. *(continued)*

**GLO 1.1:** Describe and apply appropriate **health and safety** practices. *(continued)*

9.1.1.6 Outline the safety principles for working on and around electrical and sound equipment.	10.1.1.6 →	11A.1.1.6 →	11B.1.1.6 →	11C.1.1.6 →
9.1.1.7 Outline workplace fire safety principles.	10.1.1.7 →	11A.1.1.7 →	11B.1.1.7 →	11C.1.1.7 →

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**Goal 2:** Demonstrate an understanding of **audio theory** and **music theory**.

**GLO 2.1:** Demonstrate an understanding of **audio theory**.

9.2.1.1 Demonstrate a basic understanding of sound.	10.2.1.1 →	11A.2.1.1 Demonstrate an understanding of sound as it relates to music theory.
9.2.1.2 Demonstrate an understanding of the basic principles of acoustics.	10.2.1.2 →	11A.2.1.2 Demonstrate an understanding of the principles of acoustics.
9.2.1.3 Describe frequency and pitch.	10.2.1.3 →	11A.2.1.3 Describe how the theory behind frequency and pitch relates to music theory.
	10.2.1.4 Demonstrate a basic understanding of psychoacoustic phenomena.	11A.2.1.4 Demonstrate psychoacoustic phenomena by using musical instruments and/or sound equipment, and/or the human voice.

9165 <b>Exploration of Sound Engineering (9)</b> 15S / 15E / 15M 10S / 10E / 10M	9166 <b>Introduction to Sound Engineering (10)</b> 20S / 20E / 20M	9167 <b>Music Theory for Sound Engineering (11A)</b> 30S / 30E / 30M	9168 <b>Sound Engineering for Studio Productions (11B)</b> 30S / 30E / 30M	9169 <b>Sound Engineering for Live Performances (11C)</b> 30S / 30E / 30M
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**Goal 2:** Demonstrate an understanding of **audio theory** and **music theory**. *(continued)*

**GLO 2.2:** Demonstrate an understanding of **music theory**.

9.2.2.1 Define music.	10.2.2.1 →	11A.2.2.1 Compose a song.	11B.2.2.1 Demonstrate the ability to communicate effectively with studio musicians.	11C.2.2.1 Demonstrate the ability to communicate effectively with live performers.
9.2.2.2 Demonstrate an understanding of basic notation.	10.2.2.2 Identify basic intervals and rhythms by ear.	11A.2.2.2 Identify intermediate intervals and rhythms by ear.		
	10.2.2.3 Demonstrate an understanding of basic notation.	11A.2.2.3 Demonstrate an understanding of intermediate notation.		
	10.2.2.4 Describe the typical components of song composition.	11A.2.2.4 Utilize the typical components of a song to create an original composition.		
		11A.2.2.5 Play, read, and sing intermediate music notation.		
		11A.2.2.6 Relate modal theory.		

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**Goal 3:** Communicate by **making music.**

**GLO 3.1:** Communicate by **making music.**

9.3.1.1 Interpret the musical alphabet on a musical instrument.	10.3.1.1 →	11A.3.1.1 Play from memory a repertoire of chords on a musical instrument.	11B.3.1.1 Play rhythms up to an eighth note.
9.3.1.2 Demonstrate an understanding of simple chords and rhythms.	10.3.1.2 →	11A.3.1.2 Play/read/sing intermediate chord notation.	
9.3.1.3 Play a simple melody on an instrument.	10.3.1.3 →	11A.3.1.3 Develop a repertoire of chords for piano/guitar.	
9.3.1.4 Play basic piece on an instrument.	10.3.1.4 →	11A.3.1.4 Play/sing a 12-bar blues in four keys and rhythm base in one key.	
	10.3.1.5 Demonstrate the I, IV, V form on an instrument.	11A.3.1.5 Identify root position chords by ear.	
	10.3.1.6 Improvise musical ideas over a I, IV, V form.	11A.3.1.6 Play rhythms up to an eighth note.	
	10.3.1.7 Participate in a percussion ensemble (e.g., drum circle).	11A.3.1.7 Sing intervals.	

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**Goal 3:** Communicate by **making music.** *(continued)*

**GLO 3.1:** Communicate by **making music.** *(continued)*

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10.3.1.8 Participate in a non-percussion ensemble.

10.3.1.9 Sing intervals.

10.3.1.10 Sing a simple melody.

---

**GLO 3.2:** Participate in a **musical performance.**

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10.3.2.1 Demonstrate the skills required to participate in a musical performance at an entry level.

11A.3.2.1 Demonstrate the skills required to participate in an entry-level live performance.

11B.3.2.1 Demonstrate the skills required to participate in a studio session.

11C.3.2.1 Demonstrate the skills required to participate in a live performance.

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**Goal 4: Engineer** studio sessions and live performances.

**GLO 4.1:** Demonstrate the identification, selection, and management of **musical instruments** and **recording equipment**.

9.4.1.1 Discuss the importance of managing and storing musical instruments and recording equipment.	10.4.1.1 →	11A.4.1.1 Identify, select, and manage musical instruments and recording equipment.	11B.4.1.1 Identify, select, and manage musical instruments and recording equipment required in a specific studio production.	11C.4.1.1 Identify musical instruments and recording equipment required for a specific live performance.
9.4.1.2 Identify, select, and manage musical instruments and recording equipment.	10.4.1.2 →			11C.4.1.2 Identify, select, and manage musical instruments and recording equipment used in live performances.
	10.4.1.3 Differentiate between different types of microphones, and describe their applications.			11C.4.1.3 Identify, select, and manage cables and connectors used in live performances.
	10.4.1.4 Differentiate between different types of electrical cables and connections, and describe their applications.			

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**Goal 4: Engineer** studio sessions and live performances. (*continued*)

**GLO 4.1:** Demonstrate the identification, selection, and management of **musical instruments** and **recording equipment**. (*continued*)

10.4.1.5 Identify musical instruments.

10.4.1.6 Identify parts of musical instruments.

10.4.1.7 Describe the characteristics of various musical instruments and how they are used in the recording process.

**GLO 4.2:** Perform **pre-production** sound engineering duties.

9.4.2.1 Participate in a sound check.

10.4.2.1 →

11A.4.2.1 Incorporate the principles of audio theory in the pre-production sound engineering duties for a studio production and live performance.

11B.4.2.1 Perform pre-production duties for a recording studio session.

11C.4.2.1 Perform pre-production duties for recording a live performance.

10.4.2.2 Describe pre-production sound engineering duties in a studio session.

11A.4.2.2 Incorporate the principles of audio theory in the preparation of a session in a recording studio.

11B.4.2.2 Participate in a sound check for a recording studio session.

11C.4.2.2 Participate in a sound check for a live performance.

9165 <b>Exploration of Sound Engineering (9)</b> 15S / 15E / 15M 10S / 10E / 10M	9166 <b>Introduction to Sound Engineering (10)</b> 20S / 20E / 20M	9167 <b>Music Theory for Sound Engineering (11A)</b> 30S / 30E / 30M	9168 <b>Sound Engineering for Studio Productions (11B)</b> 30S / 30E / 30M	9169 <b>Sound Engineering for Live Performances (11C)</b> 30S / 30E / 30M
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**Goal 4: Engineer** studio sessions and live performances. *(continued)*

**GLO 4.2:** Perform **pre-production** sound engineering duties. *(continued)*

	10.4.2.3 Prepare for a session in a recording studio.	11A.4.2.3 Incorporate the principles of audio theory in the performance of a sound check.	11B.4.2.3 Manage audio files for a recording studio session.	11C.4.2.3 Manage audio files for a live performance.
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**GLO 4.3:** Demonstrate **blocking** a live performance.

9.4.3.1 Participate in the blocking of a simple stage.	10.4.3.1 →		11C.4.3.1 Demonstrate an understanding of live sound reinforcement terminology.
			11C.4.3.2 Demonstrate the skills required to block a stage for a performance that includes several performers and instruments.
			11C.4.3.3 Connect cables and sound reinforcement equipment.

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**Goal 4: Engineer** studio sessions and live performances. *(continued)*

**GLO 4.4: Engineer** studio sessions and live performances.

9.4.4.1 Compare and contrast sound engineering principles in a studio session and a live performance.	10.4.4.1 →	11A.4.4.1 Incorporate the principles of audio theory and music theory in the engineering of a studio production and a live performance.	11B.4.4.1 Demonstrate the skills required to engineer a two-track composition.	11C.4.4.1 Demonstrate the skills to edit, mix, and incorporate special effects (including reverb, EQ, delay, and compression) during a live performance, at an intermediate level.
9.4.4.2 Demonstrate an awareness of the steps used in audio recording.	10.4.4.2 →		11B.4.4.2 Demonstrate the ability to adjust the mixer and audio levels, based on the studio performance, at an intermediate level.	
9.4.4.3 Describe sound engineering duties in a studio session and a live performance.	10.4.4.3 →			
9.4.4.4 Participate in the sound engineering of a studio session and a live performance.	10.4.4.4 →			

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**Goal 4: Engineer** studio sessions and live performances. *(continued)*

**GLO 4.5:** Perform **post-production** sound engineering duties.

9.4.5.1 Participate in the editing of a studio session and a live performance.	10.4.5.1 Describe post-production sound engineering duties in a studio session and a live performance.	11B.4.5.1 Demonstrate the skills to edit, mix, and incorporate special effects (including reverb, EQ, delay, and compression) after a studio production, at an intermediate level.  11B.4.5.2 Demonstrate the ability to perform the mastering process for a studio production, at an intermediate level.	11C.4.5.1 Demonstrate the skills to edit, mix, and incorporate special effects (including reverb, EQ, delay, and compression) after a live performance, at an intermediate level.  11C.4.5.2 Demonstrate the ability to perform the mastering process for a live performance, at an intermediate level.
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**GLO 4.6:** Demonstrate **striking** a live performance.

9.4.6.1 Participate in the striking of a simple stage.	10.4.6.1 Strike a simple stage.	11C.4.6.1 Demonstrate the skills required to strike a stage used in a performance that includes several performers and instruments.  11C.4.6.2 Disconnect and manage cables and sound reinforcement equipment.
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**Goal 5:** Describe and demonstrate the transferable **cross-curricular** knowledge and skills that are relevant to sound engineering.

**GLO 5.1: Read, interpret, and communicate** information that is relevant to sound engineering.

11A.5.1.1 Read, interpret, and communicate information related to audio theory and music theory.

11B.5.1.1 Read, interpret, and communicate information found on equipment such as microphones, amplifiers, mixers, etc.

11C.5.1.1 →

11B.5.1.2 Read, interpret, and communicate information found in documents such as equipment owner's manuals.

11C.5.1.2 →

**GLO 5.2:** Apply the knowledge and skills from **mathematics** that are relevant to sound engineering.

10.5.2.1 Demonstrate an understanding of the relationship between fractions and rhythms.

11A.5.2.1 Demonstrate an understanding of the relationship between mathematics and music theory.

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**Goal 5:** Describe and demonstrate the transferable **cross-curricular** knowledge and skills that are relevant to sound engineering. *(continued)*

**GLO 5.2:** Apply the knowledge and skills from **mathematics** that are relevant to sound engineering. *(continued)*

10.5.2.2 Add, subtract, multiply, and divide fractions.

11A.5.2.2 Demonstrate an understanding of the use of fractions in mathematical notation.

**GLO 5.3:** Apply the knowledge and skills from **the sciences** that are relevant to sound engineering.

10.5.3.1 Demonstrate an understanding of the physics of the human auditory system and the voice mechanism.

11A.5.3.1 Demonstrate an understanding of

- the properties of sound
- sound pressure levels (SPL)
- decibels
- loudness
- power
- Fletcher/Munson curves (contours of equal loudness)
- resonance
- pitch versus frequency

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**Goal 5:** Describe and demonstrate the transferable **cross-curricular** knowledge and skills that are relevant to sound engineering. (*continued*)

**GLO 5.4:** Apply the knowledge and skills from **other subject areas** (e.g., information and communication technology, electronics, the arts) that are relevant to sound engineering.

10.5.4.1 Demonstrate an awareness of music production software.

11A.5.4.1 Input a complex score using music notation software.

11B.5.4.1 Demonstrate an understanding of the principles and fundamentals of software-driven music and audio applications.

11C.5.4.1 Demonstrate a basic understanding of the electrical principles involved in recording and live sound reinforcement.

10.5.4.2 Input a simple score using music notation software.

11B.5.4.2 Use software-driven music and audio applications to engineer a studio production.



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**Goal 6:** Demonstrate an awareness of **sustainability** as it pertains to sound engineering.

**GLO 6.1:** Describe the impact of **human sustainability** on the well-being of those employed in the music industry and their consumers.

11A.6.1.1 Demonstrate an awareness of human sustainability.

11A.6.1.2 Discuss how music contributes to human health and well-being.

11C.6.1.1 Describe ergonomically appropriate procedures to avoid injury.

11C.6.1.2 Discuss factors that lead to noise-induced hearing loss and how it can be prevented.

11C.6.1.3 Discuss risk factors and treatments related to hearing impairment.

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**Goal 7:** Demonstrate an awareness of the **ethical and legal standards** as they pertain to sound engineering.

**GLO 7.1:** Demonstrate an awareness of the **ethical and legal standards** as they pertain to sound engineering.

11B.7.1.1 Discuss and define ethics.

**Goal 8:** Demonstrate **employability** skills.

**GLO 8.1:** Demonstrate **fundamental employability skills**.

9.8.1.1 Demonstrate regular and punctual attendance.	10.8.1.1 →	11A.8.1.1 →	11B.8.1.1 →	11C.8.1.1 →
9.8.1.2 Demonstrate the ability to communicate respectfully and effectively with teachers, supervisors, co-workers, and students.	10.8.1.2 →	11A.8.1.2 →	11B.8.1.2 →	11C.8.1.2 →
9.8.1.3 Demonstrate accountability by taking responsibility for their actions.	10.8.1.3 →	11A.8.1.3 →	11B.8.1.3 →	11C.8.1.3 →
9.8.1.4 Demonstrate adaptability, initiative, and effort.	10.8.1.4 →	11A.8.1.4 →	11B.8.1.4 →	11C.8.1.4 →

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**Goal 8:** Demonstrate **employability** skills. *(continued)*

**GLO 8.1:** Demonstrate **fundamental employability skills**. *(continued)*

9.8.1.5 Demonstrate teamwork skills.	10.8.1.5 →	11A.8.1.5 →	11B.8.1.5 →	11C.8.1.5 →
9.8.1.6 Demonstrate the ability to stay on task and effectively use time in class and work environments.	10.8.1.6 →	11A.8.1.6 →	11B.8.1.6 →	11C.8.1.6 →
9.8.1.7 Demonstrate the responsible use of wireless communication devices.	10.8.1.7 →	11A.8.1.7 →	11B.8.1.7 →	11C.8.1.7 →
			11B.8.1.8 Demonstrate the ability to communicate effectively with studio musicians.	11C.8.1.8 Demonstrate the ability to communicate effectively with performers.

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**Goal 8:** Demonstrate **employability** skills. *(continued)*

**GLO 8.2:** Demonstrate an awareness of **cultural proficiency** and its importance in the workplace.

	11A.8.2.1 Define and discuss the meaning of culture.	11B.8.2.1 Discuss potentially sensitive or offensive music.	11C.8.2.1 Demonstrate an awareness of protocols for performance of First Nations, Métis, and Inuit (FNMI) music.
	11A.8.2.2 Discuss the importance of culture in the workplace.	11B.8.2.2 Discuss the place of music in various cultures.	
	11A.8.2.3 Describe elements of traditional FNMI music.	11B.8.2.3 Describe the role of traditional music in FNMI communities.	

**GLO 8.3:** Demonstrate **critical thinking skills**.

	11A.8.3.1 Discuss the need for critical thinking.	11B.8.3.1 Demonstrate critical thinking skills in solving problems related to studio recording.	11C.8.3.1 Demonstrate critical thinking skills in solving problems related to live performances.
	11A.8.3.2 Discuss the need for problem-solving skills.		

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**Goal 9:** Demonstrate an understanding of the **industry**.

**GLO 9.1:** Demonstrate an understanding of the **scope** of the music industry.

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11A.9.1.1 Demonstrate an understanding of the scope of sound engineering.

**GLO 9.2:** Demonstrate an understanding of the **educational and career opportunities**, as well as **industry associations**, in the sound engineering industry.

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11A.9.2.1 Demonstrate an awareness of the scope of careers in sound engineering.

**GLO 9.3:** Demonstrate an understanding of **working conditions** in sound engineering.

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11A.9.3.1 Describe the working conditions related to different occupations in sound engineering.

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**Goal 10:** Demonstrate an awareness of the **evolution, technological progression, and emerging trends** in sound engineering.

**GLO 10.1:** Describe the **history, technological progression, and emerging trends** in sound engineering.

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11A.10.1.1 Describe the history, technological progression, and emerging trends in sound engineering.

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GRADE 12 SOUND  
ENGINEERING

General and Specific Learning  
Outcomes by Goal





# GRADE 12 SOUND ENGINEERING: MANITOBA TECHNICAL-VOCATIONAL CURRICULUM FRAMEWORK OF OUTCOMES

9170 <b>Advanced Music Theory for Sound Engineering (12A)</b> 40S / 40E / 40M	9171 <b>Advanced Sound Engineering for Studio Productions (12B)</b> 40S / 40E / 40M	9172 <b>Advanced Sound Engineering for Live Performances (12C)</b> 40S / 40E / 40M	9173 <b>Applied Sound Engineering (12D)</b> 40S / 40E / 40M
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**Goal 1:** Describe and apply appropriate **health and safety** practices.

**GLO 1.1:** Describe and apply appropriate **health and safety** practices.

12A.1.1.1 Create and maintain a safe and organized working environment.	12B.1.1.1 →	12C.1.1.1 →	12D.1.1.1 →
12A.1.1.2 Give examples of workplace safety and health hazards related to sound engineering.	12B.1.1.2 →	12C.1.1.2 →	12D.1.1.2 →
12A.1.1.3 Discuss sound pressure levels and their relationships to hearing loss.	12B.1.1.3 →	12C.1.1.3 →	12D.1.1.3 →
12A.1.1.4 Use hearing protection as required.	12B.1.1.4 →	12C.1.1.4 →	12D.1.1.4 →
12A.1.1.5 Demonstrate proper selection and use of a variety of personal protective equipment.	12B.1.1.5 →	12C.1.1.5 →	12D.1.1.5 →

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**Goal 1:** Describe and apply appropriate **health and safety** practices. *(continued)*

**GLO 1.1:** Describe and apply appropriate **health and safety** practices. *(continued)*

12A.1.1.6 Outline the safety principles for working on and around electrical and sound equipment.	12B.1.1.6 →	12C.1.1.6 →	12D.1.1.6 →
12A.1.1.7 Outline workplace fire safety principles.	12B.1.1.7 →	12C.1.1.7 →	12D.1.1.7 →

**Goal 2:** Demonstrate an understanding of **audio theory** and **music theory**.

**GLO 2.1:** Demonstrate an understanding of **audio theory**.

12A.2.1.1 Demonstrate the ability to identify frequencies by ear.			
12A.2.1.2 Discuss how the principles of audio theory can be incorporated into sound engineering.			
12A.2.1.3 Discuss how psychoacoustic phenomena affects sound engineering.			

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**Goal 2:** Demonstrate an understanding of **audio theory** and **music theory**. *(continued)*

**GLO 2.2:** Demonstrate an understanding of **music theory**.

- 12A.2.2.1 Identify root position chords by ear.
- 12A.2.2.2 Read and play major scales in all keys.
- 12A.2.2.3 Read and play minor scales in all keys.
- 12A.2.2.4 Demonstrate an understanding of extended harmonies.
- 12A.2.2.5 Play extended harmonies on an instrument.
- 12A.2.2.6 Compose a four-part vocal/instrumental arrangement.
- 12A.2.2.7 Follow guidelines for voice leading in four-part (SATB) arrangements.
- 12A.2.2.8 Demonstrate the ability to sing intervals.

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**Goal 3:** Communicate by **making music.**

**GLO 3.1:** Communicate by **making music.**

12A.3.1.1 Relate modal theory.

12A.3.1.2 Play and sing a I, IV, V form in four keys on an instrument.

12A.3.1.3 Play and sing a rhythm base in one key.

12A.3.1.4 Demonstrate the ability to improvise.

**GLO 3.2:** Participate in a **musical performance.**

12A.3.2.1 Describe the steps required to prepare for a musical performance.

12A.3.2.2 Demonstrate, with a minimum of supervision or instruction, the steps required to prepare for a musical performance.

12A.3.2.3 Demonstrate the skills to participate in a musical performance at an intermediate level.

12D.3.2.1 Supervise, with a minimum of instruction, a musical performance.

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**Goal 4: Engineer** studio sessions and live performances.

**GLO 4.1:** Demonstrate the identification, selection, and management of **musical instruments** and **recording equipment**.

12B.4.1.1 Identify, select, and manage all of the musical instruments and recording equipment required for a studio production.

12C.4.1.1 Identify, select, and manage all of the musical instruments and recording equipment required for a live performance.

12D.4.1.1 Identify, select, and manage all of the musical instruments and recording equipment required for a studio production and a live performance.

**GLO 4.2:** Perform **pre-production** sound engineering duties.

12B.4.2.1 Perform a sound check for a recording studio session.

12C.4.2.1 Perform a sound check for a live performance.

12D.4.2.1 Initiate and perform a sound check for a live performance and a studio production.

**GLO 4.3:** Demonstrate **blocking** a live performance.

12C.4.3.1 Block a live performance.

12D.4.3.1 Initiate and perform the blocking of a live performance.

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**Goal 4: Engineer** studio sessions and live performances. *(continued)*

**GLO 4.4: Engineer** studio sessions and live performances.

	<p>12B.4.4.1 Demonstrate the skills required to engineer an ensemble group.</p> <p>12B.4.4.2 Demonstrate, at an advanced level, the ability to adjust the mixer audio levels based on the studio performance.</p>	<p>12C.4.4.1 Demonstrate, at an advanced level, the skills to edit, mix, and incorporate special effects (including reverb, EQ, delay, and compression) during a live performance.</p>	<p>12D.4.4.1 Initiate, at an advanced level, the editing, mixing, and incorporation of special effects (including reverb, EQ, delay, and compression) during a live performance.</p>
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**GLO 4.5: Perform post-production** sound engineering duties.

	<p>12B.4.5.1 Demonstrate, at an advanced level, the skills to edit, mix, and incorporate special effects (including reverb, EQ, delay, and compression) after a studio production.</p> <p>12B.4.5.2 Demonstrate, at an advanced level, the ability to perform the mastering process for a studio production.</p>	<p>12C.4.5.1 Demonstrate, at an advanced level, the skills to edit, mix, and incorporate special effects (including reverb, EQ, delay, and compression) after a live performance.</p> <p>12C.4.5.2 Demonstrate, at an advanced level, the ability to perform the mastering process for a live performance.</p>	<p>12D.4.5.1 Initiate, at an advanced level, the editing, mixing, and incorporation of special effects (including reverb, EQ, delay, and compression) after a live performance.</p> <p>12D.4.5.2 Initiate, at an advanced level, the mastering process for a live performance.</p>
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**Goal 4: Engineer** studio sessions and live performances. *(continued)*

**GLO 4.6:** Demonstrate **striking** a live performance.

12C.4.6.1 Demonstrate the skills required to strike a stage used in a performance that includes several performers and instruments.

12D.4.6.1 Initiate the striking of a stage used in a performance that includes several performers and instruments.

**Goal 5:** Describe and demonstrate the transferable **cross-curricular** knowledge and skills that are relevant to sound engineering.

**GLO 5.1: Read, interpret, and communicate** information that is relevant to sound engineering.

12A.5.1.1 Read, interpret, and communicate information related to music theory.

12D.5.1.1 Read, interpret, and communicate information found in equipment manuals and on equipment.

**GLO 5.2:** Apply the knowledge and skills from **mathematics** that are relevant to sound engineering.

12A.5.2.1 Demonstrate an awareness of the exponential relationships found in music (e.g., exponential changes in frequency as the sound moves from one note to the octave above).

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**Goal 5:** Describe and demonstrate the transferable **cross-curricular** knowledge and skills that are relevant to sound engineering. *(continued)*

**GLO 5.3:** Apply the knowledge and skills from **the sciences** that are relevant to sound engineering.

12A.5.3.1 Describe how sound engineering is related to the mechanism of the human voice.

**GLO 5.4:** Apply the knowledge and skills from **other subject areas** (e.g., information and communication technology, electronics, the arts) that are relevant to sound engineering.

12B.5.4.1 Demonstrate proficiency in the use of music production software.

12C.5.4.1 →

12D.5.4.1 →

**Goal 6:** Demonstrate an awareness of **sustainability** as it pertains to sound engineering.

**GLO 6.1:** Describe the impact of **human sustainability** on the well-being of those employed in the music industry and their consumers.

12D.6.1.1 Demonstrate the ability to reflect on a live performance or studio production and how it might affect the well-being of the artists and listeners.



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**Goal 6:** Demonstrate an awareness of **sustainability** as it pertains to sound engineering. *(continued)*

**GLO 6.2:** Describe the industry’s **sustainability practices** and impact on the environment.

12B.6.2.1 Discuss the lifespan of electronic devices.

12C.6.2.1 Discuss the impact of modern digital electronic equipment on the environment.

**GLO 6.3:** Describe **sustainable business practices** within the industry.

12B.6.3.1 Define and discuss the concept of sustainable business practices.

12D.6.3.1 Discuss the types of business practices that promote the long-term viability of businesses in the music industry.

**Goal 7:** Demonstrate an awareness of the **ethical and legal standards** as they pertain to sound engineering.

**GLO 7.1:** Demonstrate an awareness of the **ethical and legal standards** as they pertain to sound engineering.

12A.7.1.1 Discuss ethical considerations in the music industry.

12B.7.1.1 Discuss the consequences of unethical behaviour.

12D.7.1.1 Discuss the use of copyrighted material in the music industry.

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**Goal 8: Demonstrate employability skills.**

**GLO 8.1: Demonstrate fundamental employability skills.**

12A.8.1.1 Demonstrate regular and punctual attendance.	12B.8.1.1 →	12C.8.1.1 →	12D.8.1.1 →
12A.8.1.2 Demonstrate the ability to communicate respectfully and effectively with teachers, supervisors, co-workers, and students.	12B.8.1.2 →	12C.8.1.2 →	12D.8.1.2 →
12A.8.1.3 Demonstrate accountability by taking responsibility for their actions.	12B.8.1.3 →	12C.8.1.3 →	12D.8.1.3 →
12A.8.1.4 Demonstrate adaptability, initiative, and effort.	12B.8.1.4 →	12C.8.1.4 →	12D.8.1.4 →
12A.8.1.5 Demonstrate teamwork skills.	12B.8.1.5 →	12C.8.1.5 →	12D.8.1.5 →
12A.8.1.6 Demonstrate the ability to stay on task and effectively use time in class and work environments.	12B.8.1.6 →	12C.8.1.6 →	12D.8.1.6 →

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**Goal 8:** Demonstrate **employability skills**. *(continued)*

**GLO 8.1:** Demonstrate **fundamental employability skills**. *(continued)*

12A.8.1.7 Demonstrate the responsible use of wireless communication devices.	12B.8.1.7 →	12C.8.1.7 →	12D.8.1.7 →  12D.8.1.8 Demonstrate the ability to communicate effectively with studio musicians and performing artists.
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**GLO 8.2:** Demonstrate an awareness of **cultural proficiency** and its importance in the workplace.

12B.8.2.1 Discuss the place of First Nations, Métis, and Inuit (FNMI) artists in the Canadian music industry.	12C.8.2.1 Demonstrate an awareness of contemporary FNMI music.	12D.8.2.1 Identify elements of traditional FNMI music in the works of contemporary artists.
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**GLO 8.3:** Demonstrate **critical thinking skills**.

12D.8.3.1 Use critical thinking skills to solve problems related to the supervision of a musical performance.
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**Goal 8:** Demonstrate **employability skills**. *(continued)*

**GLO 8.4:** Demonstrate an understanding of the **business operation** of a music organization.

12C.8.4.1 Discuss the requirements for companies to generate profits in order to continue operating.

12D.8.4.1 Demonstrate an understanding of the business operation of a music organization (e.g., billing customers).

**Goal 9:** Demonstrate an understanding of the **industry**.

**GLO 9.1:** Demonstrate an understanding of the **scope** of the music industry.

12B.9.1.1 Discuss the place of sound engineering in the Canadian economy.

12D.9.1.1 Demonstrate an understanding of the scope of the music industry.

**GLO 9.2:** Demonstrate an understanding of the **educational and career opportunities**, as well as **industry associations**, in the sound engineering industry.

12B.9.2.1 Discuss educational and career opportunities in sound engineering for studio productions.

12C.9.2.1 Discuss educational and career opportunities in sound engineering for live performances.

12D.9.2.1 Research career opportunities in sound engineering.

12D.9.2.2 Research educational opportunities in sound engineering.

12D.9.2.3 Develop a digital audio portfolio.

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**Goal 9:** Demonstrate an understanding of the **industry**. *(continued)*

**GLO 9.3:** Demonstrate an understanding of **working conditions** in sound engineering.

	12B.9.3.1 Discuss the working conditions for studio sound engineers.	12C.9.3.1 Discuss the working conditions for sound engineers working on live performances.	12D.9.3.1 Research the working conditions for sound engineers working on live performances and studio productions.
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**Goal 10:** Demonstrate an awareness of the **evolution, technological progression, and emerging trends** in sound engineering.

**GLO 10.1:** Describe the **history, technological progression, and emerging trends** in sound engineering.

	12B.10.1.1 Describe the history, technological progression, and emerging trends in sound engineering for studio productions.	12C.10.1.1 Describe the history, technological progression, and emerging trends in sound engineering for live performances.	
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