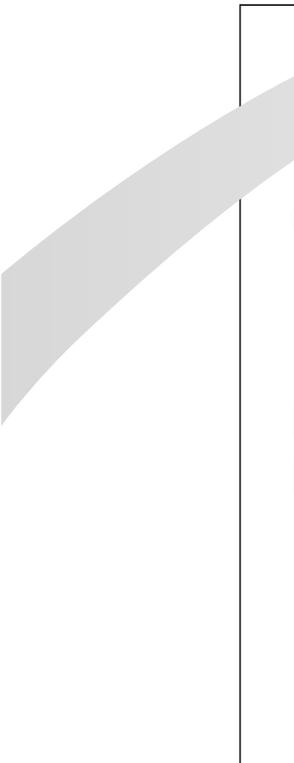




Grades 9 to 12 Photography

Manitoba Technical-Vocational
Curriculum Framework
of Outcomes



GRADES 9 TO 12
PHOTOGRAPHY

Manitoba Technical-Vocational Curriculum
Framework of Outcomes

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Any websites referenced in this document are subject to change. Educators are advised to preview and evaluate websites and online resources before recommending them for student use.

This resource is available on the Manitoba Education and Training website at <www.edu.gov.mb.ca/k12/cur/teched/sy_tech_program.html>.

Available in alternate formats upon request.

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	James Rogoway	Sturgeon Heights Regional Secondary School St. James-Assiniboia School Division	
	Mirek Weichsel	Kildonan East Collegiate River East Transcona School Division	
	Paul Reimer	Steinbach Regional Secondary School Hanover School Division	
	Ron Gilfillan	Technical Vocational High School Winnipeg School Division	
	Manitoba Education and Training, School Programs Division Staff	Carole Bilyk Project Manager	Development Unit Instruction, Curriculum and Assessment Branch
		Louise Boissonneault Coordinator	Document Production Services Unit Educational Resources Branch
		John Finch Coordinator	Learning Support and Technology Unit Instruction, Curriculum and Assessment Branch
		Gilles Landry Project Leader	Development Unit Instruction, Curriculum and Assessment Branch
		Daniel Lemieux Consultant	Learning Support and Technology Unit Instruction, Curriculum and Assessment Branch
Diane Courcelles Publications Editor		Document Production Services Unit Educational Resources Branch	
Ken Nimchuk Consultant		Learning Support and Technology Unit Instruction, Curriculum and Assessment Branch	
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TECHNICAL-VOCATIONAL EDUCATION OVERVIEW

In 2013, Manitoba Education and Training released the document *Technical-Vocational Education Overview* 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 of programming
- 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 photography.

PHOTOGRAPHY OVERVIEW

Introduction

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

Curriculum Description

The high school photography technical-vocational program focuses on developing the knowledge, skills, and attitudes required to have a successful career in photography.

Technological advances in recent years have revolutionized the growing field of photography. Photographers now need advanced skills in order to operate the highly technical equipment used in professional photography.

Students will be exposed to the professional aspects of making a living in photography, learning both the technical and artistic features of the profession.

Graduates of the program will be equipped with the knowledge, skills, and attitudes required to find entry-level employment in the industry.

Through demonstrations, critiques, and projects, students will be prepared for entry-level employment in studio or commercial photography. Careers in photography include the following:

- photographic assistant
- photographic laboratory technician
- newspaper photographer
- portrait photographer
- freelance photographer
- sports photographer
- lead or assistant wedding photographer
- wholesale or retail photographic sales
- commercial photographer
- medical photographer
- insurance photographer
- aerial photographer
- landscape photographer
- wildlife photographer
- fashion photographer

Graduates will also have the opportunity to continue their education in post-secondary institutions.

Delivery of the Photography 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 below.

Cross-curricular learning outcomes include essential skills from subject areas including, but not limited to, English language arts, mathematics, and the sciences. These essential skills are to be integrated into the authentic activities of the course.

Learning outcomes dealing with the following topics are also integrated into most courses:

- health and safety
- sustainability
- ethical and legal standards
- employability skills
- the IT industry
- evolution, technological progression, and emerging trends

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

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

Photography Goals, General Learning Outcomes (GLOs), and Specific Learning Outcomes (SLOs)

Grades 9 to 12 Photography: Manitoba Technical-Vocational Curriculum Framework of Outcomes identifies specific learning outcomes (SLOs) for use in all Manitoba schools teaching Grades 9 to 12 photography 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.

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

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

Goal 2: Demonstrate awareness of the **evolution, technological progression, and emerging trends**.

GLO 2.1: Describe the **evolution, technological progression, and emerging trends**.

Goal 3: Identify, select, use, and manage **cameras, equipment, materials, and software**.

GLO 3.1: Identify, select, use, and manage **cameras**.

GLO 3.2: Identify, select, use, and manage **equipment, materials, and software**.

Goal 4: Demonstrate understanding of photographic **theory**.

GLO 4.1: Demonstrate understanding of the elements and principles of theory related to **composition**.

GLO 4.2: Demonstrate understanding of theory related to **light**.

Goal 5: Demonstrate understanding of **photographic pre-production**.

GLO 5.1: Demonstrate understanding of **photographic pre-production**.

Goal 6: Demonstrate **photographic production**.

GLO 6.1: Demonstrate **outdoor photography**.

GLO 6.2: Demonstrate **indoor, on-location photography**.

GLO 6.3: Demonstrate **studio production**.

GLO 6.4: Demonstrate **portrait photography**.

GLO 6.5: Demonstrate **event photography**.

Goal 7: Demonstrate understanding of the properties of **photographic post-production**.

GLO 7.1: Demonstrate understanding of **photographic editing**.

GLO 7.2: Demonstrate understanding of **hard copy photographic output**.

GLO 7.3: Demonstrate understanding of **digital photographic output**.

GLO 7.4: Demonstrate understanding of **mounting and framing**.

Goal 8: Describe and demonstrate the transferable **cross-curricular** knowledge and skills relevant to photography.

GLO 8.1: **Research, read, interpret, and communicate** information relevant to photography.

GLO 8.2: Apply the knowledge and skills from **mathematics** relevant to photography.

GLO 8.3: Apply the knowledge and skills from **other subject areas** (Arts, Social Studies) relevant to photography.

GLO 8.4: Apply the knowledge and skills from the **sciences** relevant to photography.

Goal 9: Demonstrate awareness of **sustainability** as it pertains to photography.

GLO 9.1: Describe the photography industry's **sustainability practices** and impact on the environment.

GLO 9.2: Describe the impact of **human sustainability** on the well-being of those employed in photography and those who use their products and services.

GLO 9.3: Describe **sustainable business practices** within the photography industry.

Goal 10: Demonstrate awareness of the **ethical and legal standards** as they pertain to photography.

GLO 10.1: Demonstrate awareness of the **ethical and legal standards** as they pertain to photography.

Goal 11: Demonstrate **employability skills**.

GLO 11.1: Demonstrate **fundamental employability skills**.

GLO 11.2: Demonstrate awareness of **cultural proficiency** and its importance in the workplace.

GLO 11.3: Demonstrate understanding of the **business operation** of a photographic business/service.

GLO 11.4: Demonstrate **critical thinking skills**.

Goal 12: Demonstrate understanding of the **photography industry**.

GLO 12.1: Demonstrate understanding of the scope of the **photography industry**.

GLO 12.2: Demonstrate understanding of the **educational and career opportunities**, as well as the **industry and professional associations**.

GLO 12.3: Demonstrate understanding of **working conditions** in the photography industry.

Course Descriptions

Course titles, descriptions, and codes for the nine photography courses follow. For an explanation of the codes, refer to the *Subject Table Handbook: Technology Education: Student Records System and Professional School Personnel System* (Manitoba Education and Training).

9156 Exploration of Photography

15S/15E/15M
10S/10E/10M

This optional course is designed for students to explore photography. Students will learn the basic functions of a camera, as well as the introductory skills used in photographic editing. They will be introduced to the history of photography, as well as photography's theoretical principles. They will also learn how to make the most of available light and how to control it.

9157 Introduction to Photography 20S/20E/20M

This course is designed for students who are interested in the photography program. Students will learn photographic theory, the functions of a camera, as well as photographic editing skills and the history of photography. They will explore the use of different light sources.

9158 Photographic Equipment 30S/30E/30M

This course focuses on the safe and appropriate use of professional photographic equipment, such as the functions of DSLR cameras, different types of lenses, and tripods. Students will learn about different brands and types of DSLR cameras, and the specific uses of each one.

9159 Photographic Lighting 30S/30E/30M

This course focuses on all aspects of lighting, including lighting theory, techniques, and styles. Students will learn to safely use professional photographic lighting equipment, light modifiers, and ambient light.

9160 Digital Darkroom 30S/30E/30M

This course focuses on basic digital editing techniques, including layout, resolution, tonal and colour correction, crop ratios, and output. Students will learn to use several types of editing software.

9161 Advanced Photographic Equipment 40S/40E/40M

This course builds on the skills and knowledge learned in 9158 Photographic Equipment, focusing on the advanced use of professional photographic equipment. Students will use critical thinking skills to select and utilize the most appropriate equipment to complete photographic assignments.

9162 Advanced Photographic Lighting 40S/40E/40M

This course builds on the skills and knowledge learned in 9159 Photographic Lighting, focusing on the advanced use of professional photographic lighting. Students will use critical thinking skills to manipulate various forms of lighting to complete photographic assignments.

9163 Advanced Digital Darkroom 40S/40E/40M

This course builds on the skills and knowledge learned in 9160 Digital Darkroom, focusing on advanced digital editing techniques. Students will use critical thinking skills to select the most appropriate software and tools to professionally edit images to achieve desired results.

9164 Applied Photography 40S/40E/40M

In this course, students initiate and complete all the steps of a photographic assignment, demonstrating mastery of photographic techniques. They will research entry-level employment and post-secondary educational opportunities. They will also complete a resumé and portfolio for finding entry-level employment.

Curriculum Implementation Dates

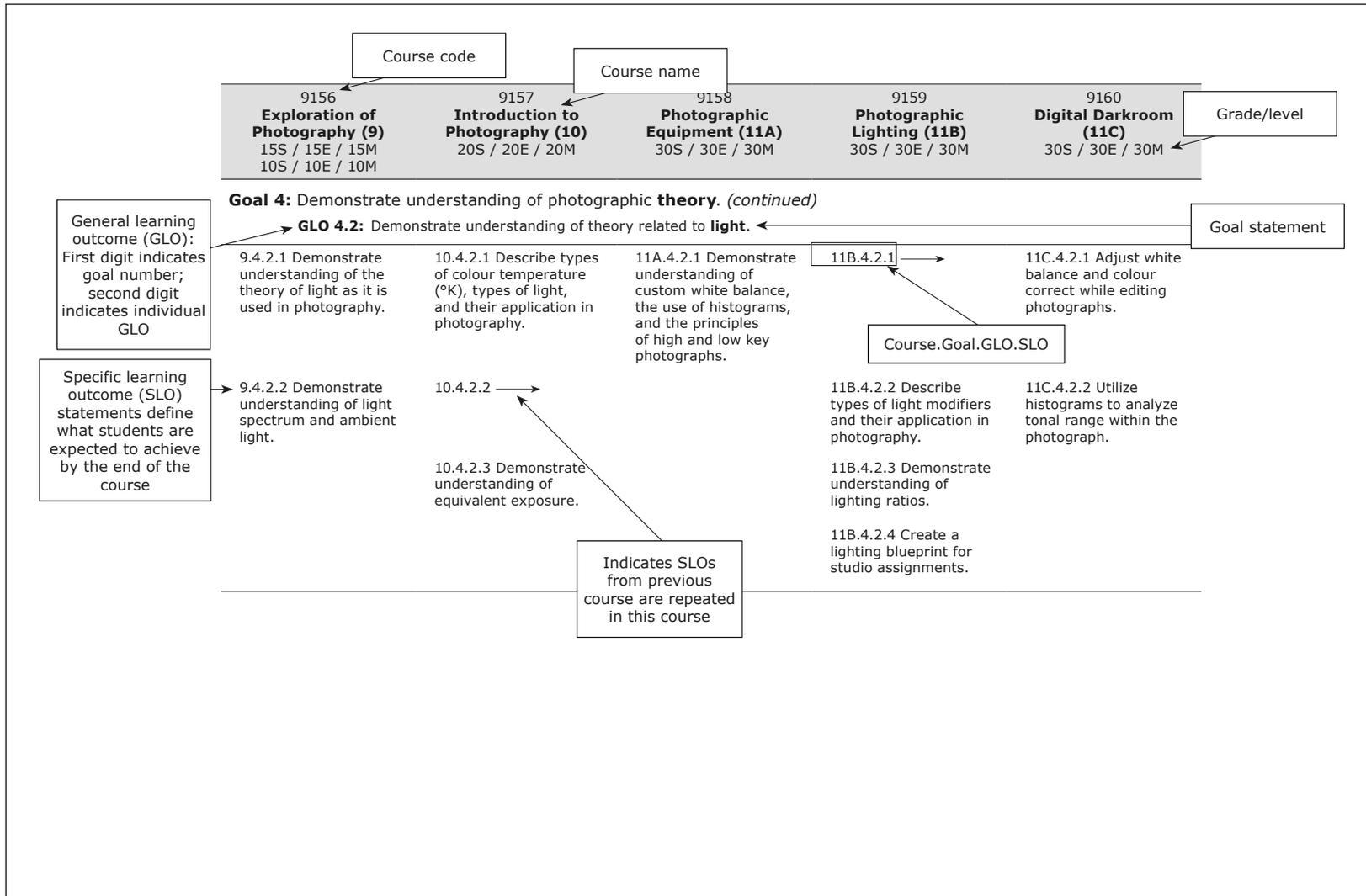
During **voluntary implementation**, teachers have the option of teaching the entire new draft curriculum as soon as Manitoba Education and Training releases it on the [Technology Education](#) website.

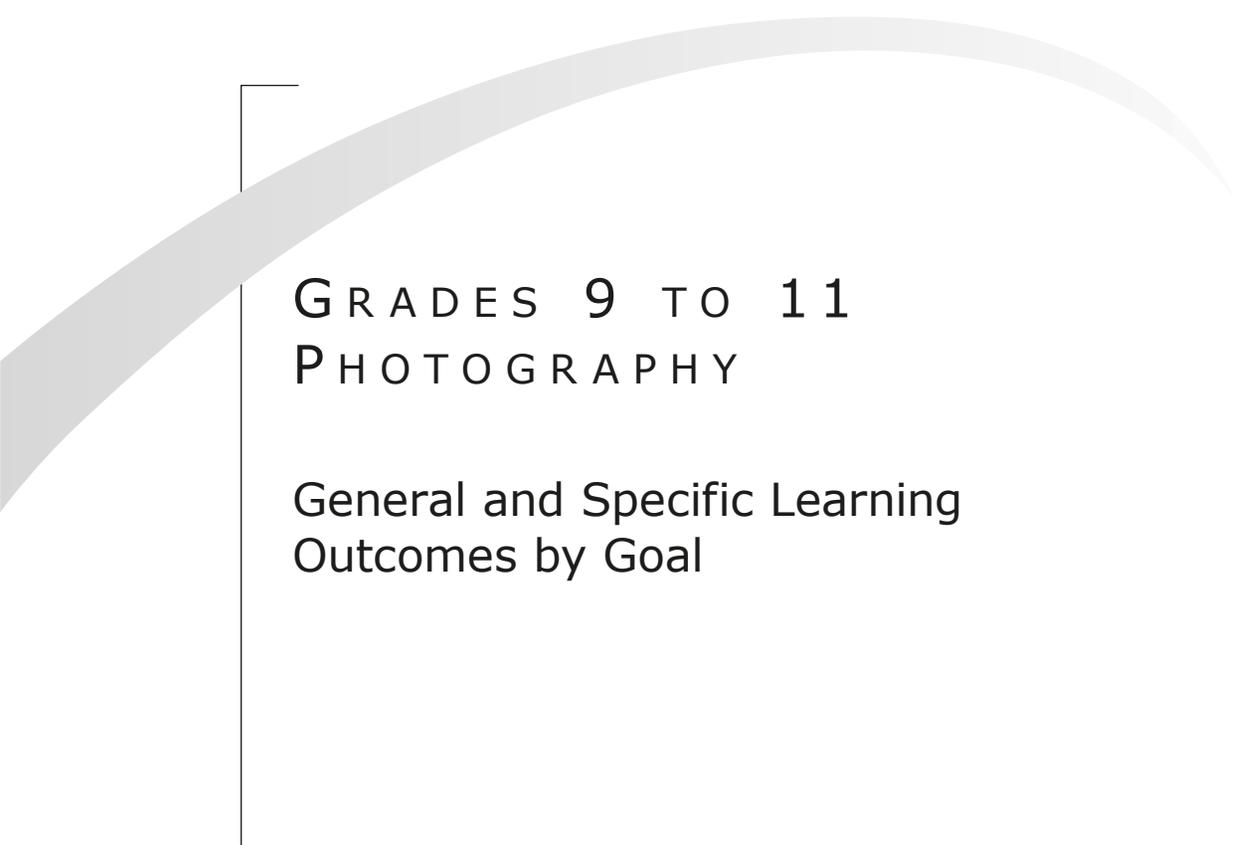
Voluntary implementation of all photography courses began in the fall of 2015 and will continue until their respective system-wide implementation dates.

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](#).

Guide to Reading the Photography Goals and Learning Outcomes





GRADES 9 TO 11
PHOTOGRAPHY

General and Specific Learning
Outcomes by Goal

GRADES 9 TO 11 PHOTOGRAPHY GENERAL AND SPECIFIC LEARNING OUTCOMES BY GOAL

9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M	9157 Introduction to Photography (10) 20S / 20E / 20M	9158 Photographic Equipment (11A) 30S / 30E / 30M	9159 Photographic Lighting (11B) 30S / 30E / 30M	9160 Digital Darkroom (11C) 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 Follow safety practices when using tools, equipment, and materials.	10.1.1.1 →	11A.1.1.1 →	11B.1.1.1 →	11C.1.1.1 →
9.1.1.2 Locate first aid stations and fire extinguishers.	10.1.1.2 →	11A.1.1.2 →	11B.1.1.2 →	11C.1.1.2 →
9.1.1.3 Describe the reporting process for injuries.	10.1.1.3 →	11A.1.1.3 →	11B.1.1.3 →	11C.1.1.3 →
9.1.1.4 Describe the steps used in the Right to Refuse process.	10.1.1.4 →	11A.1.1.4 →	11B.1.1.4 →	11C.1.1.4 →
9.1.1.5 Explain how and where to find information on workplace safety and health.	10.1.1.5 →	11A.1.1.5 →	11B.1.1.5 →	11C.1.1.5 →
9.1.1.6 Explain the Workplace Hazardous Material Information System (WHMIS).	10.1.1.6 →	11A.1.1.6 →	11B.1.1.6 →	11C.1.1.6 →

9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M	9157 Introduction to Photography (10) 20S / 20E / 20M	9158 Photographic Equipment (11A) 30S / 30E / 30M	9159 Photographic Lighting (11B) 30S / 30E / 30M	9160 Digital Darkroom (11C) 30S / 30E / 30M
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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)*

9.1.1.7 Match the WHMIS hazardous materials symbols and their meanings.	10.1.1.7 →	11A.1.1.7 →	11B.1.1.7 →	11C.1.1.7 →
9.1.1.8 Describe the importance of the Material Safety Data Sheets (MSDS).	10.1.1.8 →	11A.1.1.8 →	11B.1.1.8 →	11C.1.1.8 →
9.1.1.9 Give examples of safety and health hazards found in photography.	10.1.1.9 →	11A.1.1.9 →	11B.1.1.9 →	11C.1.1.9 →
9.1.1.10 Describe the importance of using Personal Protective Equipment (PPE).	10.1.1.10 →	11A.1.1.10 →	11B.1.1.10 →	11C.1.1.10 →
9.1.1.11 Demonstrate proper selection and use of a variety of PPE and fall protection systems.	10.1.1.11 →	11A.1.1.11 →	11B.1.1.11 →	11C.1.1.11 →
9.1.1.12 Outline the safety principles for working on and around electrical equipment.	10.1.1.12 →	11A.1.1.12 →	11B.1.1.12 →	11C.1.1.12 →

9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M	9157 Introduction to Photography (10) 20S / 20E / 20M	9158 Photographic Equipment (11A) 30S / 30E / 30M	9159 Photographic Lighting (11B) 30S / 30E / 30M	9160 Digital Darkroom (11C) 30S / 30E / 30M
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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)*

9.1.1.13 Outline the safety principles for working on and around cables.	10.1.1.13 →	11A.1.1.13 →	11B.1.1.13 →	11C.1.1.13 →
9.1.1.14 Outline workplace fire safety principles.	10.1.1.14 →	11A.1.1.14 →	11B.1.1.14 →	11C.1.1.14 →
9.1.1.15 Maintain a clean and organized work area.	10.1.1.15 →	11A.1.1.15 →	11B.1.1.15 →	11C.1.1.15 →
9.1.1.16 Discuss the need for safety when selecting locations for photographic assignments.	10.1.1.16 →	11A.1.1.16 →	11B.1.1.16 →	11C.1.1.16 →
9.1.1.17 Maintain an organized and safe work environment.	10.1.1.17 →	11A.1.1.17 →	11B.1.1.17 →	11C.1.1.17 →
		11A.1.1.18 Demonstrate knife safety standards when cutting mats, photographs, and other materials.		
		11A.1.1.19 Follow safety procedures when using roller (tucking in loose clothing and hair, etc.)		

9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M	9157 Introduction to Photography (10) 20S / 20E / 20M	9158 Photographic Equipment (11A) 30S / 30E / 30M	9159 Photographic Lighting (11B) 30S / 30E / 30M	9160 Digital Darkroom (11C) 30S / 30E / 30M
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Goal 2: Demonstrate awareness of the **evolution, technological progression,** and **emerging trends.**

GLO 2.1: Describe the **evolution, technological progression,** and **emerging trends.**

9.2.1.1 Describe the invention of early cameras, and describe early photographic techniques.	10.2.1.1 —>	11C.2.1.1 Describe the evolution, technological progression, and emerging trends in digital darkroom.
	10.2.1.2 Research a photographer and describe their contributions.	
	10.2.1.3 Differentiate between digital and film cameras.	

9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M	9157 Introduction to Photography (10) 20S / 20E / 20M	9158 Photographic Equipment (11A) 30S / 30E / 30M	9159 Photographic Lighting (11B) 30S / 30E / 30M	9160 Digital Darkroom (11C) 30S / 30E / 30M
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Goal 3: Identify, select, use, and manage **cameras, equipment, materials, and software.**

GLO 3.1: Identify, select, use, and manage **cameras.**

9.3.1.1 Identify, select, use, and manage cameras.	10.3.1.1 →	11A.3.1.1 Demonstrate understanding of bracketing.
9.3.1.2 Differentiate between point-and-shoot, SLR, and DSLR cameras.	10.3.1.2 Identify different types of cameras.	11A.3.1.2 Demonstrate understanding of exposure compensation.
9.3.1.3 Demonstrate understanding of cameras and their functions.	10.3.1.3 Demonstrate understanding of cameras and their functions, including <ul style="list-style-type: none"> ■ ISO ■ shutter speed ■ aperture ■ white balance ■ modes ■ sensors ■ in-camera metering ■ in-camera flash ■ batteries and battery packs ■ battery chargers ■ memory cards ■ lenses 	11A.3.1.3 Differentiate between full-frame and cropped sensor cameras.

9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M	9157 Introduction to Photography (10) 20S / 20E / 20M	9158 Photographic Equipment (11A) 30S / 30E / 30M	9159 Photographic Lighting (11B) 30S / 30E / 30M	9160 Digital Darkroom (11C) 30S / 30E / 30M
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Goal 3: Identify, select, use, and manage **cameras, equipment, materials, and software.** *(continued)*

GLO 3.1: Identify, select, use, and manage **cameras.** *(continued)*

9.3.1.4 Pack up and manage cameras.	10.3.1.4 Pack up and manage cameras after assignment.	11A.3.1.4 Describe the features and specifications of different types of cameras. 11A.3.1.5 Describe how the features and specifications of different types of cameras make them more appropriate for different types of photography (i.e., sports photography and portrait photography).
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9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M	9157 Introduction to Photography (10) 20S / 20E / 20M	9158 Photographic Equipment (11A) 30S / 30E / 30M	9159 Photographic Lighting (11B) 30S / 30E / 30M	9160 Digital Darkroom (11C) 30S / 30E / 30M
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Goal 3: Identify, select, use, and manage **cameras, equipment, materials, and software.** *(continued)*

GLO 3.2: Identify, select, use, and manage **equipment, materials, and software.**

9.3.2.1 Identify, select, use, and manage equipment and materials.	10.3.2.1 →	11A.3.2.1 Demonstrate understanding of hand-held light metering.	11C.3.2.1 Discuss the hardware and software requirements for running editing software.
9.3.2.2 Pack up and manage equipment and materials.	10.3.2.2 Demonstrate the use of <ul style="list-style-type: none"> ■ tripods ■ lights ■ light stands ■ light modifiers ■ props and backdrops ■ posing stools and tables ■ light boxes ■ equipment for mounting photographs 	11A.3.2.2 Demonstrate the use of grey cards.	11C.3.2.2 Demonstrate awareness of the use of graphic tablets to edit photographs.
	10.3.2.3 Identify and select all equipment and materials required for a shoot.	11A.3.2.3 Demonstrate the use of off-camera flash.	
	10.3.2.4 Pack up and manage equipment and materials after photo shoots.	11A.3.2.4 Describe the specifications of different types of camera lenses.	

9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M	9157 Introduction to Photography (10) 20S / 20E / 20M	9158 Photographic Equipment (11A) 30S / 30E / 30M	9159 Photographic Lighting (11B) 30S / 30E / 30M	9160 Digital Darkroom (11C) 30S / 30E / 30M
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Goal 3: Identify, select, use, and manage **cameras, equipment, materials, and software.** *(continued)*

GLO 3.2: Identify, select, use, and manage **equipment, materials, and software.** *(continued)*

11A.3.2.5 Describe how the features and specifications found in different types of camera lenses make them more appropriate for different types of photography.

11A.3.2.6 Identify, select, use, and manage accessories (e.g., tripods, pistol grips, straps, and cables and tethering).

9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M	9157 Introduction to Photography (10) 20S / 20E / 20M	9158 Photographic Equipment (11A) 30S / 30E / 30M	9159 Photographic Lighting (11B) 30S / 30E / 30M	9160 Digital Darkroom (11C) 30S / 30E / 30M
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Goal 4: Demonstrate understanding of photographic **theory**.

GLO 4.1: Demonstrate understanding of the elements and principles of theory related to **composition**.

9.4.1.1 Demonstrate understanding of the elements of composition into photographs.	10.4.1.1 Demonstrate understanding of the elements of composition into photographs, including <ul style="list-style-type: none"> ■ line ■ shape ■ colour ■ texture ■ value ■ space 	11A.4.1.1 →	11B.4.1.1 →	11C.4.1.1 →
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<p>9156 Exploration of Photography (9) 15S / 15E / 15M 10S / 10E / 10M</p>	<p>9157 Introduction to Photography (10) 20S / 20E / 20M</p>	<p>9158 Photographic Equipment (11A) 30S / 30E / 30M</p>	<p>9159 Photographic Lighting (11B) 30S / 30E / 30M</p>	<p>9160 Digital Darkroom (11C) 30S / 30E / 30M</p>
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Goal 4: Demonstrate understanding of photographic **theory**. *(continued)*

GLO 4.1: Demonstrate understanding of the elements and principles of theory related to **composition**. *(continued)*

<p>9.4.1.2 Demonstrate understanding of the principles and guidelines of composition into photographs.</p>	<p>10.4.1.2 Demonstrate understanding of the principles and guidelines of composition into photographs, including</p> <ul style="list-style-type: none"> ■ proportion ■ balance ■ contrast ■ emphasis ■ motion ■ perspective ■ point of view ■ rhythm ■ pattern ■ rule of thirds ■ framing ■ simplicity ■ leading lines ■ orientation ■ depth of field ■ background ■ cropping ■ golden rule 	<p>11A.4.1.2 →</p>	<p>11B.4.1.2 →</p>	<p>11C.4.1.2 →</p>
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Goal 4: Demonstrate understanding of photographic **theory**. *(continued)*

GLO 4.1: Demonstrate understanding of the elements and principles of theory related to **composition**. *(continued)*

9.4.1.3 Demonstrate understanding of layouts and builds.	10.4.1.3 →	11A.4.1.3 →	11B.4.1.3 →	11C.4.1.3 →
9.4.1.4 Demonstrate understanding of photographic resolution.	10.4.1.4 Demonstrate understanding of photographic resolution, dots per inch, and pixels per inch.	11A.4.1.4 →	11B.4.1.4 →	11C.4.1.4 →
	10.4.1.5 Demonstrate understanding of design theory in their use of fonts.	11A.4.1.5 →	11B.4.1.5 →	11C.4.1.5 →

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Goal 4: Demonstrate understanding of photographic **theory**. *(continued)*

GLO 4.2: Demonstrate understanding of theory related to **light**.

9.4.2.1 Demonstrate understanding of the theory of light as it is used in photography.	10.4.2.1 Describe types of colour temperature (°K), types of light, and their application in photography.	11A.4.2.1 Demonstrate understanding of custom white balance, the use of histograms, and the principles of high and low key photographs.	11B.4.2.1 →	11C.4.2.1 Adjust white balance and colour correct while editing photographs.
9.4.2.2 Demonstrate understanding of light spectrum and ambient light.	10.4.2.2 →		11B.4.2.2 Describe types of light modifiers and their application in photography.	11C.4.2.2 Utilize histograms to analyze tonal range within the photograph.
	10.4.2.3 Demonstrate understanding of equivalent exposure.		11B.4.2.3 Demonstrate understanding of lighting ratios.	
			11B.4.2.4 Create a lighting blueprint for studio assignments.	

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Goal 5: Demonstrate understanding of **photographic pre-production.**

GLO 5.1: Demonstrate understanding of **photographic pre-production.**

10.5.1.1 Demonstrate understanding of photographic assignments.	11A.5.1.1 Analyze each photographic assignment in order to determine the equipment required.	11B.5.1.1 Analyze each photographic assignment in order to determine the lighting requirements.	11C.5.1.1 Discuss the limitations of photo editing and that photographs need to be of a certain quality in order to be properly edited.
10.5.1.2 Prepare for each photographic assignment.	11A.5.1.2 List and describe all of the equipment required for each photographic assignment.	11B.5.1.2 List and describe all of the lighting equipment required for each photographic assignment.	11C.5.1.2 Discuss the conditions under which pictures must be re-edited.
10.5.1.3 Investigate the location of the photographic assignment in order to locate the subject or to anticipate potential problems that might arise during the assignment.			
10.5.1.4 Demonstrate awareness of aspect ratios when setting up a photograph.			

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Goal 6: Demonstrate photographic production.

GLO 6.1: Demonstrate outdoor photography.

9.6.1.1 Demonstrate the ability to photograph outdoor assignments.	10.6.1.1 Discuss how different weather conditions, the time of day, and the location affect outdoor photography.	11A.6.1.1 Describe equipment and materials (including cameras, lenses, and filters) used for outdoor photography.	11B.6.1.1 Describe lighting equipment and materials (including reflectors and gobos) used for outdoor photography.
	10.6.1.2 Identify equipment and materials (including cameras and lenses) used for outdoor photography.	11A.6.1.2 Demonstrate the operation of photographic equipment used in outdoor photography.	11B.6.1.2 Demonstrate the use of lighting equipment (including reflectors and gobos) used in outdoor photography.
	10.6.1.3 Discuss the need to adjust camera settings for outdoor photography.	11A.6.1.3 For outdoor assignments, determine equipment needed and adjust the settings based on factors such as weather conditions, time of day, location, etc.	11B.6.1.3 For outdoor assignments, determine lighting equipment needed and adjust the settings based on factors such as weather conditions, time of day, location, etc.
	10.6.1.4 Complete outdoor photograph assignments to established criteria.	11A.6.1.4 Determine camera settings for outdoor photography.	11B.6.1.4 Complete outdoor portrait photographs to required criteria, incorporating lighting equipment.

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Goal 6: Demonstrate **photographic production.** *(continued)*

GLO 6.1: Demonstrate **outdoor photography.** *(continued)*

11A.6.1.5 Discuss optimal moment to photograph outdoor assignments.

11A.6.1.6 Evaluate results and modify settings.

11A.6.1.7 Photograph outdoor architectural assignments.

11A.6.1.8 Identify the elements of design found in their outdoor architectural photograph.

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Goal 6: Demonstrate **photographic production.** *(continued)*

GLO 6.2: Demonstrate **indoor, on-location photography.**

9.6.2.1 Demonstrate the ability to photograph indoor, on-location assignments.	10.6.2.1 Discuss how different conditions and locations affect indoor, on-location photography.	11A.6.2.1 Describe equipment and materials (including cameras and lenses) for indoor, on-location photography.	11B.6.2.1 Use the colour temperature of lights in degrees Kelvin to determine lighting requirements.
	10.6.2.2 Identify equipment and materials (including cameras and lenses) for indoor photography.	11A.6.2.2 Demonstrate the operation of photographic equipment used for indoor, on-location photography.	11B.6.2.2 Identify the source of the lighting found in the indoor location.
	10.6.2.3 Discuss the need to adjust camera settings for indoor, on-location photography.	11A.6.2.3 Determine camera settings for indoor, on-location photography.	11B.6.2.3 Describe lighting equipment required for the indoor location.
	10.6.2.4 Photograph indoor, on-location assignments to established criteria.	11A.6.2.4 Discuss optimal moment to photograph indoor, on-location assignments.	11B.6.2.4 Modify the lighting settings in the indoor location.
		11A.6.2.5 Photograph indoor, on-location assignments.	

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Goal 6: Demonstrate photographic production. *(continued)*

GLO 6.3: Demonstrate studio production.

9.6.3.1 Demonstrate the ability to photograph a studio production.	10.6.3.1 Discuss differences between indoor location photography and studio production, including the level of control over conditions such as light, room temperature, etc.	11A.6.3.1 Describe equipment and materials (including cameras and lenses) for studio productions.	11B.6.3.1 Describe lighting equipment required for studio productions.
	10.6.3.2 Identify equipment and materials (including cameras and lenses) for studio production.	11A.6.3.2 Demonstrate the use of photographic equipment in studio productions.	11B.6.3.2 Use the colour temperature of lights in degrees Kelvin to determine lighting requirements.
	10.6.3.3 Discuss lighting requirements in studio production.	11A.6.3.3 Determine camera settings for studio productions.	11B.6.3.3 Identify the source of the lighting found in the studio.
	10.6.3.4 Discuss camera settings for studio production.	11A.6.3.4 Photograph studio productions.	11B.6.3.4 Implement lighting blueprint.
	10.6.3.5 Photograph studio production assignments to established criteria.		

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Goal 6: Demonstrate **photographic production**. *(continued)*

GLO 6.4: Demonstrate **portrait photography**.

9.6.4.1 Demonstrate the ability to photograph a portrait.	10.6.4.1 Identify equipment and materials (including cameras and lenses) for portrait photography.	11A.6.4.1 Describe equipment and materials (including cameras and lenses) for portrait photography.	11B.6.4.1 Describe lighting equipment required for portrait photography.
	10.6.4.2 Discuss lighting requirements for portrait photography.	11A.6.4.2 Incorporate pre-existing security features.	11B.6.4.2 Use the colour temperature of lights in degrees Kelvin to determine lighting requirements.
	10.6.4.3 Discuss camera settings for portrait photography.	11A.6.4.3 Demonstrate the operation of photographic equipment used in portrait photography.	11B.6.4.3 Identify the source of the lighting found in portrait photography.
	10.6.4.4 Discuss the need to establish rapport with photographic subjects.	11A.6.4.4 Demonstrate understanding of the theory related to posing subjects.	11B.6.4.4 Modify the lighting settings in portrait photography.
	10.6.4.5 Discuss basic posing techniques.	11A.6.4.5 Discuss optimal moment to photograph people.	
	10.6.4.6 Photograph a portrait to established criteria.	11A.6.4.6 Photograph people to required criteria.	

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Goal 6: Demonstrate **photographic production.** *(continued)*

GLO 6.5: Demonstrate **event photography.**

	11A.6.5.1 Describe equipment and materials (including cameras and lenses) for event photography.	11B.6.5.1 Describe lighting equipment required for event photography.
	11A.6.5.2 Determine camera settings for event photography.	11B.6.5.2 Use the colour temperature of lights in degrees Kelvin to determine lighting requirements.
	11A.6.5.3 Demonstrate the operation of photographic equipment used in event photography.	11B.6.5.3 Identify the source of the lighting found in event photography.
	11A.6.5.4 Discuss the optimal moment to photograph a specific moment in an event.	11B.6.5.4 Modify the lighting settings in event photography.
	11A.6.5.5 Photograph events to established criteria.	11B.6.5.5 →
	11A.6.5.6 Evaluate results of each photograph and, if necessary, modify settings and reshoot.	

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Goal 7: Demonstrate understanding of the properties of **photographic post-production.**

GLO 7.1: Demonstrate understanding of **photographic editing.**

9.7.1.1 Demonstrate the ability to edit photographs.

10.7.1.1 Demonstrate the following techniques using editing software (i.e., Adobe, Picasa, Gimp, photo editing plug-ins, Photomatix):

- layers
- simple edits
 - crop
 - levels
 - curves
 - sharpening
 - contrast
- selections

Note that various editing software use different names for these techniques.

11C.7.1.1 Demonstrate the following techniques using editing software (i.e., Adobe, Picasa, Gimp, photo editing plug-ins, Photomatix):

- layers
- filters
- simple edits
 - crop
 - levels
 - curves
 - sharpening
 - contrast
- selections
- actions
- cloning
- bandage
- layer masks
- adjustment layers
- brushes
- typography
- blending modes
- RAW
- stitching / montage
- colour modes
- colour space
- light painting
- HDR

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Goal 7: Demonstrate understanding of the properties of **photographic post-production**. *(continued)*

GLO 7.1: Demonstrate understanding of **photographic editing**. *(continued)*

10.7.1.2 Manage files and folders using naming conventions.	11C.7.1.2 Modify the elements of composition into photographic edits.
10.7.1.3 Describe different graphic file formats.	11C.7.1.3 Incorporate the principles and guidelines of composition into photographic edits.
10.7.1.4 Demonstrate understanding of file formats.	11C.7.1.4 Incorporate layouts and builds into photographic edits.
10.7.1.5 Edit photographs.	

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Goal 7: Demonstrate understanding of the properties of **photographic post-production.** *(continued)*

GLO 7.2: Demonstrate understanding of **hard copy photographic output.**

9.7.2.1 Demonstrate the ability to print photographs.	10.7.2.1 Demonstrate the ability to print photographs following criteria.	11A.7.2.1 →	11B.7.2.1 →	11C.7.2.1 →
	10.7.2.2 Demonstrate understanding of resolution and image quality as they apply to output.	11A.7.2.2 Demonstrate understanding of the qualities of various substrates (including materials, sizes, paper profiles, and aspect ratios) used in printing photographs.		11C.7.2.2 Consider editing features when printing photographs.
	10.7.2.3 Demonstrate awareness of aspect ratios when outputting photographs.	11A.7.2.3 Select appropriate substrate (i.e., paper, vinyl, canvas) when printing.		11C.7.2.3 Consider resolution and format when editing a photograph that will be printed.

GLO 7.3: Demonstrate understanding of **digital photographic output.**

9.7.3.1 Demonstrate awareness of photo sharing sites.	10.7.3.1 →		11C.7.3.1 Consider resolution and format when editing a photograph that will be uploaded.
	10.7.3.2 Upload photographs.		

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Goal 7: Demonstrate understanding of the properties of **photographic post-production**. *(continued)*

GLO 7.4: Demonstrate understanding of **mounting and framing**.

10.7.4.1 Mount and frame a photograph following criteria.	11A.7.4.1 Demonstrate mat cutting following industry standards.	11C.7.4.1 Consider resolution and format when editing a photograph that will be mounted or framed.
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Goal 8: Describe and demonstrate the transferable **cross-curricular** knowledge and skills relevant to photography.

GLO 8.1: Research, read, interpret, and communicate information relevant to photography.

11A.8.1.1 Research, read, interpret, and communicate information relevant to photography.	11C.8.1.1 Research, read, interpret, and communicate information relevant to photo editing.
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Goal 8: Describe and demonstrate the transferable **cross-curricular** knowledge and skills relevant to photography.
(continued)

GLO 8.2: Apply the knowledge and skills from **mathematics** relevant to photography.

10.8.2.1 Demonstrate understanding of fractions, decimals, ratios, and percentages and the ability to calculate them.

10.8.2.2 Convert between metric and imperial/standard systems of measurement.

10.8.2.3 Demonstrate understanding of golden triangle rules (ISO, shutter speed, aperture) and apply them.

10.8.2.4 Demonstrate understanding of exposures and calculate equivalent exposures.

10.8.2.5 Calculate resolution required for final print size.

10.8.2.6 Demonstrate understanding of similar and dissimilar ratios (i.e., 4:3, 3:2, 5:7, 4:5) in order to understand and manipulate aspect ratios.

11A.8.2.1 Demonstrate measurement skills required to mount and frame photographs.

11C.8.2.1 Apply the knowledge and skills from mathematics relevant to photo editing.

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Goal 8: Describe and demonstrate the transferable **cross-curricular** knowledge and skills relevant to photography.
(continued)

GLO 8.3: Apply the knowledge and skills from **other subject areas** (Arts, Social Studies) relevant to photography.

10.8.3.1 Discuss the social impact of photography.	11A.8.3.1 Discuss how photography can be a vehicle for social change.
10.8.3.2 Discuss the emotional impact of photographs.	11A.8.3.2 Demonstrate understanding of vanishing point and perspective.
10.8.3.3 Demonstrate awareness of fine art photography.	

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Goal 8: Describe and demonstrate the transferable **cross-curricular** knowledge and skills relevant to photography.
(continued)

GLO 8.4: Apply the knowledge and skills from the **sciences** relevant to photography.

	10.8.4.1 Demonstrate understanding of the nature and properties of light and colour.		11B.8.4.1 Demonstrate awareness of the science used in film-based photography.	11C.8.4.1 Explain how prints are made by manipulating the additive and subtractive colour systems.
	10.8.4.2 Compare the structure of the human eye to a camera.		11B.8.4.2 Demonstrate understanding of the electromagnetic spectra and its use in photography.	
	10.8.4.3 Discuss how light-sensitive material has been used to create photographs.		11B.8.4.3 Demonstrate understanding of the properties of light and their use in photography.	

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Goal 9: Demonstrate awareness of **sustainability** as it pertains to photography.

GLO 9.1: Describe the photography industry's **sustainability practices** and impact on the environment.

10.9.1.1 Compare the environmental impact of non-digital photography versus digital photography.

11A.9.1.1 Discuss the environmental impact of the chemicals used in printing and production.

11B.9.1.1 Discuss the environmental impact of the disposal of expired digital equipment.

GLO 9.2: Describe the impact of **human sustainability** on the well-being of those employed in photography and those who use their products and services.

10.9.2.1 Define human sustainability.

11A.9.2.1 Demonstrate ergonomically correct procedures to avoid injury (e.g., stress, strain) while editing photographs.

11B.9.2.1 Discuss the purposes of photography, and how photography can contribute to human health and well-being.

GLO 9.3: Describe **sustainable business practices** within the photography industry.

11A.9.3.1 Discuss what a photographic business can do to remain solvent.

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Goal 10: Demonstrate awareness of the **ethical and legal standards** as they pertain to photography.

GLO 10.1: Demonstrate awareness of the **ethical and legal standards** as they pertain to photography.

10.10.1.1 Define ethics and discuss how they relate to photography.	11A.10.1.1 Discuss ownership of images uploaded to photo sharing sites.	11C.10.1.1 Avoid the unethical or illegal copying of images.
10.10.1.2 Demonstrate awareness of regulations affecting photography.	11A.10.1.2 Discuss ownership of images downloaded from photo sharing sites.	11C.10.1.2 Provide references for all copied images.
10.10.1.3 Discuss the rationale behind copyright legislation.		11C.10.1.3 Discuss the use of public domain and royalty-free images.

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Goal 11: Demonstrate **employability skills**.

GLO 11.1: Demonstrate **fundamental employability skills**.

9.11.1.1 Demonstrate regular and punctual attendance.	10.11.1.1 →	11A.11.1.1 →	11B.11.1.1 →	11C.11.1.1 →
9.11.1.2 Demonstrate the ability to communicate respectfully and effectively with teachers, supervisors, co-workers, and students.	10.11.1.2 →	11A.11.1.2 →	11B.11.1.2 →	11C.11.1.2 →
9.11.1.3 Demonstrate accountability by taking responsibility for their actions.	10.11.1.3 →	11A.11.1.3 →	11B.11.1.3 →	11C.11.1.3 →
9.11.1.4 Demonstrate adaptability, initiative, and effort.	10.11.1.4 →	11A.11.1.4 →	11B.11.1.4 →	11C.11.1.4 →
9.11.1.5 Demonstrate teamwork skills.	10.11.1.5 →	11A.11.1.5 →	11B.11.1.5 →	11C.11.1.5 →
9.11.1.6 Demonstrate the ability to stay on task and effectively use time in class and work environments.	10.11.1.6 →	11A.11.1.6 →	11B.11.1.6 →	11C.11.1.6 →

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Goal 11: Demonstrate **employability skills**. *(continued)*

GLO 11.1: Demonstrate **fundamental employability skills**. *(continued)*

9.11.1.7 Demonstrate the responsible use of wireless communication devices.	10.11.1.7 →	11A.11.1.7 →	11B.11.1.7 →	11C.11.1.7 →
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GLO 11.2: Demonstrate awareness of **cultural proficiency** and its importance in the workplace.

11A.11.2.1 Define and discuss the meaning of culture.	11A.11.2.2 Discuss the importance of culture in the workplace.	11B.11.2.1 Discuss how different cultures relate to photography.	11C.11.2.1 Discuss cultural sensitivities related to editing.
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GLO 11.3: Demonstrate understanding of the **business operation** of a photographic business/service.

10.11.3.1 Discuss the costs of photographic equipment.	11A.11.3.1 Discuss the purpose of model release forms.
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Goal 11: Demonstrate **employability skills.** *(continued)*

GLO 11.4: Demonstrate **critical thinking skills.**

	10.11.4.1 Discuss the need for critical thinking.	11A.11.4.1 Discuss how problem-solving skills are required in photography.	11C.11.4.1 Demonstrate critical-thinking skills related to editing.
	10.11.4.2 Discuss the need for problem-solving skills.	11A.11.4.2 Troubleshoot problems with cameras and equipment.	

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Goal 12: Demonstrate understanding of the **photography industry**.

GLO 12.1: Demonstrate understanding of the scope of the **photography industry**.

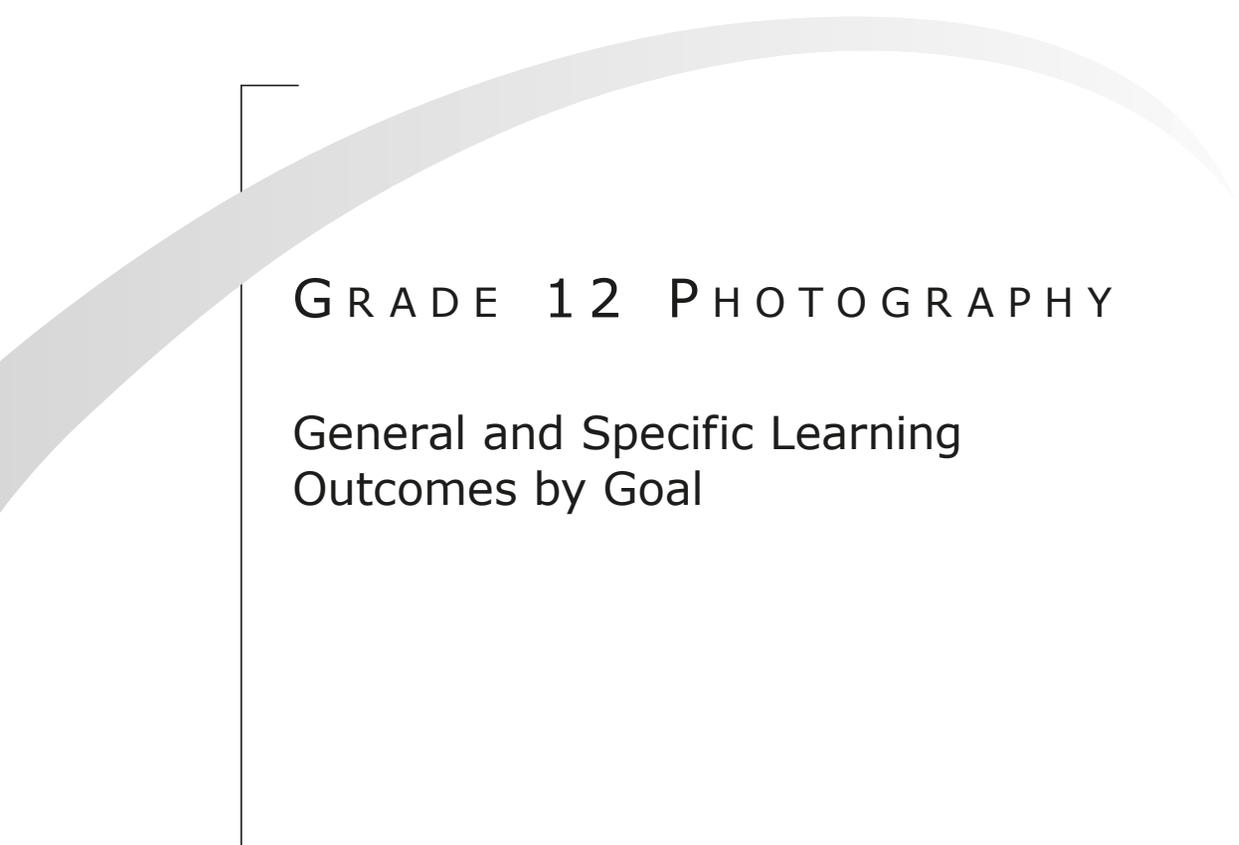
9.12.1.1 Demonstrate awareness of the scope of photography.	10.12.1.1 Demonstrate understanding of the scope of the photography industry.	11A.12.1.1 Discuss the place of photography in the Canadian economy.	11C.12.1.1 Demonstrate understanding of the editing portion of the industry.
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GLO 12.2: Demonstrate understanding of the **educational and career opportunities**, as well as the **industry and professional associations**.

9.12.2.1 Demonstrate understanding of the scope of careers in photography.	10.12.2.1 →	11A.12.2.1 →	11B.12.2.1 →	11C.12.2.1 Demonstrate understanding of the educational and career opportunities in editing.
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GLO 12.3: Demonstrate understanding of **working conditions** in the photography industry.

11A.12.3.1 Demonstrate understanding of working conditions in the photography industry.	11C.12.3.1 Demonstrate understanding of working conditions in editing.
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GRADE 12 PHOTOGRAPHY

General and Specific Learning
Outcomes by Goal

GRADE 12 PHOTOGRAPHY

GENERAL AND SPECIFIC LEARNING OUTCOMES BY GOAL

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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 Follow safety practices when using tools, equipment, and materials.	12B.1.1.1 →	12C.1.1.1 →	12D.1.1.1 →
12A.1.1.2 Locate first aid stations and fire extinguishers.	12B.1.1.2 →	12C.1.1.2 →	12D.1.1.2 →
12A.1.1.3 Describe the reporting process for injuries.	12B.1.1.3 →	12C.1.1.3 →	12D.1.1.3 →
12A.1.1.4 Describe the steps used in the Right to Refuse process.	12B.1.1.4 →	12C.1.1.4 →	12D.1.1.4 →
12A.1.1.5 Explain how and where to find information on workplace safety and health.	12B.1.1.5 →	12C.1.1.5 →	12D.1.1.5 →
12A.1.1.6 Explain the Workplace Hazardous Material Information System (WHMIS). (TSA 13)	12B.1.1.6 →	12C.1.1.6 →	12D.1.1.6 →

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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.1.1.7 Match the WHMIS hazardous materials symbols and their meanings.	12B.1.1.7 →	12C.1.1.7 →	12D.1.1.7 →
12A.1.1.8 Describe the importance of the Material Safety Data Sheets (MSDS).	12B.1.1.8 →	12C.1.1.8 →	12D.1.1.8 →
12A.1.1.9 Give examples of safety and health hazards found in photography.	12B.1.1.9 →	12C.1.1.9 →	12D.1.1.9 →
12A.1.1.10 Describe the importance of using Personal Protective Equipment (PPE).	12B.1.1.10 →	12C.1.1.10 →	12D.1.1.10 →
12A.1.1.11 Demonstrate proper selection and use of a variety of PPE and fall protection systems.	12B.1.1.11 →	12C.1.1.11 →	12D.1.1.11 →
12A.1.1.12 Outline the safety principles for working on and around electrical equipment.	12B.1.1.12 →	12C.1.1.12 →	12D.1.1.12 →
12A.1.1.13 Outline the safety principles for working on and around cables.	12B.1.1.13 →	12C.1.1.13 →	12D.1.1.13 →

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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.1.1.14 Outline workplace fire safety principles.	12B.1.1.14 →	12C.1.1.14 →	12D.1.1.14 →
12A.1.1.15 Maintain a clean and organized work area.	12B.1.1.15 →	12C.1.1.15 →	12D.1.1.15 →
12A.1.1.16 Discuss the need for safety when selecting locations for photographic assignments.	12B.1.1.16 →	12C.1.1.16 →	12D.1.1.16 →
12A.1.1.17 Maintain an organized and safe work environment.	12B.1.1.17 →	12C.1.1.17 →	12D.1.1.17 →
12A.1.1.18 Demonstrate knife safety standards when cutting mats, photographs, and other materials.	12B.1.1.18 →	12C.1.1.18 →	12D.1.1.18 →
12A.1.1.19 Follow safety procedures when using roller (tucking in loose clothing and hair, etc.)	12B.1.1.19 →	12C.1.1.19 →	12D.1.1.19 →

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Goal 2: Demonstrate awareness of the **evolution, technological progression,** and **emerging trends.**

GLO 2.1: Describe the **evolution, technological progression,** and **emerging trends.**

<p>12A.2.1.1 Describe the evolution, technological progression, and emerging trends in photographic equipment.</p>	<p>12B.2.1.1 Describe the evolution, technological progression, and emerging trends in photographic lighting.</p>	<p>12C.2.1.1 Describe the evolution, technological progression, and emerging trends in image manipulation software.</p> <p>12C.2.1.2 Describe the evolution, technological progression, and emerging trends in data management.</p> <p>12C.2.1.3 Demonstrate awareness of the changes in society caused by the advent of digital cameras and digital technology.</p>	<p>12D.2.1.1 Discuss how to use emerging trends to generate income from photography.</p>
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Goal 3: Identify, select, use, and manage **cameras, equipment, materials, and software.**

GLO 3.1: Identify, select, use, and manage **cameras.**

12A.3.1.1 Demonstrate understanding of the video capabilities of DSLR cameras.

12A.3.1.2 Demonstrate the use of head cameras.

12A.3.1.3 Research and describe the equipment required in their ideal photography business.

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Goal 3: Identify, select, use, and manage **cameras, equipment, materials, and software.** *(continued)*

GLO 3.2: Identify, select, use, and manage **equipment, materials, and software.**

12A.3.2.1 Demonstrate the use of cameras tethered to output devices, such as laptops, tablets, televisions, etc.

12B.3.2.1 Demonstrate the use of polarizers and neutral density filters.

12B.3.2.2 Demonstrate awareness of the use of drones in photography.

12B.3.2.3 Demonstrate the use of booms.

12B.3.2.4 Demonstrate the use of

- remote lighting trigger
- multiple lights
- three-dimensional lighting
- soft boxes
- light modifiers
- light boxes

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Goal 4: Demonstrate understanding of photographic **theory**.

GLO 4.1: Demonstrate understanding of the elements and principles of theory related to **composition**.

12A.4.1.1 Incorporate the elements of composition into photographs, including

- line
- shape
- colour
- texture
- value
- space

12B.4.1.1 →

12C.4.1.1 →

12D.4.1.1 →

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Goal 4: Demonstrate understanding of photographic **theory**. *(continued)*

GLO 4.1: Demonstrate understanding of the elements and principles of theory related to **composition**. *(continued)*

12A.4.1.2 Incorporate the principles and guidelines of composition into photographs, including <ul style="list-style-type: none"> ■ proportion ■ balance ■ contrast ■ emphasis ■ motion ■ perspective ■ point of view ■ rhythm ■ pattern ■ rule of thirds ■ framing ■ simplicity ■ leading lines ■ orientation ■ depth of field ■ background ■ cropping ■ golden rule 	12B.4.1.2 →	12C.4.1.2 →	12D.4.1.2 →
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Goal 4: Demonstrate understanding of photographic **theory**. *(continued)*

GLO 4.2: Demonstrate understanding of theory related to **light**.

12B.4.2.1 Demonstrate the ability to set up and utilize three-dimensional lighting.

12D.4.2.1 Determine individual lighting requirements based on the subject.

12D.4.2.2 Apply pre-determined lighting techniques for each assignment.

Goal 5: Demonstrate understanding of **photographic pre-production**.

GLO 5.1: Demonstrate understanding of **photographic pre-production**.

12A.5.1.1 Demonstrate the ability to prepare for an assignment, with a minimum of supervision.

12C.5.1.1 Demonstrate understanding of resolution quality in order to meet the requirements of the assignment.

12D.5.1.1 Conduct a pre-production consultation with clients.

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Goal 6: Demonstrate photographic production.

GLO 6.1: Demonstrate outdoor photography.

<p>12A.6.1.1 Select equipment and materials (including cameras and lenses) for outdoor photography.</p> <p>12A.6.1.2 Demonstrate the use of photographic equipment in outdoor photography.</p> <p>12A.6.1.3 Use manual camera settings for outdoor photography.</p> <p>12A.6.1.4 Select the optimal moment to photograph outdoor assignments.</p>	<p>12B.6.1.1 Use the colour temperature of lights in degrees Kelvin to determine lighting requirements.</p> <p>12B.6.1.2 Evaluate the source of the lighting found in the outdoor location.</p> <p>12B.6.1.3 Describe and select the lighting equipment required for the outdoor location.</p> <p>12B.6.1.4 Creatively modify the lighting settings in an outdoor location.</p>	<p>12D.6.1.1 Demonstrate the ability to photograph an outdoor assignment to industry standards, with a minimum of supervision.</p>
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Goal 6: Demonstrate **photographic production**. *(continued)*

GLO 6.2: Demonstrate **indoor, on-location photography**.

<p>12A.6.2.1 Select equipment and materials (including cameras and lenses) for indoor, on-location photography.</p> <p>12A.6.2.2 Demonstrate the use of photographic equipment for indoor, on-location photography.</p> <p>12A.6.2.3 Use creative camera settings for indoor, on-location photography.</p> <p>12A.6.2.4 Select the optimal moment to photograph indoor, on-location assignments.</p>	<p>12B.6.2.1 Use the colour temperature of lights in degrees Kelvin to determine lighting requirements.</p> <p>12B.6.2.2 Evaluate the source of the lighting found in the indoor, on-location location.</p> <p>12B.6.2.3 Describe and select lighting equipment required for indoor, on-location location.</p> <p>12B.6.2.4 Creatively modify the lighting settings in an indoor, on-location location.</p>	<p>12D.6.2.1 Demonstrate the ability to photograph an indoor, on-location assignment to industry standards, with a minimum of supervision.</p>
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Goal 6: Demonstrate **photographic production**. *(continued)*

GLO 6.3: Demonstrate **studio production**.

12A.6.3.1 Select equipment and materials (including cameras and lenses) for studio photography.	12B.6.3.1 Use the colour temperature of lights in degrees Kelvin to determine lighting requirements.	12D.6.3.1 Demonstrate the ability to photograph a studio assignment to industry standards, with a minimum of supervision.
12A.6.3.2 Demonstrate the use of photographic equipment in studio photography.	12B.6.3.2 Evaluate the source of the lighting found in the studio.	
12A.6.3.3 Use creative camera settings for studio photography.	12B.6.3.3 Describe and select lighting equipment required for studio assignments.	
12A.6.3.4 Select the optimal moment to photograph studio assignments.	12B.6.3.4 Creatively modify the lighting settings in a studio.	

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Goal 6: Demonstrate photographic production. (continued)

GLO 6.4: Demonstrate portrait photography.

<p>12A.6.4.1 Select equipment and materials (including cameras and lenses) for portrait photography.</p>	<p>12B.6.4.1 Use the colour temperature of lights in degrees Kelvin to determine lighting requirements.</p>	<p>12D.6.4.1 Demonstrate the ability to photograph a portrait assignment to industry standards, with a minimum of supervision.</p>
<p>12A.6.4.2 Demonstrate the use of photographic equipment in portrait photography.</p>	<p>12B.6.4.2 Evaluate the source of the lighting found in the portrait assignment.</p>	
<p>12A.6.4.3 Use creative camera settings for portrait photography.</p>	<p>12B.6.4.3 Describe and select lighting equipment required for portrait assignments.</p>	
<p>12A.6.4.4 Select optimal moment to photograph portraits.</p>	<p>12B.6.4.4 Creatively modify the lighting settings for a studio assignment.</p>	

GLO 6.5: Demonstrate event photography.

<p>12A.6.5.1 Photograph events to industry standards.</p>	<p>12D.6.5.1 Demonstrate the ability to photograph an event assignment to industry standards, with a minimum of supervision.</p>
<p>12A.6.5.2 Evaluate results of each photograph and, if necessary, modify settings and reshoot.</p>	

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Goal 7: Demonstrate understanding of the properties of **photographic post-production.**

GLO 7.1: Demonstrate understanding of **photographic editing.**

Note that various editing software use different names for these techniques.



12C.7.1.1 Demonstrate the following techniques to industry standards using editing software (i.e., Adobe, Picasa, Gimp, photo editing plug-ins, Photomatix):

- layers
- filters
- simple edits
 - crop
 - levels
 - curves
 - sharpening
 - contrast
- selections
- actions
- cloning
- bandage
- layer masks
- adjustment layers
- brushes
- typography
- blending modes
- RAW
- stitching / montage
- colour modes
- colour space
- light painting
- HDR

12D.7.1.1 Demonstrate the ability to emulate the editing of a professional photographer.

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Goal 7: Demonstrate understanding of the properties of **photographic post-production**. *(continued)*

GLO 7.2: Demonstrate understanding of **hard copy photographic output**.

12A.7.2.1 Demonstrate colour management (profiling).	12B.7.2.1 Print photographs following criteria.	12C.7.2.1 →	12D.7.2.1 →
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GLO 7.3: Demonstrate understanding of digital photographic output.
No applicable SLOs.

GLO 7.4: Demonstrate understanding of mounting and framing.

12A.7.4.1 Demonstrate the ability to stretch canvas.	12A.7.4.2 Demonstrate the ability to cut mats following industry standards.		
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Goal 8: Describe and demonstrate the transferable **cross-curricular** knowledge and skills relevant to photography.

GLO 8.1: Research, read, interpret, and communicate information relevant to photography.

12D.8.1.1 Demonstrate the ability to research the work of a professional photographer.

GLO 8.2: Apply the knowledge and skills from **mathematics** relevant to photography.

12A.8.2.1 Find and describe the nodal point on a camera lens in order to create panoramic shots.

12A.8.2.2 Demonstrate an understanding of the relationship between the aspect ratio and the focal length (crop sensor).

GLO 8.3: Apply the knowledge and skills from **other subject areas** (Arts, Social Studies) relevant to photography.

12D.8.3.1 Research an event to determine how photography (either still or video) was used as a tool for social justice.

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Goal 9: Demonstrate awareness of **sustainability** as it pertains to photography.

GLO 9.1: Describe the photography industry's **sustainability practices** and impact on the environment.

No applicable SLOs.

GLO 9.2: Describe the impact of **human sustainability** on the well-being of those employed in photography and those who use their products and services.

12A.9.2.1 Demonstrate awareness of photography as a tool for understanding the past.

GLO 9.3: Describe **sustainable business practices** within the photography industry.

12A.9.3.1 Discuss what a photographic business can do to remain solvent.

12B.9.3.1 Demonstrate awareness of the need for photography businesses to create networks in order to promote their business.

12C.9.3.1 Demonstrate awareness of the ways that photographers can promote their business.

12D.9.3.1 Demonstrate how photographers can use their portfolios in order to develop a customer base.

12A.9.3.2 Demonstrate awareness of the purpose of marketing in the photography industry, and the need to keep it current.

12B.9.3.2 Demonstrate awareness of the need for photographers to keep their technology current.

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Goal 10: Demonstrate awareness of the **ethical and legal standards** as they pertain to photography.

GLO 10.1: Demonstrate awareness of the **ethical and legal standards** as they pertain to photography.

12A.10.1.1 Demonstrate awareness of the use of photography in cyber-bullying and other inappropriate behaviours.	12B.10.1.1 Discuss the consequences of the fraudulent use of images.	12C.10.1.1 Discuss ethical considerations related to sensitive subject matter (i.e., content that is sexually-suggestive, illegal substances, racist, etc.).	12D.10.1.1 Demonstrate the use of model release forms. 12D.10.1.2 Discuss the consequences of not fulfilling contractual agreements with clients.
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Goal 11: Demonstrate employability skills.

GLO 11.1: Demonstrate fundamental employability skills.

12A.11.1.1 Demonstrate regular and punctual attendance.	12B.11.1.1 →	12C.11.1.1 →	12D.11.1.1 →
12A.11.1.2 Demonstrate the ability to communicate respectfully and effectively with teachers, supervisors, co-workers, and students.	12B.11.1.2 →	12C.11.1.2 →	12D.11.1.2 →
12A.11.1.3 Demonstrate accountability by taking responsibility for their actions.	12B.11.1.3 →	12C.11.1.3 →	12C.11.1.3 →
12A.11.1.4 Demonstrate adaptability, initiative, and effort.	12B.11.1.4 →	12C.11.1.4 →	12D.11.1.4 →
12A.11.1.5 Demonstrate teamwork skills.	12B.11.1.5 →	12C.11.1.5 →	12D.11.1.5 →
12A.11.1.6 Demonstrate the ability to stay on task and effectively use time in class and work environments.	12B.11.1.6 →	12C.11.1.6 →	12D.11.1.6 →
12A.11.1.7 Demonstrate the responsible use of wireless communication devices.	12B.11.1.7 →	12C.11.1.7 →	12D.11.1.7 →

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Goal 11: Demonstrate **employability skills**. *(continued)*

GLO 11.2: Demonstrate awareness of **cultural proficiency** and its importance in the workplace.

12B.11.2.1 Demonstrate the ability to research a different culture in order to gain the knowledge necessary to photograph individuals from that culture in an appropriate way.

12C.11.2.1 Demonstrate the ability to photograph an event, in a way that reflects the values of that culture.

12D.11.2.1 Demonstrate the ability to manage, coordinate, and organize small and large groups of subjects representing various cultures (i.e., wedding party) during a photographic assignment.

GLO 11.3: Demonstrate an understanding of the **business operation** of a photographic business/service.

12D.11.3.1 Demonstrate the skills of an art director, managing the work of other photographers, during a photographic assignment.

12D.11.3.2 Develop a contractual agreement.

12D.11.3.3 Demonstrate understanding of the role of lawyers, financial institutions, accountants, and business advisors in a photographic business/service.

12D.11.3.4 Demonstrate the ability to conduct post-production consultations with clients.

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Goal 11: Demonstrate **employability skills.** *(continued)*

GLO 11.4: Demonstrate **critical thinking skills.**

12C.11.4.1 Demonstrate critical thinking skills in selecting editing software to perform a certain task.

12D.11.4.1 Demonstrate the ability to think critically in order to solve problems that occur during a photographic assignment.

12C.11.4.2 Demonstrate critical thinking skills in selecting editing tools.

12D.11.4.2 Demonstrate the ability to critically evaluate photographs in order to decide which to keep and which to dispose of.

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Goal 12: Demonstrate understanding of the **photography industry**.

GLO 12.1: Demonstrate understanding of the scope of the **photography industry**.

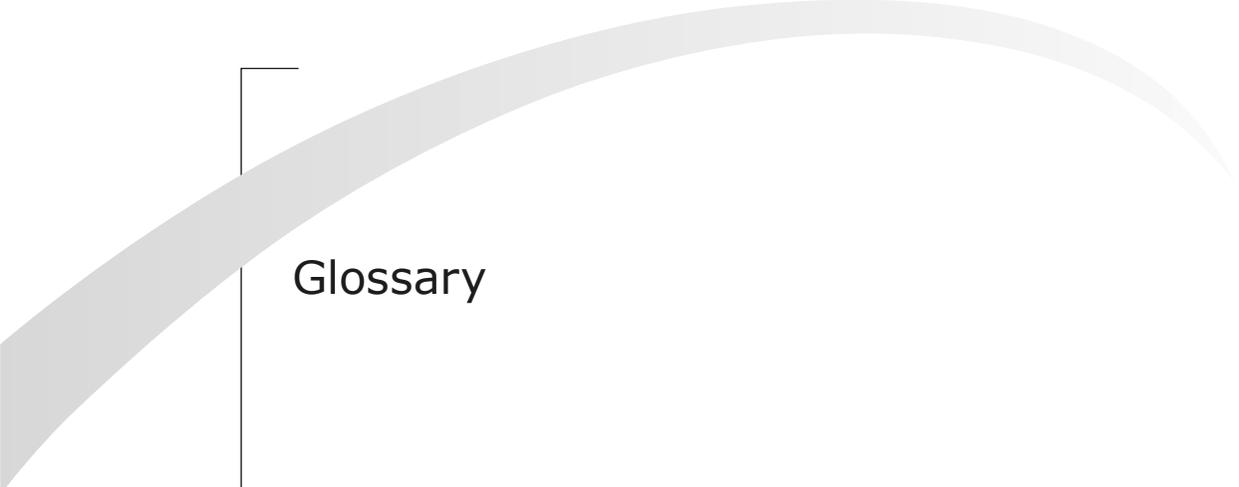
12A.12.1.1 Demonstrate awareness of non-typical forms of photography (i.e., medical, construction, underwater, space, x-rays).	12C.12.1.1 Demonstrate the ability to research one specific occupation within photography.	12D.12.1.1 Demonstrate the ability to research the scope of the local industry.
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GLO 12.2: Demonstrate understanding of the **educational and career opportunities**, as well as the **industry and professional associations**.

12B.12.2.1 Demonstrate understanding of industry and professional associations.	12C.12.2.1 Demonstrate the ability to research one specific educational opportunity within photography.	12D.12.2.1 Develop a portfolio to be used for gaining employment in the photography industry.
		12D.12.2.2 Develop a resumé to be used for gaining employment in the photography industry.

GLO 12.3: Demonstrate understanding of **working conditions** in the photography industry.

12A.12.3.1 Demonstrate understanding of the working conditions of photojournalists.	12B.12.3.1 Demonstrate understanding of the harsh working conditions which can be found in outdoor photography assignments.	12C.12.3.1 Demonstrate the ability to research the working conditions in one specific occupation.
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Glossary

GLOSSARY

Aperture

An opening, usually variable in size, located on or near a lens, which is used to control the amount of light that reaches the photosensitive material.

Aperture priority

An automatic exposure allowing the photographer to set the desired lens opening, after which the camera automatically adjusts the shutter speed for a correct exposure.

Blur

The softening of the detail in an image or parts of an image.

Bounce light

Diffused illumination achieved by reflecting light from a flash or lamp off of a white surface such as a wall or card.

Bracketing

Making several exposures of the same subject, intentionally overexposing and underexposing from an initially determined or estimated exposure thought to be correct; can be done by changing either the f/stop or the exposure time (shutter speed).

Burning-in

A technique used to darken certain areas of the image.

Cable release

A flexible cable that usually screws into the shutter release, allowing the photographer to rip the shutter without pressing the release with a finger; used for time exposures to prevent camera movement.

CCD

An abbreviation for Charge-coupled Device, a common type of image sensor in a digital camera or scanner that can convert light into an electronic signal.

Colour balance

The colour temperature of illumination for which a colour film will give a correct colour rendition. Often used to refer to the colour temperature of illumination, as in daylight balance illumination.

Colour temperature

A scale of numbers used for measuring the colour of light, which varies according to its temperature; expressed in units of measurement called kelvin, abbreviated K. Colour temperatures are derived from comparison with the colour of the illumination emitted from an ideal black-body radiator at different temperatures.

Composition

The arrangement of the subject or elements in a picture; carefully considered composition is the key to an effective photograph.

Contrast

The range of brightness of a subject; also, the range of density in a negative, print, or slide. In general, a difference between extremes.

Copyright

The exclusive right to reproduce, publish, and sell the matter and form of a literary or artistic work including photographs.

Cropping

Eliminating unwanted parts of a picture. A photographer crops with the viewfinder by framing only the desired subject. Cropping also can be used during the manipulation process to print only the desired portion of the negative or image.

Daguerreotype

A photographic process that uses silver-plated copper plates fumed with iodine. After exposure, the plate is fumed with mercury as a kind of development. Invented by Louis Jacques M. N. P. Daguerre and announced to the public in 1839, it was the first practical photographic process.

Depth of field

The area in a photograph that is in sharp focus; figured as the distance between the nearest and farthest object in focus; varies depending on the lens focal length, point of focus, and f/stop.

Diffused lighting

Non-directional lighting that gives uniform illumination with lower contrast and less shadowing than directional lighting; also called soft lighting.

Distortion

Used to describe an unnatural or imperfect image; often related to the use of lenses.

Dodging

A technique used to lighten certain areas of the image.

Employability Skills

The critical skills needed in the workplace – whether self-employed or working for others. The Employability Skills 2000+ are developed by the Conference Board of Canada.

Essential Skills

Skills needed for work, learning, and life which provide the foundation for learning all other skills, enabling people to evolve with their jobs and adapt to workplace change. The Essential Skills are developed by Human Resources and Skills Development Canada.

Exposure

The amount of light acting on the photosensitive material; with cameras, exposure is controlled by the lens opening and shutter speed. Exposure is equal to the product of the illuminance on the material and the amount of time that the material is exposed to light.

Fill light

Light from any source used to augment the main illumination in order to brighten dark areas in a picture, such as shadows.

Fish-eye lens

An extreme wide-angle lens that often has a bulging front lens element resembling a fish's eye and produces an angle of view close to 180 degrees; a fish-eye lens designated as full-frame rather than circular is designed to produce a rectangular image.

Flash

Illumination provided by electronic flash units which are discontinuous light sources in which illumination is generated by a brief, high-voltage electric discharge through a gas-filled transparent or translucent tube.

Focal length

The distance between the lens and the plane of focus when the lens is focused at infinity.

Focus modes

The control on a camera that sets it to autofocus or manual focus.

Framing

A composition technique to position the camera so that the foreground objects in the picture form a natural frame at the top of, on the side of, or around the main subject; also refers to composing a picture within the viewfinder.

Front curtain sync

The flash fires an instant after the front curtain of a focal plane shutter has completed its travel across the film plane. This is the way the camera operates with the flash sync mode at Normal Sync (see “Rear curtain sync”).

High dynamic range (HDR)

A set of techniques that allow a greater dynamic range of luminance between the lightest and darkest areas of an image than current standard digital imaging techniques or photographic methods.

Histogram

A graphical representation of the occurrence of tones or colours in a digital image.

ISO

A system of numbers determined by the International Organization for Standardization that indicates the relative speeds of films; also adopted for use with digital cameras to indicate a change in the image sensor’s effective sensitivity.

Landscape orientation

In a rectangular orientation, the long dimension is horizontal.

Layer

A mechanism for overlaying and combining multiple images. Layers are like transparent sheets of acetate (clear plastic) that you can stack and rearrange. In addition to ordinary image layers, there are special kinds of layers.

Lens

Optical pieces of glass designed to focus rays of light so as to produce an image; adjustable lenses feature focusing and f/stop controls.

Manual adjustment

A setting on a camera under the total control of the photographer, who selects both the lens opening (f/stop) and shutter speed; also an exposure mode setting (M) on some SLR cameras with multimode exposure.

Masking

Using an opaque material cut in the proper shape to block light from part of the image during printing.

Matting

A method for simulating transparency in images displayed on web pages. When transparency is not supported, you can specify a matte colour that matches the background to simulate transparency.

Medium

A name for substances on which data is recorded, such as magnetic disks and tape.

Natural light

Existing light, usually sunlight (but also moonlight and firelight), that is not supplemented with artificial light; sometimes called ambient light, available light, or existing light.

Negative space

In a figure-ground relationship, a ground that is relatively featureless, with fairly uniform tonal qualities.

Opacity

The extent to which something blocks light. You can change the opacity of layers, filters, and effects so that more (or less) of the underlying image shows through.

Panorama

A broad view of a subject, usually a landscape, made by overlapping individual shots as they are taken and then merging them to form one image.

Perspective

The appearance of objects relative to their distance and position; a necessary consideration to suggest depth in photographs; a dimension that the human eyes see but the camera lens does not.

Photographic triangle

The relationship between shutter speed, aperture, and ISO to determine the exposure of an image.

Point and shoot camera

An automatic compact camera; sometimes refers to some simple cameras.

Public domain

Created material, such as photographs, on which the copyright has lapsed, making them available for anyone's use without compensation to the creator.

Rear curtain sync

A feature of some autoflash units that delays the firing of the flash to portray moving subjects with a blurred image that appears to follow them; also called second curtain flash and trailing sync.

Reflector

Any device used in photography to reflect light for the purpose of redirecting it or diffusing it.

Retouching

Correction of technical flaws or alteration of a photograph for aesthetic reasons.

Rule of thirds

A rule of thumb for composition that entails dividing the frame into thirds horizontally and vertically to form four intersection points at which the subject can be effectively positioned.

Sharp

A subjective description of a photographic image that appears to render small detail and texture clearly and precisely. The opposite of soft or blurred.

Shutter priority

An automatic exposure mode that permits the shutter speed to be set to capture the subject at a high speed or to show movement of the subject at a slower speed. The camera automatically sets the aperture to give the correct exposure.

Shutter speed

Indicates the precise length of time that light exposes the film or CCD; usually in marked fractions of a second.

Stitch

To join together one or more pictures, usually to make a panorama. A "stitched" or "segmented" image involves taking two or more photographs of a scene from the same camera position, with the camera rotating on a single axis and with each image (segment) partially overlapping another so they can be joined together ("stitched") on your computer using image-processing software, resulting in a single extra-wide or extra-tall picture.

Stock resources

Generic photography that is performed on speculation at the expense of the photographer. Stock photographs are usually held by a second party who sells the rights to the photographs to a wide variety of clients.

Supplementary light

Any artificial light supplied by the photographer in addition to pre-existing light.

Telephoto lens

A lens that has a greater focal length and a narrower angle of view than a normal lens or a wide-angle lens; produces a larger subject image than a normal lens or a wide-angle lens when all lenses are the same distance from the subject.

Texturizing

The process of adding texture to an image through electronic means.

TIFF

An acronym for Tagged Image File Format, a digital image file format that is available in many digital cameras; produces a larger digital image file with higher resolution and better image quality than the more common JPEG digital image file format.

Tintype

A variation of the wet-plate process in which the collodion emulsion is coated on a black-lacquered metal sheet and exposed directly in the camera. An inexpensive and popular type of photograph in the 19th century.

Tone mapping

A technique used in image processing and computer graphics to map one set of colours to another.

Tripod

A three-legged device designed to give support and steadiness to the camera.

TTL

Abbreviation for Through-the-lens.

Vignetting

An undesirable effect when taking a picture that darkens the edges of the image; often caused by a lens shade or filter ring that extends too far in front of the camera lens; also an effect created to emphasize the subject by obliterating the background around it.

White balance

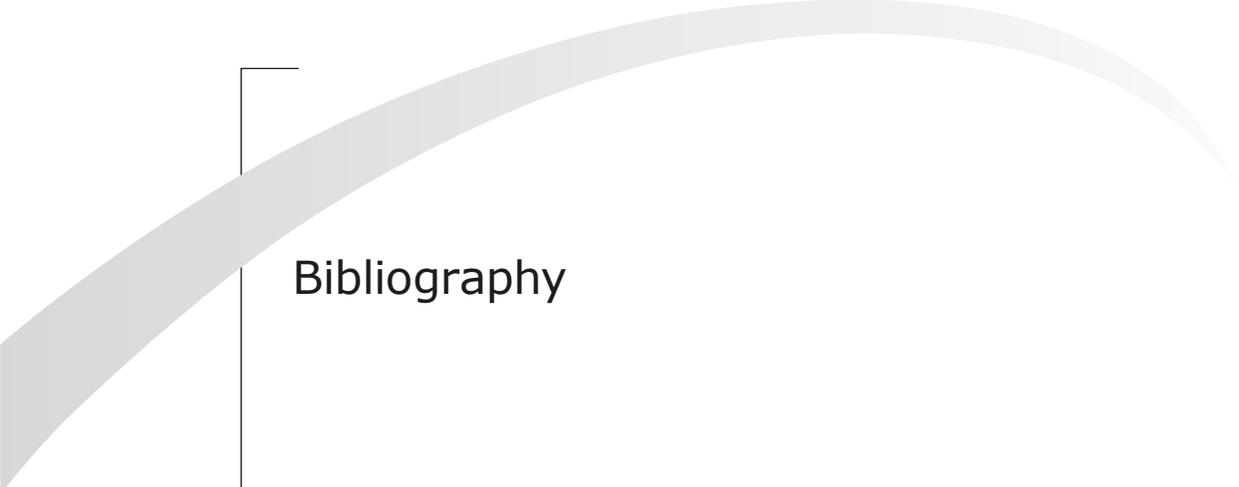
A control in digital cameras to correct the colours from different light sources so that your subjects appear in the same colours in a digital photograph as they do to your eyes; can be set to automatic or manual control to adjust for varying light.

Wide angle lens

A lens that has a shorter focal length and a greater angle of view than a normal lens or a telephoto lens; produces a smaller image than a normal lens or a telephoto lens when all lenses are the same distance from a subject.

Zoom lens

A versatile lens that can be adjusted quickly to different focal lengths in order to vary the subject image size.



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