



Senior Years Information and Communication Technology

Manitoba Curriculum
Framework of Outcomes

SENIOR YEARS INFORMATION AND COMMUNICATION TECHNOLOGY

Manitoba Curriculum Framework of Outcomes

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Contents

Acknowledgements iii

Contents v

Introduction 1

Information and Communication
Technology Framework 1
Senior Years ICT Courses 1
Implementation 2
Access to Computer Hardware and
Software 3

Focus on Learning 4

The Student as Learner 4
The Teacher as Facilitator 4

List of Courses 5

Learning Outcomes 6

General Learning Outcomes 6
Specific Learning Outcomes 6

Course Descriptions 7

Specific Learning Outcomes Common to
All Courses 9
Applying ICT 1 15F 11
Applying ICT 2 15F 12
Keyboarding 25S 13
Print Communications 25S 14

Digital Pictures 25S 15
Digital Filmmaking 25S 16
Desktop Publishing 35S 17
Web Design 35S 18
Interactive Websites 35S 19
Data Collection and Analysis 35S 20
Relational Databases 35S 21
2-D Animation 35S 22
3-D Modelling 35S 23
Broadcast Media 35S 24
Interactive Media 35S 25

Appendix 27

Link between Applying ICT Courses and Literacy
with ICT Continuum 29
Sample Course Outline for Schools Combining
Applying ICT 1 and 2 into a Single Course 32
Topics for Consideration 35

References 73

Introduction

“The use of information technology will help enable all students to solve problems, improve their personal performance, and gain the critical and abstract thinking skills necessary to become lifelong learners and contributing members of their communities” (Manitoba Education and Training, *Technology As a Foundation Skill Area*, 7).

Information and Communication Technology Framework

This document provides a framework of learning outcomes for students completing Senior Years information and communication technology (ICT) courses. The framework serves as a basis for the development of the following courses:

- Applying ICT 1 15F
- Applying ICT 2 15F
- Keyboarding 25S
- Print Communications 25S
- Digital Pictures 25S
- Digital Filmmaking 25S
- Desktop Publishing 35S
- Web Design 35S
- Interactive Websites 35S
- Data Collection and Analysis 35S
- Relational Databases 35S
- 2-D Animation 35S
- 3-D Modelling 35S
- Broadcast Media 35S
- Interactive Media 35S

Senior Years ICT Courses

The emphasis of ICT courses is on students learning to solve problems, accomplish tasks, and express creativity, both individually and collaboratively. Students will learn to use today’s technology for tasks at school and in their personal lives. More importantly, students will learn to adapt to change and be able to independently learn and use new technology as it evolves throughout their lives. Each student should be knowledgeable about technology, be able to use technology readily and effortlessly, and be able to make decisions about her or his use of technology.

Effective integration of ICT into all curricula assists students in developing abilities to use, manage, and understand technologies. It is hoped that, before students enter Senior Years, they will have acquired most of the cognitive, affective, and supporting skills described in *Literacy with ICT Across the Curriculum: A Developmental Continuum*, available from Manitoba Education, Citizenship and Youth.

The Applying Information and Communication Technology 1 and 2 courses described in this document provide an opportunity for students to reinforce and extend the ICT knowledge, attitudes, and skills that they have developed in K–8, and prepare them for further studies in ICT.

Specialized ICT courses provide students with opportunities to apply previous learning, and to extend their information and communication technology skills in areas that interest them. This framework contains learning outcomes for a variety of courses that focus on analyzing information, communicating messages, and using technology to create products such as print documents, web pages, and video recordings.

A separate framework of learning outcomes is available for computer science. Computer science courses enable students to explore and develop skills in solving problems, and prepare them for further computer science studies at college or university. Computer science learning outcomes are listed in *Senior 2 (20S)*, *Senior 3 (30S)*, and *Senior 4 (40S) Computer Science: Manitoba Curriculum Framework of Outcomes*.

Implementation

The courses listed in this document are all optional Senior Years courses. The Senior Years credit system provides flexibility to enable students to pursue courses best suited to their individual needs and aspirations. No prerequisites are specified for ICT courses; however, some courses are designed to build upon the learning outcomes of previous courses. Schools must decide which courses to offer, whether courses have any local prerequisites, and how students will be assessed and recognized for prior learning.

ICT courses can be offered separately or combined with other courses to meet local needs. The following examples are provided to show some possibilities of how schools may be flexible in the delivery of the ICT courses described in this framework. Schools must decide how

they can best meet the needs of their students and community with the staff and resources available to them.

Example 1

A teacher may teach both a mathematics course and Data Collection and Analysis 35S to the same group of students. The two courses combined would be allotted 165 hours in the timetable (110 hours for the full-credit mathematics course plus 55 hours for the half-credit Data Collection and Analysis 35S course). Students would learn to collect and analyze data in the context provided by the mathematics curriculum. The learning outcomes for Data Collection and Analysis 35S could be achieved along with the mathematics learning outcomes. The student would earn 1½ credits for the combined course. The school would report the marks using the course codes for both the mathematics course and Data Collection and Analysis 35S.

Example 2

A teacher may infuse the learning outcomes from Desktop Publishing 25S throughout a full-credit ELA course. Students would use desktop publishing tools and techniques to plan and create a variety of published documents related to the content of the ELA curriculum. The learning outcomes for Desktop Publishing 25S would be achieved along with the learning outcomes for the ELA course. Evidence of the student's learning might be in the form of a portfolio. The two courses combined would be allotted 110 hours in the timetable with an increased expectation that students create their portfolio outside of the scheduled class time. The student would earn 1½ credits for the combined course. The school would report the marks using the course codes for both the ELA course and Desktop Publishing 25S.

Example 3

A school may combine the half-credit Web Design 35S with the half-credit Relational Databases 35S to create a full-credit course that allows students to create websites that include databases. The school would report the marks using the course codes for both Web Design 35S and Relational Databases 35S.

Example 4

A school may combine the half-credit 2-D Animation 35S with the half-credit 3-D Modelling 35S to create a full-credit course that allows students to focus on learning about and creating animations. The school would report the marks using the course codes for both 2-D Animation 35S and 3-D Modelling 35S.

Example 5

A school may wish to focus studies in several courses around a theme or big idea such as telling a story through film. Students might develop a script, create and edit a film, and publicize the screening of the film. Through a series of common projects, students could meet learning outcomes from Web Design 35S, Interactive Websites 35S, Digital Filmmaking 25S, Digital Filmmaking 25S, and other Senior Years courses such as ELA or social studies.

Example 6

A school may wish to focus studies in several courses around a large project that benefits the school or local community. The learning from the project could span multiple courses. Students would earn course credits based on the learning outcomes they met while contributing to the large project.

Access to Computer Hardware and Software

To achieve the outcomes for the ICT courses, students must have access to a computer with appropriate software installed. This framework does not prescribe specific software. It also avoids the use of trade names and product-specific terminology so that teachers and students may decide which software is appropriate for the activities designed to meet the learning outcomes. This allows for the introduction of new products and future technological developments.

Focus on Learning

The Student as Learner

Students are curious, active learners who have individual interests, abilities, and needs. It is crucial to recognize how students learn and how learning can be assessed. Learning involves the process of linking newly constructed understanding with prior knowledge, and adding new contexts and experiences to current understanding. The ICT framework is designed to accommodate and recognize students' prior learning.

Students must become independent learners if they are to maintain their skills and understanding of ICT. Products and techniques continue to evolve. Students are expected to learn new information and continually adapt to changes. To ensure that students become lifelong learners, it is imperative that they become increasingly engaged in planning, developing, and assessing their own learning experiences. They must have opportunities to work with other students, to initiate investigations, to communicate their findings, and to complete projects that demonstrate their learning.

At the beginning of a block of instruction, teachers, together with students, need to identify expected learning outcomes and establish performance criteria that correspond with learning outcomes specified for the course. This communication between teachers and students assists in planning for instruction, assessment, evaluation, and reporting. It also helps clearly identify what students need to accomplish, and thus facilitates the learning process.

When students are aware of expected learning outcomes, they will be more focused on the learning and more likely to assess their own progress and achievement. Furthermore, they can participate in creating appropriate assessment and evaluation criteria. Assessment methods must be valid, reliable, and fair to students.

The Teacher as Facilitator

Teachers do not need to be experts in ICT. Teachers are experts in facilitating groups and using instructional and assessment strategies that help students learn. If ICT courses are to remain current and relevant, teachers must be open to and accepting of innovations, and be willing to learn with their students.

As facilitators, teachers

- assist students as they navigate through information made available by information and communication technologies and other sources
- direct students as they gather, organize, analyze, and present their findings
- help students recognize, develop, focus, refine, consolidate, and extend their knowledge, skills, and competencies

List of Courses

Each Senior Years course is assigned a course code in the Department's *Subject Table Handbook*. The codes are listed below. Use these numbers when completing Professional School Personnel (PSP) forms and entering student records into the Student Records System (SRS).

Title	Level	Code	Credit
Applying ICT 1 *	15F	0217	0.5
Applying ICT 2 *	15F	0218	0.5
Keyboarding *	25S	1270	0.5
Print Communications *	25S	0222	0.5
Digital Pictures	25S	0226	0.5
Digital Filmmaking	25S	0230	0.5
Desktop Publishing *	35S	0223	0.5
Web Design *	35S	0234	0.5
Interactive Websites *	35S	0225	0.5
Data Collection and Analysis *	35S	0254	0.5
Relational Databases *	35S	0221	0.5
2-D Animation	35S	0227	0.5
3-D Modelling	35S	0236	0.5
Broadcast Media	35S	0231	0.5
Interactive Media	35S	0237	0.5

* These courses may be utilized to fulfill the minimum eight credit requirement for an approved Business Education or Marketing Education cluster.

Learning Outcomes

This framework contains the general and specific learning outcomes for Senior Years ICT courses. The learning outcomes are concise statements of the learning that students are expected to demonstrate in ICT courses by the end of each course. This learning includes:

- **Knowledge:** Students need to know facts, concepts, principles, and generalizations. The knowledge learned in ICT includes the vocabulary and function of computer hardware and software, standards and conventions, health and safety issues, and career information.
- **Skills and Strategies:** Students need to know and apply processes and strategies in developing skills. The skills include problem solving, critical thinking, metacognition, communication, and teamwork.
- **Attitudes:** Students need to develop attitudes and habits that include setting goals, thinking strategically in approaching a task, considering personal health and safety, acting ethically and morally, and reflecting on their own performance.

General Learning Outcomes

The general learning outcomes (GLOs) are broad statements describing student learning. These outcomes are interrelated and interdependent. Each outcome is to be achieved through a variety of learning strategies and experiences.

The four GLOs of the ICT framework reflect the four

foundation skill areas as outlined in *A Foundation for Excellence* (1995):

1. **Human Relations:** Students will demonstrate tolerance, teamwork, leadership, and responsible, ethical, and moral behaviour.
2. **Literacy and Communication:** Students will demonstrate effective communication skills in listening, speaking, reading, writing, viewing, and representing.
3. **Problem Solving:** Students will demonstrate appropriate problem-solving skills while seeking solutions to technological challenges.
4. **Technology:** Students will develop the abilities to use, manage, and understand information and communication technologies by exploring software, programming languages, and computer-controlled devices.

Specific Learning Outcomes

Each GLO is elaborated through a sequence of specific learning outcomes (SLOs). SLOs are listed for each Senior Years ICT course, and there are an additional 20 SLOs that are common to all courses. These are listed separately before the descriptions of specific courses.

Course Descriptions

Specific Learning Outcomes Common to All Courses

Senior Years teachers must continue to reinforce the learning that occurred in Early and Middle Years. Students must continue to collaborate, participate in self-assessment, consider the social implications of ICT, and act ethically and responsibly. Teachers should address the following learning outcomes throughout all the Senior Years ICT courses. The wording for these learning outcomes is the same for all courses. The application and assessment of them will differ for each course.

These learning outcomes support the descriptors listed in *Literacy with ICT Across the Curriculum: A Developmental Continuum*, published by Manitoba Education, Citizenship and Youth. Codes in brackets at the end of each learning outcome indicate the matching descriptor from the Developmental Continuum.

Students will...

1. Evaluate original inquiry questions and create new questions for future inquiry. (P-3.1)
2. Incorporate new information with prior knowledge and adjust inquiry strategies. (G-3.1)
3. Assess textual, numerical, aural, and visual information, as well as the source of the media, to determine context, perspective, bias, and/or motive. (G-3.2)
4. Self-assess ICT representations and go beyond established criteria by enhancing meaning and/or artistry, according to topic, audience, purpose, and occasion. (Pr-3.2)
5. Adjust communication based on self-evaluation and feedback from a global audience. (C-3.1)
6. Self-monitor learning goals, reflect on the value of ICT to complete learning tasks, and set personal goals for using ICT to learn. (R-3.1)
7. Identify possible health issues associated with using ICT. (*Examples: ergonomic factors, inactivity, carpal tunnel syndrome, repetitive stress injury, eye strain, addictive/obsessive behaviour...*) (E-1.4)
8. Apply school division's acceptable-use policy for ICT. (E-2.1)
9. Apply safety guidelines when communicating electronically. (*Examples: email, web pages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards...*) (E-2.2)
10. Explain consequences of unethical behaviour. (*Examples: cyberbullying, promotion of prejudice and hatred, copyright violations, plagiarism, wilful destruction/manipulation of data, hacking, propagation of viruses, spamming, software piracy, consumer fraud, identity theft...*) (E-2.3)

Senior Years Information and Communication Technology

11. Apply guidelines for ethical and responsible use of ICT. (*Examples: respect others' privacy, protect personal information, follow security procedures, respect intellectual property and credit sources, use licensed software, discourage cyberbullying, collect data ethically, analyze information ethically...*) (E-2.4)
12. Evaluate effects of personal ICT behaviour on others. (E-3.1)
13. Weigh personal benefits and risks of using ICT. (E-3.2)
14. Analyze various ICT skills and competencies required in personal career choices. (S-2.2)
15. Analyze advantages and disadvantages of ICT use in society. (*Examples: lack of access, consequences of unethical use, ease of manipulating data, ease of communicating information, addictive/obsessive behaviour...*) (S-2.3)
16. Weigh society's right to information access against right to individual privacy. (S-3.1)
17. Weigh benefits versus risks to society of creating new ICTs. (*Example: outsourcing jobs...*) (S-3.2)
18. Lead a group in the process of collaborative learning. (*Examples: motivate team members, value contributions of team members, manage group conflict, work toward consensus...*) (Co-3.1)
19. Weigh benefits and challenges of collaborating on learning with ICT. (Co-3.2)
20. Synthesize knowledge and information to solve unique ICT problems. (M-3.1)

Applying Information and Communication Technology 1

Course Code	Credits	Level
0217	0.5	15F

Purpose

The purpose of the course is to reinforce and extend the ICT knowledge, attitudes, and skills acquired by students in the Early and Middle Years. The course will further prepare students to use ICT to learn and demonstrate their learning in all Senior Years courses.

Specific Learning Outcomes

Students will:

- Organize and categorize information using:
 - Outlines
 - Graphic organizers
 - Spreadsheets
 - Tables
 - Charts
 - File directories
- Solve problems, reach conclusions, make decisions, and/or propose answers to questions by analyzing data/information and concepts using a spreadsheet or database.
- Assess textual, numerical, aural, and visual information, as well as the sources of the media, to determine context, perspective, bias, and/or motive.
- Analyze whether information from media sources has been manipulated. (*Examples: bogus websites, bogus email, spam, graphs showing selected data...*)
- Analyze whether information collected from media sources is sufficient and/or suitable for purpose and audience. Sources include websites, CD-ROMs, and email.
- Discuss information, ideas, and/or electronic work using tools for electronic communication. (*Examples: email, electronic whiteboards, web pages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards...*)

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Applying Information and Communication Technology 2

Course Code	Credits	Level
0218	0.5	15F

Purpose

The purpose of the course is to reinforce and extend the ICT knowledge, attitudes, and skills acquired by students in the Early and Middle Years. The course will further prepare students to use ICT to learn and demonstrate their learning in all Senior Years courses.

Specific Learning Outcomes

Students will:

1. Design electronic plans including:

- Outlines
- Timelines
- Storyboards

2. Design and create non-sequential web pages and branching multimedia presentations.

3. Simulate an abstract concept or real process using animation.

4. Analyze whether information collected from media sources is sufficient and/or suitable for purpose and audience. Sources include websites, CD-ROMs, and email.

5. Discuss information, ideas, and/or electronic work using tools for electronic communication. (*Examples: email, electronic whiteboards, webpages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards...*)

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Keyboarding

Course Code	Credits	Level
1270	0.5	25S

Purpose

The purpose of the course is to improve students' accuracy and speed with a keyboard, using touch-keying techniques.

Specific Learning Outcomes

Students will:

1. Demonstrate proper finger placement and movement for keystroking.
2. Demonstrate touch keying on a QWERTY keyboard with a minimum straight copy speed of 25 words per minute (based on a three-minute timing with a maximum of one error per minute).
3. Demonstrate touch keying on a numeric keypad.
4. Produce documents with no keying errors.
5. Follow acceptable Canadian standards and conventions for document production.

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Print Communications

Course Code	Credits	Level
0222	0.5	25S

Subject Description

The purpose of the course is to provide students with the skills and knowledge to plan and create documents for personal and business communications.

Specific Learning Outcomes

Students will:

- Plan and produce print documents conforming to recognized standards:
 - Business letters
 - Labels and envelopes
 - Meeting agendas
 - Meeting minutes
 - Research papers in a prescribed style (*Examples: MLA, APA, Chicago...*)
 - Resumés and cover letters
- Participate in multi-user document editing and reviewing.
- Use language and tone appropriate to the communication.
- Incorporate elements of good design when designing documents. (*Examples: balance, harmony, contrast, colour, consistency...*)

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Digital Pictures

Course Code	Credits	Level
0226	0.5	25S

Purpose

The purpose of this course is to provide students with the skills and knowledge to convey a message through an original digital image.

Specific Learning Outcomes

Students will:

1. Define the purpose and audience for an image.
2. Conceive of a still image that will communicate a message.
3. Capture a still image with a digital camera.
4. Manipulate a digital image to create a new image by:
 - Using painting tools (*Examples: lines, boxes, polygons, pencil, brush, spray, text...*)
 - Using editing tools (*Examples: extract, crop, straighten, colour...*)
 - Using layers (*Examples: create, adjust, import, knockout, duplicate, liquefy...*)
 - Flattening files
 - Using image properties (*Examples: transparency/opacity, soft/hard edges, curves...*)
 - Applying filters and effects (*Examples: blur, distort, sketch, stylize, texture...*)
5. Select the graphic file format best suited to the end product and purpose of the image. (*Examples: image size, resolution, bitmap or vector, compression...*)
6. Display an original graphic image. (*Examples: printed, projected...*)
7. Critique and suggest improvements for an image, using given technical and aesthetic criteria.
8. Accept critique of an image and make changes based on the feedback.

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Digital Filmmaking

Course Code	Credits	Level
0230	0.5	25S

Purpose

The purpose of the course is to provide students with the skills and knowledge to tell stories by combining sound, still images, moving images, text, graphics, and animation into a video product. Students will plan, develop, and produce a video project.

Specific Learning Outcomes

Students will:

1. Define the purpose and audience for a film.
2. Create a storyboard with sketch drawings and descriptions.
3. Develop a shooting schedule including timelines, lists of events, and logistics.
4. Demonstrate three-point lighting (key light, backlight, fill light) of a subject.
5. Use lighting techniques to convey mood. (*Example: dark lighting and shadows emphasize dramatic effects. As a learning strategy, students may compare the lighting employed in a variety of video genres, such as advertisement, music video, drama, documentary, and news.*)
6. Evaluate the effect of camera settings on image quality. (*Examples: aperture settings, quality settings, manual versus automatic...*)
7. Evaluate the effect of camera position, angle, and movement.
8. Capture images and sounds with cameras and microphones.
9. Transfer images and sounds from recording devices to a personal computer.
10. Edit video and sound clips using a software program.
11. Combine sound, still images, moving images, text, graphics, animation, transitions, and effects into a video product. (Note: emphasize the need to respect intellectual property and credit sources.)
12. Use a software program to add title and credits to a video project.

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Desktop Publishing

Course Code	Credits	Level
0223	0.5	35S

Subject Description

The purpose of the course is to provide students with the skills and knowledge to plan and create a variety of published print documents.

Specific Learning Outcomes

Students will:

1. Define the purpose and audience for a print document.
2. Incorporate elements of good design when designing documents. (*Examples: balance, harmony, contrast, colour, consistency...*)
3. Plan and produce print documents conforming to recognized standards:
 - Brochures
 - Flyers
 - Media inserts (*Examples: CD inserts, DVD inserts...*)
 - Newsletters
 - Posters
 - Programs
 - Yearbooks
4. Participate in multi-user document editing and reviewing.
5. Use language and tone appropriate to the communication.
6. Critique and suggest improvements for published documents using given criteria.
7. Accept a critique of a print document and make changes based on the feedback.

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Web Design

Course Code	Credits	Level
0234	0.5	35S

Purpose

The purpose of this course is to provide students with the skills and knowledge to design, develop, and publish a simple website.

Specific Learning Outcomes

Students will:

1. Design a website for a defined audience and purpose.
2. Explain the need for standards and conventions when creating websites.
3. Develop a prototype visual design for a website, using current design principles. (*Include: page layout, links, colours, and content requirements.*)
4. Design a navigation plan for a website.
5. Set up a directory and file management system for storing, sharing, and publishing documents.
6. Create a website that includes:
 - Multiple pages
 - Formatting
 - Content objects (*Examples: images, sounds, video, animation...*)
 - Navigation (*Examples: anchors, hyperlinks, email addresses, files...*)
7. Publish a website. (*Examples: Internet, Intranet, CD...*)
8. Critique and suggest improvements for a website, using given criteria.
9. Accept a critique of a website and make changes based on the feedback.

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Interactive Websites

Course Code	Credits	Level
0225	0.5	35S

Purpose

The purpose of this course is to provide students with the skills and knowledge to design, develop, and publish a website to display and gather information. Students should have the skills described in the learning outcomes for Web Design 35S prior to starting this course.

Specific Learning Outcomes

Students will:

1. Discuss the advantages and costs of using a content management system when creating and maintaining a website.
2. Create and use style sheets.
3. Create meta tags.
4. Discuss the strengths and weaknesses of current scripting languages. Note: This course is not intended to be an in-depth study of scripting languages.
5. Insert and edit client scripts. (*Examples: applets, hit counters, hover buttons, slide shows, mouse-overs...*)
6. Create and use forms to capture information. (*Examples: guest book, mail to form...*)
7. Describe the advantages and challenges of streaming audio and video content.
8. Publish a website.
9. Critique and suggest improvements for a website, using given criteria.
10. Accept a critique of a website and make changes based on the feedback.

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Data Collection and Analysis

Course Code	Credits	Level
0254	0.5	35S

Purpose

The purpose of the course is to provide students with the skills and knowledge to collect, organize, manipulate, and analyze data to solve problems using spreadsheets.

Specific Learning Outcomes

Students will:

1. Analyze data for accuracy, currency, credibility, validity, reliability, objectivity, fairness, and relevance.
2. Analyze whether information from media sources has been manipulated. (*Examples: bogus information, graphs showing only selected data...*)
3. Create worksheets by entering and importing data.
4. Create formulas, including:
 - Cell references (*Examples: relative, absolute, mixed...*)
 - Mathematical expressions
 - Functions (*Examples: financial, logical, statistical...*)
5. Sort data.
6. Create, modify, and publish charts.
7. Automate repetitive tasks by using software tools. (*Examples: macros, templates...*)
8. Link multiple worksheets and multiple spreadsheet documents.
9. Improve the readability of a worksheet. (*Examples: layout, format, labels, borders, hiding cells...*)
10. Validate and protect data in a spreadsheet.
11. Publish information from a spreadsheet. (*Examples: print, web, link, export to other applications...*)

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Relational Databases

Course Code	Credits	Level
0221	0.5	35S

Purpose

The purpose of the course is to provide students with the skills and knowledge to plan, create, and use a relational database built in a Database Management System (DBMS).

Specific Learning Outcomes

Students will:

1. Analyze data for accuracy, currency, credibility, validity, reliability, objectivity, fairness, and relevance.
2. Analyze whether information from media sources has been manipulated. (*Examples: bogus information, reports showing only selected data...*)
3. Plan, create, and use a relational database, including:
 - Adding fields (*Examples: text, numbers...*)
 - Creating tables
 - Setting primary keys
 - Defining relationships between tables
4. Set up a mechanism to enter data into a database. (*Examples: forms, web interface...*)
5. Ensure the validity and integrity of data.
6. Create and modify queries.
7. Summarize data by creating reports and sub-reports.
8. Export data from a database for use in other applications. (*Example: for use in spreadsheets, word-processed documents...*)

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

2-D Animation

Course Code	Credits	Level
0227	0.5	35S

Purpose

The purpose of the course is to provide students with the skills and knowledge to create two-dimensional animations.

Specific Learning Outcomes

Students will:

1. Define the purpose and audience for an animation.
2. Discuss various types of animation.
3. Create a storyboard.
4. Choose frame rate and screen size based on use of animation.
5. Create animation objects.
6. Import object files. (*Examples: graphics, sound...*)
7. Morph an object through distortion or deformation.
8. Create and use a timeline.
9. Animate objects by using timeline effects, layers, or frames.
10. Incorporate interactive features to control an animation. (*Examples: buttons, counters...*)
11. Critique and suggest improvements for an animation, using given criteria.
12. Accept a critique of an animation and make changes based on the feedback.

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

3-D Modelling

Course Code	Credits	Level
0236	0.5	35S

Purpose

The purpose of the course is to provide students with the skills and knowledge to use software to create three-dimensional models that represent real objects or illustrate ideas.

Specific Learning Outcomes

Students will:

1. Describe uses of 3-D modelling.
2. Describe the basic principles of 3-D modelling.
3. Define the purpose and audience for a 3-D model.
4. Build objects including:
 - Primitive objects
 - Objects created through union, division, subtraction, and intersection
 - Flat objects pulled into the third dimension
 - Deformed objects (*Examples: sculpted, hooked, hammered, drilled, brushed...*)
 - Curves
 - Organic shapes (*Examples: metaballs, bones and skinning...*)
5. Enhance the visual presentation of a model by setting object properties and applying textures to objects.
6. Light an object to create shadows, shading, reflection, and ray tracing.
7. Describe the characteristics and purposes of perspective and orthogonal viewing.
8. Critique and suggest improvements for a 3-D model, using given criteria.
9. Accept a critique of a 3-D model and make changes based on the feedback.

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Broadcast Media

Course Code	Credits	Level
0231	0.5	35S

Purpose

The purpose of the course is to provide students with an understanding of all phases of the media production process (pre-production planning, production, and post-production) from a variety of perspectives (news, sports, entertainment...). The course includes technical aspects of media production for the web, radio, and television. Students should have skills creating video and creating web pages prior to taking the course. Students will plan, develop, and broadcast multimedia.

Specific Learning Outcomes

Students will:

1. Create and edit announcer copy for an audio broadcast. (*Examples: news items, music top hits...*)
2. Record sound files.
3. Edit sound files using hardware and software tools to add and create desired effects. (*Examples: fade, clip, mix, equalize, compress, adjust gain...*)
4. Create and record an audio program with voice and sound files. (*Examples: announcements, sports, community events...*)
5. Discuss the advantages and disadvantages of various sound file formats and compression codecs.
6. Create and edit announcer copy and stage directions for a video broadcast. (*Examples: news items, music top hits, weather...*)
7. Record video files.
8. Edit video files using hardware and software tools to add and create desired effects. (*Examples: special effects, transitions, mixing...*)
9. Create and record a video program. (*Examples: school event, community event, variety show...*)
10. Discuss and select the video format best suited to the purpose, audience, and available technology.
11. Create audio and video clips for broadcast via a web page. (*Examples: avi, mov, streaming audio/video...*)

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Interactive Media

Course Code	Credits	Level
0237	0.5	35S

Purpose

The purpose of the course is to provide students with the skills and knowledge to create interactive media products that combine video, audio, and interactive components. Prior to taking the course, students should have skills in creating audio and video and an understanding of the media production process. Students will plan, develop, and publish interactive media.

Specific Learning Outcomes

Students will:

1. Define the purpose and audience for a product.
2. Develop and present a project proposal.
3. Document a product design including:
 - Storyboard
 - Written script
 - Design document (treatment)
 - Functional specifications
 - Production methodology
 - Production timeline
4. Produce a project including the following, as needed:
 - Interface
 - Text
 - Images
 - Audio
- Video
- Animation
- Code/script
- Database
5. Create a support document for the user of a product.
6. Create a promotional plan for a product.
7. Evaluate how effectively a product fulfilled its purpose.

Also see:

Specific Learning Outcomes Common to All Courses on page 9.

Notes

Appendix

Link between Applying ICT Courses and Literacy with ICT Continuum

Applying Information and Communication Technology 1 and Applying Information and Communication Technology 2 have a strong connection to *Literacy with ICT Across the Curriculum: A Developmental Continuum*. The table below shows these connections to the Developmental Continuum and the prior learning that supports the learning outcomes for both courses.

Specific learning outcomes from Applying ICT courses	Prior learning and supporting skills from Literacy with ICT Developmental Continuum
Organize and categorize information using: <ul style="list-style-type: none"> • outlines • graphic organizers • spreadsheets • tables • charts • file directories Literacy with ICT Developmental Continuum G-2.3	sa2.3 moves data between applications sc2.1 customizes the template of a graphic organizer, table, multimedia presentation, spreadsheet, and/or database
Solve problems, reach conclusions, make decisions, and/or propose answers to questions by analyzing data/information and concepts using a spreadsheet or database. Literacy with ICT Developmental Continuum Pr-2.3	Pr-1.3 edits electronic products according to established criteria, conventions, and/or standards (<i>Examples: text, images, sound, concept maps, multimedia presentations, email, tables, spreadsheets, graphs, video, animation, web pages, wikis, blogs...</i>) sa2.3 moves data between applications sc2.1 customizes the template of a graphic organizer, table, multimedia presentation, spreadsheet, and/or database
Assess textual, numerical, aural, and visual information, as well as the sources of the media, to determine context, perspective, bias, and/or motive. Literacy with ICT Developmental Continuum G-3.2	G-1.1 finds and collects information (text, images, data, audio, video) from given media sources (<i>Examples: within applications, CD-ROMs, the Internet, broadcast media, email...</i>) sa1.11 sends and receives text messages and electronic files using rules of etiquette (<i>Examples: not typing in all capital letters, filling in subject line...</i>) G-2.1 refines information searches using a variety of media sources sa2.4 chooses and uses search engines using own keywords sa2.5 refines searches using Boolean logic

(continued)

Specific learning outcomes from Applying ICT courses	Prior learning and supporting skills from Literacy with ICT Developmental Continuum
<p><i>(continued)</i></p> <p>Assess textual, numerical, aural, and visual information as well as the sources of the media to determine context, perspective, bias, and/or motive.</p> <p>Literacy with ICT Developmental Continuum G-3.2</p>	<p>G-2.2 analyzes textual, numerical, aural, and visual information gathered from media sources, applying established criteria (<i>Examples: accuracy, currency, credibility, validity, reliability, objectivity, fairness, relevance...</i>)</p> <p>sa2.6 investigates the currency and/or authorship of electronic sources such as websites, email, CD-ROMs, syndications, blogs, wikis, podcasts, and broadcast media (<i>Examples: checking date last modified, analyzing the meta-web information of a URL...</i>)</p>
<p>Analyze whether information from media sources has been manipulated. (<i>Examples: bogus websites, bogus email, spam, graphs showing selected data...</i>)</p> <p>Literacy with ICT Developmental Continuum G-2.5</p>	
<p>Analyze whether information collected from media sources is sufficient and/or suitable for purpose and audience. Sources include websites, CD-ROMs, email.</p> <p>Literacy with ICT Developmental Continuum G-2.4</p>	<p>sb1.3 captures digital data (<i>Examples: with microphones, digital audio-recording devices, digital cameras, video cameras, GPS, probeware...</i>)</p>
<p>Discuss information, ideas, and/or electronic work using tools for electronic communication. (<i>Examples: email, electronic whiteboards, web pages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards...</i>)</p> <p>Literacy with ICT Developmental Continuum C-2.1</p>	<p>C-1.1 displays and/or discusses electronic work (<i>Examples: text, images, sound, concept maps, multimedia presentations, email, tables, spreadsheets, graphs, video, animation, web pages, wikis, blogs...</i>)</p>
<p>Design electronic plans including:</p> <ul style="list-style-type: none"> • outline • timeline • storyboard <p>Literacy with ICT Developmental Continuum P-3.2</p>	<p>sa2.2 manages electronic files and folders</p> <p>sa2.3 moves data between applications</p> <p>sc1.3 inserts and edits text, data, images, sound, video, and/or formulas</p> <p>sc2.3 constructs graphic organizers, tables, spreadsheets, databases, multimedia presentations, and/or web pages</p>

(continued)

Specific learning outcomes from Applying ICT courses	Prior learning and supporting skills from Literacy with ICT Developmental Continuum
<p>Design and create non-sequential web pages and branching multimedia presentations.</p> <p>Literacy with ICT Developmental Continuum Pr-3.1</p>	<p>sc1.6 inserts hyperlinks to electronic sources</p> <p>sc1.7 formats page layout</p> <p>sb1.3 captures digital data (<i>Examples: with microphones, digital audio-recording devices, digital cameras, video cameras, GPS, probeware...</i>)</p> <p>sc2.3 constructs graphic organizers, tables, spreadsheets, databases, multimedia presentations, and/or web pages</p> <p>Pr-1.3 edits electronic work according to established criteria, conventions, and/or standards (<i>Examples: text, images, sound, concept maps, multimedia presentations, email, tables, spreadsheets, graphs, video, animation, web pages, wikis, blogs...</i>)</p> <p>Pr-2.2 revises electronic work to improve organization and clarity, enhance content and artistry, and meet audience needs, according to established criteria, feedback, and personal preferences (<i>Examples: by creating and/or critically revising text, images, and/or sound to enhance electronic work; by revising audio/video clips or effects; by adjusting the pace and transitions in multimedia presentations; by adding animation to web pages...</i>)</p>
<p>Simulate an abstract concept or real process using animation.</p> <p>Literacy with ICT Developmental Continuum Pr-3.3</p>	<p>sc1.2 draws images using electronic tools</p>

Sample Course Outline for Schools Combining Applying ICT 1 and 2 into a Single Course

Applying Information and Communication Technology

Introduction:

The purpose of this course is to provide students with an opportunity to expand upon previously learned ICT skills. Students will use office productivity software to meet a variety of project outcomes, such as the creation of documents, spreadsheets, databases, web pages, and presentations. In addition, students will explore the production of multimedia through a variety of projects that emphasize the use of graphics, animation, audio, and video. The integration of software tools will be utilized to complete complex tasks and projects. The Internet and email will be used as communications tools to assist in the research and data-gathering process. Ethical considerations, acceptable use, and the challenges associated with various uses of ICT in the home and workplace will also be examined.

Topics:

1. *Computer Orientation (5 Hours)*
 - Working at school:
 - Introducing what is available (software, computers, printers, scanners, et cetera)
 - Accessing the network
 - Storing and managing files (network, CD-ROM, DVD-ROM, USB, et cetera)
 - Knowing where to get more information (help menu, online and print resources)
 - Working at home:
 - Accessing school resources online
 - Transferring files
2. *Word Processing (10 Hours)*
 - Formatting and designing documents, including:
 - Referencing sources of text and inserted objects
 - Including headers, footers, and pagination
 - Choosing fonts and colours
3. *Spreadsheets and Databases (20 Hours)*
 - Determining when to use a database and when to use a spreadsheet
 - Creating a spreadsheet with formulas and logic
 - Manipulating spreadsheets (sorting and beyond)
 - Creating a flat file database, capturing and importing data
 - Manipulating the database (sorts and queries)
 - Displaying the results

4. *Graphics (15 Hours)*
 - Importing images and getting permission
 - Capturing still images (cameras and scanners)
 - Drawing and changing images
5. *Presentations (10 Hours)*
 - Conveying the message
 - Creating an outline
 - Creating speaking notes
 - Creating a consistent design
 - Customizing images and backgrounds
 - Inserting objects and linking to resources, including audio, video, and animation
6. *Multimedia (20 Hours)*
 - Telling a story with animation and video
 - Capturing good pictures and sounds
7. *Web Page Design (20 Hours)*
 - Making your words, images, and sounds communicate a message
8. *Ethical and Legal Issues (5 Hours)*
9. *Reflection and Assessment (5 Hours)*
 - Appraising tasks completed by peers using criteria and constructive feedback
 - Self-assessing and setting personal goals for the future

Note: The number of hours assigned to each topic will depend on each student's prior knowledge. The hours listed above are only an estimate for students who have progressed considerably through the Developmental Continuum for Literacy with ICT Across the Curriculum. The actual time spent on each topic will depend on the needs of the students. Students may have spent considerably more time word processing and creating presentations in Kindergarten to Grade 8 than in creating multimedia or designing web pages.

Assignments:

Research Project

Students will design and conduct a research project on an educational topic of their choice, which will be used for the following units:

Keyboarding

- Students will develop their keyboarding speed and accuracy while working on projects.

Word Processing

- Students will learn to set up documents correctly.
- Students will create handouts to support their presentation/research project.

Graphic Design

- Students will acquire images for their research project and edit them.
- Students will create images appropriate for the type of media they will be using for their research project.

2-D Animation

- Students will create or acquire images and sounds for their animation.
- Students will create animations for their research project and export them for use in other media.

Spreadsheets

- Students will create spreadsheets for their research project using common functions.
- Students will create charts for their research project.

Database

- Students will enter and display information for their research project in a flat file database.
- Students will sort and query the data for reports for their project.

Audio and Video

- Students will design a storyboard and timeline for a video to support their research project.
- Students will tape, edit, and export the video for their research project.

Web Page Design

- Students will design a website to support their research project.
- Students will create an interactive, non-linear, branching website, which includes appropriate projects from the previous units.

Presentation

- Students will create a multimedia presentation to enhance their research project.
- Students will make an oral presentation to the class accompanied by their multimedia presentation, and include handouts for the class.

Topics for Consideration

This appendix contains topics for consideration when developing courses that meet the learning outcomes for Senior Years ICT courses. The content of each course should reflect the needs of the students and the local community. The topics presented here are neither prescriptive nor exhaustive. They serve as a starting point for the development of courses.

Applying Information and Communication Technology 1

Course Code	Credits	Level
0217	0.5	15F

The purpose of the course is to reinforce and extend the ICT knowledge, attitudes, and skills acquired by students in the Early and Middle Years. The course will further prepare students to use ICT to learn and demonstrate their learning in all Senior Years courses.

Orientation to the Course and Activating Prior Knowledge	
Orientation <ul style="list-style-type: none"> Review the school's ICT acceptable-use policy. List the software and hardware available at the school. Poll students to determine their access to ICT outside of school. Review procedures/rules/limitations for accessing school networks from home. Review management of electronic files. Review health issues, such as: <ul style="list-style-type: none"> Ergonomics Review ethical and legal issues. 	Word Processing <ul style="list-style-type: none"> Review touch-keying techniques. Review document editing and formatting. Review insertion and manipulation of objects, such as: <ul style="list-style-type: none"> Resizing Text wrapping Layout Review rules for citing the work of others.
Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Organize and categorize information using: <ul style="list-style-type: none"> Outlines Graphic organizers Spreadsheets Tables Charts File directories 	<ul style="list-style-type: none"> In the context of a project or simulated work environment, use word-processing or concept-mapping software to create outlines and graphic organizers. (<i>Examples: concept map, flow chart, spider map, observation chart, T-chart, persuasion map, Venn diagram, Five W's Chart...</i>)

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
<p>(continued)</p> <p>1. Organize and categorize information using:</p> <ul style="list-style-type: none"> • Outlines • Graphic organizers • Spreadsheets • Tables • Charts • File directories 	<p>Spreadsheets</p> <ul style="list-style-type: none"> • Enter and edit data. • Format the spreadsheet. • Enter formulas and functions. • Create charts appropriate to the data. <p>Databases</p> <ul style="list-style-type: none"> • Enter and edit data. • Sort records. • Create queries. <p>File Directories</p> <ul style="list-style-type: none"> • Manage electronic files. • Create a structure of electronic file folders to store personal project files.
<p>2. Solve problems, reach conclusions, make decisions, and/or propose answers to questions by analyzing data/information and concepts using a spreadsheet or database.</p>	<ul style="list-style-type: none"> • Design and create a spreadsheet model of a real situation.
<p>3. Assess textual, numerical, aural, and visual information, as well as the sources of the media, to determine context, perspective, bias, and/or motive.</p>	<ul style="list-style-type: none"> • Research a news item that has at least two perspectives. • Analyze the differences in which the data is portrayed.
<p>4. Analyze whether information from media sources has been manipulated. (<i>Examples: bogus websites, bogus email, spam, graphs showing selected data...</i>)</p>	<p>Web Component</p> <ul style="list-style-type: none"> • Critique the validity of information from websites and other media sources.
<p>5. Analyze whether information collected from media sources is sufficient and/or suitable for purpose and audience. Sources include websites, CD-ROMs, and email.</p>	<p>This is a component of every assignment and project that includes collecting information.</p>
<p>6. Discuss information, ideas, and/or electronic work using tools for electronic communication. (<i>Examples: email, electronic whiteboards, web pages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards...</i>)</p>	<p>Communication Tools</p> <ul style="list-style-type: none"> • Email • Threaded discussion • Video communications • Chat • Instant messaging • Podcasts

Applying Information and Communication Technology 2

Course Code	Credits	Level
0218	0.5	15F

The purpose of the course is to reinforce and extend the ICT knowledge, attitudes, and skills acquired by students in the Early and Middle Years. The course will further prepare students to use ICT to learn and demonstrate their learning in all Senior Years courses.

Orientation to the Course and Activating Prior Knowledge	
<p>Orientation</p> <ul style="list-style-type: none"> • Review the school's ICT acceptable-use policy. • List the software and hardware available at the school. • Poll students to determine their access to ICT outside of school. • Review procedures/rules/limitations for accessing school networks from home. • Review management of electronic files. • Review health issues, such as: <ul style="list-style-type: none"> — Ergonomics • Review ethical and legal issues. 	
Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
<p>1. Design electronic plans including:</p> <ul style="list-style-type: none"> • Outlines • Timelines • Storyboards 	<ul style="list-style-type: none"> • Include outlines, timelines, and storyboards in the projects as students create web pages, animations, and multimedia presentations.

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
2. Design and create non-sequential web pages and branching multimedia presentations.	<ul style="list-style-type: none"> • Determine audience and purpose for a presentation. • Create a non-sequential presentation with: <ul style="list-style-type: none"> — An outline — Speaking notes — Text, images, imbedded objects, and links <ul style="list-style-type: none"> ? Create graphics ? Capture still images • Determine audience and purpose for a video. • Discuss ethics related to capturing images. • Create a video with: <ul style="list-style-type: none"> — A timeline — Edited clips — Transitions — Sound • Determine the audience and purpose for a website. • Create a website with: <ul style="list-style-type: none"> — A navigation structure — Text — Images — Internal and external links
3. Simulate an abstract concept or real process using animation.	<ul style="list-style-type: none"> • Determine audience and purpose for an animation. • Create an animation with: <ul style="list-style-type: none"> — A storyboard — Animated objects — Sound
4. Analyze whether information collected from media sources is sufficient and/or suitable for purpose and audience. Sources include websites, CD-ROMs, and email.	This is a component of every assignment and project that includes collecting information.
5. Discuss information, ideas, and/or electronic work using tools for electronic communication. (<i>Examples: email, electronic whiteboards, web pages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards...</i>)	<ul style="list-style-type: none"> • Use communication tools, such as: <ul style="list-style-type: none"> — Email — Threaded discussion — Video communications — Chat — Instant messages — Podcasts

Keyboarding

Course Code	Credits	Level
1270	0.5	25S

The purpose of the course is to improve a student's accuracy and speed with a keyboard, using touch-keying techniques.

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Demonstrate proper finger placement and movement for keystroking.	Ergonomics <ul style="list-style-type: none"> Identify ergonomic factors related to using a computer, including an alphanumeric keyboard, numeric keypad, and mouse. Practise stretching exercises suitable to a confined workspace or office. Keying <ul style="list-style-type: none"> Demonstrate ergonomically correct posture, finger placement, finger movement. Demonstrate ergonomically correct body movements while working at a workstation.
2. Demonstrate touch keying on a QWERTY keyboard with a minimum straight copy speed of 25 words per minute (based on a three-minute timing with a maximum of one error per minute).	<ul style="list-style-type: none"> Demonstrate entry on an alphanumeric keyboard.
3. Demonstrate touch keying on a numeric keypad.	<ul style="list-style-type: none"> Demonstrate entry on a numeric keypad.
4. Produce documents with no keying errors.	<ul style="list-style-type: none"> Reinforce proper spelling, grammar, and punctuation. Note: This is a component of every assignment and project.
5. Follow acceptable Canadian standards and conventions for document production.	<ul style="list-style-type: none"> Use authentic school or workplace materials to illustrate the standards and conventions for producing documents.

Print Communications

Course Code	Credits	Level
0222	0.5	25S

The purpose of the course is to provide students with the skills and knowledge to plan and create documents for personal and business communications.

Orientation to the Course and Activating Prior Knowledge	
<p>Orientation</p> <ul style="list-style-type: none"> • Review management of electronic files. • Review health issues: <ul style="list-style-type: none"> — Ergonomics — Repetitive strain injuries • Review ethical and legal issues. • Review keyboarding skills and techniques. 	
Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
<p>1. Plan and produce print documents conforming to recognized standards:</p> <ul style="list-style-type: none"> • Business letters • Labels and envelopes • Meeting agendas • Meeting minutes • Research papers in a prescribed style (<i>Examples: MLA, APA, Chicago...</i>) • Resumés and cover letters 	<ul style="list-style-type: none"> • Use authentic school, community, or workplace materials to illustrate the standards and conventions for producing documents. <p>Business Letters</p> <ul style="list-style-type: none"> • Include: <ul style="list-style-type: none"> — Letterhead — Salutation — Enclosures — Copy notations — Multiple pages <p>Labels and Envelopes</p> <ul style="list-style-type: none"> • Include: <ul style="list-style-type: none"> — Courier and postal requirements

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
<p>(continued)</p> <p>1. Plan and produce print documents conforming to recognized standards:</p> <ul style="list-style-type: none"> • Business letters • Labels and envelopes • Meeting agendas • Meeting minutes • Research papers in a prescribed style (<i>Examples: MLA, APA, Chicago...</i>) • Resumés and cover letters 	<p>Meeting Agendas</p> <ul style="list-style-type: none"> • Include: <ul style="list-style-type: none"> — Organization name — Date, time, and location of the meeting — Discussion topics — Presenter or discussion leader for each topic — Time allotted to each topic <p>Meeting Minutes</p> <ul style="list-style-type: none"> • Create a template to record meeting minutes. • Include: <ul style="list-style-type: none"> — Date, time, and location of the meeting — Purpose of the meeting — Meeting lead or chair's name — Names of people in attendance — Assigned action items — Decisions made <p>Research Papers</p> <ul style="list-style-type: none"> • Create research papers using the formatting and style guide prescribed by the school. (<i>Examples: MLA, APA, Chicago...</i>) • Include: <ul style="list-style-type: none"> — Title page — Table of contents (automatically generate) — Enumerations — Bulleted and numbered lists — Citations — Quotations — Footnotes and endnotes — Headers and footers — Bibliography — Index (automatically generate)
<p>2. Participate in multi-user document editing and reviewing.</p>	<ul style="list-style-type: none"> • Use software tools to edit documents and track changes. • Focus on composition, language accuracy, and appropriate tone to communicate a message and achieve desired results.

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
3. Use language and tone appropriate to the communication.	Note: This is a component of every assignment and project.
4. Incorporate elements of good design when designing documents. (<i>Examples: balance, harmony, contrast, colour, consistency...</i>)	Note: This is a component of every assignment and project.

Digital Pictures

Course Code	Credits	Level
0226	0.5	25S

The purpose of this course is to provide students with the skills and knowledge to convey a message through an original digital image.

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Define the purpose and audience for an image.	
2. Conceive of a still image that will communicate a message.	
3. Capture a still image with a digital camera.	Using Cameras <ul style="list-style-type: none"> • Zoom (digital versus optical) • Shutter speed • Aperture • Resolution to suit the purpose • Storage media • File formats • Batteries • Flash versus available light • Tripod • Built-in software features Photography Principles <ul style="list-style-type: none"> • Framing a subject • Distance • Focus and depth of field • Contrast • Perspective

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
<p>(continued)</p> <p>3. Capture a still image with a digital camera.</p>	<p>Design Basics</p> <ul style="list-style-type: none"> • Demonstrate an understanding of fundamental principles of design, such as: <ul style="list-style-type: none"> — Line — Shape and form — Pattern — Texture — Colour — Balance — Rhythm — Rule of thirds <p>Lighting</p> <ul style="list-style-type: none"> • Create an effect or mood by using light, such as: <ul style="list-style-type: none"> — Daylight — Flash — Ambient light — Studio lights (location, colour temperatures...) — Reflective surfaces (windows, vehicles, jewelry...)
<p>4. Manipulate a digital image to create a new image by:</p> <ul style="list-style-type: none"> • Using painting tools (<i>Examples: lines, boxes, polygons, pencil, brush, spray, text...</i>) • Using editing tools (<i>Examples: extract, crop, straighten, colour...</i>) • Using layers (<i>Examples: create, adjust, import, knockout, duplicate, liquefy...</i>) • Flattening files • Using image properties (<i>Examples: transparency/opacity, soft/hard edges, curves...</i>) • Applying filters and effects (<i>Examples: blur, distort, sketch, stylize, texture...</i>) 	<ul style="list-style-type: none"> • Manipulate digital images by using software tools to: <ul style="list-style-type: none"> — Fix technical problems with a photograph (<i>Examples: remove red eye, light reflections...</i>) — Alter a photograph (<i>Examples: crop, extract, straighten, resize, calibrate colours, remove blemishes, change colours, add effects...</i>) — Combine images to create a new image (<i>Examples: add a person to a group photo, create a tabloid-style manipulated photo ...</i>)

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
5. Select the graphic file format best suited to the end product and purpose of the image. (<i>Examples: image size, resolution, bitmap or vector, compression...</i>)	Managing Images <ul style="list-style-type: none"> • Shoot and archive • Media • Print • Keyword images • Protect images • Work with different file formats • Image size • Resolution • Compression
6. Display an original graphic image. (<i>Examples: printed, projected...</i>)	Displaying Graphic Images <ul style="list-style-type: none"> • Image settings • Print • Stock paper versus photo paper • Inks • Commercial printing versus in-house • Projection • Web • Email
7. Critique and suggest improvements for an image, using given technical and aesthetic criteria.	Critiquing Images <ul style="list-style-type: none"> • Examine images from professional photographers for use of photographic principles. • Critique their own work and the work of other students using the criteria provided. • Compare original photographs to the final edited images.
8. Accept critique of an image and make changes based on the feedback.	<ul style="list-style-type: none"> • Accept critique of an image and make changes based on the feedback.

Digital Filmmaking

Course Code	Credits	Level
0230	0.5	25S

The purpose of the course is to provide students with the skills and knowledge to tell stories by combining sound, still images, moving images, text, graphics, and animation into a video product. Students will plan, develop, and produce a video project.

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Define the purpose and audience for a film.	Introduction to Film <ul style="list-style-type: none"> • History of film • Teacher assigns a short film project with defined purpose and audience. (<i>Examples: advertisement, movie trailer...</i>) • Students propose a film project and define the purpose and audience. (<i>Examples: short documentary, music video, drama...</i>)
2. Create a storyboard with sketch drawings and descriptions.	Planning the Story <ul style="list-style-type: none"> • Create a storyboard for each project • Include a visual representation (sketch, illustration) • Include: <ul style="list-style-type: none"> — Scene annotations — Scene descriptions — Dialogue — Captions — Props — Transitions — Sound — Camera angles — Lighting

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
3. Develop a shooting schedule, including timelines, lists of events, and logistics.	Planning the Filming <ul style="list-style-type: none"> • Shooting schedule • Timelines • Crews • Lists of events • Logistics • Equipment • Location • Script • Shot list • Props
4. Demonstrate three-point lighting (key light, backlight, fill light) of a subject.	Pre-Filming <ul style="list-style-type: none"> • Lighting <ul style="list-style-type: none"> — Key light — Backlight — Fill light
5. Use lighting techniques to convey mood. (<i>Example: dark lighting and shadows emphasize dramatic effects. As a learning strategy, students may compare the lighting employed in a variety of video genres, such as advertisement, music video, drama, documentary, and news.</i>)	Lighting Effects <ul style="list-style-type: none"> • Light quality • Light source • Shadows • Indoor versus outdoor
6. Evaluate the effect of camera settings on image quality. (<i>Examples: aperture settings, quality settings, manual versus automatic...</i>)	Camera Settings <ul style="list-style-type: none"> • Controls • Aperture settings • Quality settings • Manual versus automatic
7. Evaluate the effect of camera position, angle, and movement.	Camera Angles <ul style="list-style-type: none"> • Close-up • Medium • Wide

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
8. Capture images and sounds with cameras and microphones.	<p>Using Cameras</p> <ul style="list-style-type: none"> • Zoom (digital versus optical) • Storage media • File formats • Batteries • Tripod versus hand-held • Microphones (built-in versus external) • Built-in software features
9. Transfer images and sounds from recording devices to a personal computer.	<ul style="list-style-type: none"> • Transfer images and sounds from a camera to a computer. • Connect camera to a computer. (<i>Examples: Firewire, USB...</i>)
10. Edit video and sound clips using a software program.	<p>Editing Video and Sound</p> <ul style="list-style-type: none"> • Overview of video editing software • Edit styles and effects • Trim clips • Mark clips • Splitting • Transitions
11. Combine sound, still images, moving images, text, graphics, animation, transitions, and effects into a video product. (Note: Emphasize the need to respect intellectual property and credit sources.)	<p>Creating a Final Product</p> <ul style="list-style-type: none"> • Effects • Animations • Graphics
12. Use a software program to add title and credits to a video project.	<p>Adding Text to Video</p> <ul style="list-style-type: none"> • Title • Credits • Subtitles

Desktop Publishing

Course Code	Credits	Level
0223	0.5	35S

The purpose of the course is to provide students with the skills and knowledge to plan and create a variety of published print documents.

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Define the purpose and audience for a print document.	Planning a Publication <ul style="list-style-type: none"> • Select a publication to produce within the school or community. • Determine the purpose and audience.
2. Incorporate elements of good design when designing documents. (<i>Examples: balance, harmony, contrast, colour, consistency...</i>)	<ul style="list-style-type: none"> • Determine the format of the publication. • Consider design principles: <ul style="list-style-type: none"> — Proportion — Balance — Contrast — Rhythm — Unity — Colour — Eye flow • Consider font type, size, and style.
3. Plan and produce print documents conforming to recognized standards: <ul style="list-style-type: none"> • Brochures • Flyers • Media inserts (<i>Examples: CD inserts, DVD inserts...</i>) • Newsletters • Posters • Programs • Yearbooks 	Producing the Document <ul style="list-style-type: none"> • Manipulate text: <ul style="list-style-type: none"> — Insert and import text — Insert and delete text blocks — Thread and unthread text — Change paragraph alignment, indents, and tabs — Add bulleted and numbered lists — Work with widows and orphans — Insert captions

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
<p>(continued)</p> <p>3. Plan and produce print documents conforming to recognized standards:</p> <ul style="list-style-type: none"> • Brochures • Flyers • Media inserts (<i>Examples: CD inserts, DVD inserts...</i>) • Newsletters • Posters • Programs • Yearbooks 	<ul style="list-style-type: none"> — Work with text features <ul style="list-style-type: none"> ? Drop caps ? Pull quotes ? Indents <p>Working with Graphics</p> <ul style="list-style-type: none"> • Investigate copyright issues. • Insert images from: <ul style="list-style-type: none"> — Clip art — The web — Scanner — Digital camera • Work with placement of graphics: <ul style="list-style-type: none"> — Wrapping — In line • Edit graphics: <ul style="list-style-type: none"> — Scale — Resize — Crop — Re-format — Resolution — Watermarks <p>Layout Techniques</p> <ul style="list-style-type: none"> • Work with multiple pages. • Determine page size and orientation. • Change margins, layout grids, columns. • Create layers. • Use white space.
4. Participate in multi-user document editing and reviewing.	
5. Use language and tone appropriate to the communication.	
6. Critique and suggest improvements for published documents using given criteria.	
7. Accept a critique of a print document and make changes based on the feedback.	

Web Design

Course Code	Credits	Level
0234	0.5	35S

The purpose of this course is to provide students with the skills and knowledge to design, develop, and publish a simple website.

Orientation to the Course and Activating Prior Knowledge	
The World Wide Web <ul style="list-style-type: none"> • What is it? • Web browsers • Web servers • URLs • Bookmarks 	
Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Design a website for a defined audience and purpose.	Planning and Designing a Website <ul style="list-style-type: none"> • What is the purpose of the website? • Who is the audience for the website?
2. Explain the need for standards and conventions when creating websites.	<ul style="list-style-type: none"> • Consider standards and conventions relative to the website's purpose.
3. Develop a prototype visual design for a website, using current design principles. (<i>Include: page layout, links, colours, and content requirements.</i>)	<ul style="list-style-type: none"> • Investigate the essence of good design. • Determine the site content. • Determine the page layout. • Use common elements. • Determine colours. • Include links.

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
4. Design a navigation plan for a website.	<ul style="list-style-type: none"> Plan a navigation scheme. Map the site/organize the site structure using mapping techniques such as outlines, flow charts, storyboards, and cluster maps.
5. Set up a directory and file management system for storing, sharing, and publishing documents.	<p>Managing Files</p> <ul style="list-style-type: none"> Organize files and folders according to a defined hierarchy. Ensure consistency of file naming. Create backups.
6. Create a website that includes: <ul style="list-style-type: none"> Multiple pages Formatting Content objects (<i>Examples: images, sounds, video, animation...</i>) Navigation (<i>Examples: anchors, hyperlinks, email addresses, files...</i>) 	<p>Creating a Website</p> <ul style="list-style-type: none"> Create multiple web pages with: <ul style="list-style-type: none"> Formatting (<i>Examples: text, headers, tables, text and image alignment, text wrapped next to image, image dimensions and scaling, image borders, background image, layers, colour scheme, playback options...</i>) Content objects (<i>Examples: images [GIF, JPEG, PNG], audio [MIDI, WAV, MP3], animation, video [avi, ram], tables...</i>) Navigation (<i>Examples: anchors; image maps; links to local pages and other websites, files, email, audio files, and streaming software...</i>)
7. Publish a website. (<i>Examples: Internet, Intranet, CD...</i>)	<p>Publishing the Site</p> <ul style="list-style-type: none"> Establish domain names. Investigate platforms and servers. Publish to the Internet, Intranet, CD. Publish entire site or selected files and folders. Create a schedule for updating the site. Test the site for: <ul style="list-style-type: none"> Accessibility Integrity

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
8. Critique and suggest improvements for a website, using given criteria.	Critiquing the Site <ul style="list-style-type: none">• Authorship and sponsorship• Audience/Purpose• Navigation• Usability• Design• Quality of content
9. Accept a critique of a website and make changes based on the feedback.	<ul style="list-style-type: none">• Make changes to the website based on feedback.

Interactive Websites

Course Code	Credits	Level
0225	0.5	35S

The purpose of this course is to provide students with the skills and knowledge to design, develop, and publish a website to display and gather information. Students should have the skills described in the learning outcomes for Web Design 35S prior to starting this course.

Orientation to the Course and Activating Prior Knowledge	
<ul style="list-style-type: none"> Review the planning and creation of a website as outlined in Web Design 35S. 	
Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Discuss the advantages and costs of using a content management system when creating and maintaining a website.	Managing Content <ul style="list-style-type: none"> Describe the purpose of a content management system. Discuss the advantages and costs of a content management system.
2. Create and use style sheets.	Frames <ul style="list-style-type: none"> Create a frameset. Create title frames. Create mainframe content. Create variable content. Create links within a frameset. Set frame attributes: <ul style="list-style-type: none"> Borders, colours, width Background images

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
<p>(continued)</p> <p>2. Create and use style sheets.</p>	<p>Cascading Style Sheets</p> <ul style="list-style-type: none"> • Create and edit cascading style sheets: <ul style="list-style-type: none"> — Set font and text properties — Set colours, backgrounds, and borders — Set page properties — Determine layouts • Embed style sheets. • Import style sheets. • Export style sheets. • Link to external style sheets.
<p>3. Create meta tags.</p>	<p>Creating Meta Tags</p> <ul style="list-style-type: none"> • Abstract • Author • Copyright • Description • Keyword
<p>4. Discuss the strengths and weaknesses of current scripting languages. Note: This course is not intended to be an in-depth study of scripting languages.</p>	<p>Scripting Languages</p> <ul style="list-style-type: none"> • HTML • Javascript
<p>5. Insert and edit client scripts. (<i>Examples: applets, hit counters, hover buttons, slide shows, mouse-overs...</i>)</p>	<ul style="list-style-type: none"> • Insert and edit client scripts appropriate to the audience and purpose of the website: <ul style="list-style-type: none"> — Applets — Hit counters — Hover buttons — Slide shows — Mouse-overs

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration						
6. Create and use forms to capture information. (<i>Examples: guest book, mail to form...</i>)	<p>Forms</p> <ul style="list-style-type: none"> • Create a form that includes: <ul style="list-style-type: none"> — Text fields — Check boxes and/or radio buttons — Form lists and menus <ul style="list-style-type: none"> ? Drop-down menus ? Scrolling lists — Jump menus — Form buttons <ul style="list-style-type: none"> ? Submit and reset buttons — Hidden fields — Tables • Send form data to multiple email recipients. • Investigate form hosting services. 						
7. Describe the advantages and challenges of streaming audio and video content.	<p>Streaming Video and Sound</p> <ul style="list-style-type: none"> • Critique websites that offer streaming video and audio. • Experiment with streaming audio and video. (<i>Examples: QuickTime, RealMedia, Windows Media</i>) 						
8. Publish a website.	<p>Publishing the Site</p> <ul style="list-style-type: none"> • Publish an entire site or selected files and folders to the Internet, Intranet, CD. • Determine a plan to update the site. • Test the website for integrity and accessibility. 						
9. Critique and suggest improvements for a website, using given criteria.	<p>Critiquing the Site</p> <table border="0"> <tr> <td>• Authorship and sponsorship</td> <td>• Usability</td> </tr> <tr> <td>• Audience/Purpose</td> <td>• Design</td> </tr> <tr> <td>• Navigation</td> <td>• Quality of content</td> </tr> </table>	• Authorship and sponsorship	• Usability	• Audience/Purpose	• Design	• Navigation	• Quality of content
• Authorship and sponsorship	• Usability						
• Audience/Purpose	• Design						
• Navigation	• Quality of content						
10. Accept a critique of a website and make changes based on the feedback.	<ul style="list-style-type: none"> • Make changes to the website based on feedback. 						

Data Collection and Analysis

Course Code	Credits	Level
0254	0.5	35S

The purpose of the course is to provide students with the skills and knowledge to collect, organize, manipulate, and analyze data to solve problems using spreadsheets.

Orientation to the Course and Activating Prior Knowledge	
Introduction to Spreadsheets <ul style="list-style-type: none"> Discuss the differences and similarities between a flat file database and a spreadsheet. 	
Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Analyze data for accuracy, currency, credibility, validity, reliability, objectivity, fairness, and relevance.	<ul style="list-style-type: none"> Students analyze sample data and discuss the implications of flawed or misrepresented data.
2. Analyze whether information from media sources has been manipulated. (<i>Examples: bogus information, graphs showing only selected data...</i>)	<ul style="list-style-type: none"> Students collect information from media sources and explain how the information has been manipulated or misrepresents the original data.
3. Create worksheets by entering and importing data.	Creating Worksheets <ul style="list-style-type: none"> Enter text and numerical values. Enter data values and time values. Import data from a file or from an online source. Erase, replace, and edit cell content.

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Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
<p>4. Create formulas, including:</p> <ul style="list-style-type: none"> • Cell references (<i>Examples: relative, absolute, mixed...</i>) • Mathematical expressions • Functions (<i>Examples: financial, logical, statistical...</i>) 	<p>Formulas and Functions</p> <ul style="list-style-type: none"> • Enter and edit formulas manually. • Use operators and order of precedence in formulas. • Compare, create, and use relative, absolute, and mixed references. • Analyze data using AVERAGE, MAX, and MIN functions. • Use a variety of functions such as IF, PMT, RATE, PV, VLOOKUP, CHOOSE. • Use Date and Time functions. • Use logical functions.
<p>5. Sort data.</p>	<p>Sorting Data</p> <ul style="list-style-type: none"> • Sort records using one field and multiple fields. • Filter records using “OR/AND” search criteria.
<p>6. Create, modify, and publish charts.</p>	<p>Creating and Modifying Charts</p> <ul style="list-style-type: none"> • Identify common chart types and features. (<i>Examples: bar, pie, line, area...</i>) • Create a chart using a wizard. • Create a chart using non-adjacent data series. • Create a combination chart. • Modify a chart: <ul style="list-style-type: none"> — Move, resize, and change chart type — Move and delete chart elements — Modify plot area, chart area, legends, axes... — Delete, add, and change data series
<p>7. Automate repetitive tasks by using software tools. (<i>Examples: macros, templates...</i>)</p>	<p>Automating Repetitive Tasks</p> <ul style="list-style-type: none"> • Macros <ul style="list-style-type: none"> — Record, copy, delete, and run a macro — Assign a macro to run from a keyboard shortcut • Templates <ul style="list-style-type: none"> — Create, modify, and use a template

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Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
8. Link multiple worksheets and multiple spreadsheet documents.	Integrating Applications <ul style="list-style-type: none"> • Import and export data. • Use hyperlinks within a workbook. • Create links to connect to data and files.
9. Improve the readability of a worksheet. (<i>Examples: layout, format, labels, borders, hiding cells...</i>)	Modifying and Formatting a Spreadsheet <ul style="list-style-type: none"> • Hide and reveal cells, rows, and columns. • Change the width of columns and height of rows. • Copy and move ranges. • Change spreadsheet views. • Change cell alignment (left, right, centre). • Format numbers (percentage, decimal, currency). • Change fonts and font sizes. • Use colours and shading. • Add borders and lines. • Add background images. • Apply, create, and modify styles. Adding Special Effects <ul style="list-style-type: none"> • Add and modify shapes and objects. • Insert a graphic file. • Embed a sound file.

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Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
10. Validate and protect data in a spreadsheet.	<p>Validating and Protecting Data</p> <ul style="list-style-type: none"> • Restrict cell entries (both text and numerical). • Create user-specific error alert messages. • Copy data restrictions and messages to other cells. • Find and correct formula errors. (<i>Examples: formulas returning an error, absolute/relative reference problems, operator precedence problems, actual versus displayed values...</i>) • Attach comments to cells. • Protect worksheet contents and objects. • Lock and unlock cells. • View and set file properties. • Use security features. (<i>Example: password</i>)
11. Publish information from a spreadsheet. (<i>Examples: print, web, link, export to other applications...</i>)	<ul style="list-style-type: none"> • Print the spreadsheet. • Publish the spreadsheet within a web page. • Embed the spreadsheet within another application such as a word processor.

Relational Databases

Course Code	Credits	Level
0221	0.5	35S

The purpose of the course is to provide students with the skills and knowledge to plan, create, and use a relational database built in a Database Management System (DBMS).

Orientation to the Course and Activating Prior Knowledge	
Introduction to Relational Databases <ul style="list-style-type: none"> Discuss the use and capabilities of relational databases compared to flat file databases. 	
Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Analyze data for accuracy, currency, credibility, validity, reliability, objectivity, fairness, and relevance.	<ul style="list-style-type: none"> Analyze sample data and discuss the implications of flawed or misrepresented data.
2. Analyze whether information from media sources has been manipulated. (<i>Examples: bogus information, graphs showing only selected data...</i>)	<ul style="list-style-type: none"> Collect information from media sources and explain how the information has been manipulated or misrepresents the original data.
3. Plan, create, and use a relational database, including: <ul style="list-style-type: none"> Adding fields (<i>Examples: text, numbers...</i>) Creating tables Setting primary keys Defining relationships between tables 	Designing and Creating a Relational Database <ul style="list-style-type: none"> Design a database for a unique purpose. Determine the desired output. Identify data elements. Organize fields into tables. Define table relationships. Design a user interface. Create a database. Create a table.

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
<p>(continued)</p> <p>3. Plan, create, and use a relational database, including:</p> <ul style="list-style-type: none"> • Adding fields (<i>Examples: text, numbers...</i>) • Creating tables • Setting primary keys • Defining relationships between tables 	<ul style="list-style-type: none"> • Define fields: <ul style="list-style-type: none"> — Define primary keys — Set field data types — Set field properties <ul style="list-style-type: none"> ? Field size ? Format ? Input mask ? Captions ? Default values ? Validation rules <p>Entering and Editing Data</p> <ul style="list-style-type: none"> • Import data from other sources (database, spreadsheet, web source). • Add records. • Find records. • Sort records. <p>Modifying Tables</p> <ul style="list-style-type: none"> • Add, rename, and delete tables. • Change field names. • Change field order. • Insert and delete fields.
<p>4. Set up a mechanism to enter data into a database. (<i>Examples: forms, web interface...</i>)</p>	<p>Creating and Using Forms</p> <ul style="list-style-type: none"> • Create and edit a form. • Add fields. • Move and resize fields. • Add headers and footers. • Create multiple page forms and sub-forms. • Enhance the look of a form. • Add lines and rectangles. • Add colours and special effects. <ul style="list-style-type: none"> • Set border style. • Set control properties. • Format properties. • Add a scroll bar. • Enable and lock controls. • Automate fields. • Add date and time.

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Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
5. Ensure the validity and integrity of data.	Data Validity and Integrity <ul style="list-style-type: none"> • Set up data restrictions. • Specify field size. • Set up masks. • Set validation rules. • Look up lists. • Create consistent data formats. • Prevent duplicate entries by using indexed fields.
6. Create and modify queries.	Creating and Manipulating Queries <ul style="list-style-type: none"> • Create a new query from single or multiple tables. • Specify fields. • Set field properties. • Modify and sort queries. • Use multiple criteria. • Use comparison operators. • Use wildcards. • Add calculated fields. • Change field properties.
7. Summarize data by creating reports and sub-reports.	Creating Reports <ul style="list-style-type: none"> • Create and modify a report. • Add sub-reports. • Sort and group records in a report. • Change sort order. • Add group sections. • Add headers and footers. • Set layouts and properties. • Create labels. • Add calculated controls. • Add page numbers. • Print reports.
8. Export data from a database for use in other applications. (<i>Example: for use in spreadsheets, word-processed documents...</i>)	Exporting Data <ul style="list-style-type: none"> • Export to another database format. • Export to text files. • Use a table or query for a mail merge. • Publish and link to a word processor or spreadsheet.

2-D Animation

Course Code	Credits	Level
0227	0.5	35S

The purpose of the course is to provide students with the skills and knowledge to create two-dimensional animations.

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Define the purpose and audience for an animation.	<ul style="list-style-type: none"> Propose an animation project, including a description of the purpose and audience for the product.
2. Discuss various types of animation.	<ul style="list-style-type: none"> Types of Animation <ul style="list-style-type: none"> — A brief history of 2-D animation — Cel animation — Cut-out animation — Object animation — Clay animation — Computer animation
3. Create a storyboard.	Planning and Designing a Computer Animation <ul style="list-style-type: none"> Create a storyboard. Illustrate the scenes. Describe the scenes. Determine duration of scenes. Add transition cues. Add sound cues.
4. Choose frame rate and screen size based on use of animation.	<ul style="list-style-type: none"> Determine frame rate. Determine screen size according to purpose.
5. Create animation objects.	<ul style="list-style-type: none"> Create objects: <ul style="list-style-type: none"> — Create, edit, and format objects using different drawing tools. — Create custom colours, gradients, and line styles. — Transform and group objects. — Create, edit, and modify text.

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Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
6. Import object files. (<i>Examples: graphics, sound...</i>)	<ul style="list-style-type: none"> Enhance an animation with imported objects, including: <ul style="list-style-type: none"> Animated sequences Sounds Backgrounds
7. Morph an object through distortion or deformation.	<ul style="list-style-type: none"> Alter objects by: <ul style="list-style-type: none"> Morphing Distorting Deforming
8. Create and use a timeline.	<ul style="list-style-type: none"> Create and use a timeline as the animation is developed.
9. Animate objects by using timeline effects, layers, or frames.	<ul style="list-style-type: none"> Use timeline effects to create motion. Use layers to create motion. Use frames to create motion: <ul style="list-style-type: none"> Key frames Static frames Blank key frames Frame-by-frame animation Shape-tweened animation Motion-tweened animation
10. Incorporate interactive features to control an animation. (<i>Examples: buttons, counters...</i>)	<ul style="list-style-type: none"> Add buttons to control animation events: <ul style="list-style-type: none"> Animation sequences Sounds
11. Critique and suggest improvements for an animation, using given criteria.	<ul style="list-style-type: none"> Critique an animation project and communicate suggestions for improvement: <ul style="list-style-type: none"> Does it suit the audience? Does it meet the purpose? Did the story flow? How could it be improved technically?
12. Accept a critique of an animation and make changes based on the feedback.	<ul style="list-style-type: none"> Make changes to the animation based on feedback.

3-D Modelling

Course Code	Credits	Level
0236	0.5	35S

The purpose of the course is to provide students with the skills and knowledge to use software to create three-dimensional models that represent real objects or illustrate ideas.

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Describe uses of 3-D modelling.	<ul style="list-style-type: none"> • Uses of 3-D modelling: <ul style="list-style-type: none"> — Advertising art — Animation objects — Assets for video games — Models of chemical compounds — Proposals of buildings and landscapes — Illustration of new inventions or products — Geological models — Medical imaging
2. Describe the basic principles of 3-D modelling.	<ul style="list-style-type: none"> • Principles of 3-D modelling: <ul style="list-style-type: none"> — 3-D space — Coordinates — Axes — Textures — Lighting — Rendering
3. Define the purpose and audience for a 3-D model.	<ul style="list-style-type: none"> • Propose a project, including a description of the purpose and audience for the product.

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Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration	
4. Build objects, including: <ul style="list-style-type: none"> • Primitive objects • Objects created through union, division, subtraction, and intersection • Flat objects pulled into the third dimension • Deformed objects (<i>Examples: sculpted, hooked, hammered, drilled, brushed...</i>) • Curves • Organic shapes (<i>Examples: metaballs, bones, and skinning...</i>) 	<ul style="list-style-type: none"> • Create and modify objects: <ul style="list-style-type: none"> — Import objects — Create primitive objects — Move, rotate, scale, mirror, and clone objects — Pull flat objects into 3-D objects — Group objects — Deform objects — Sculpted — Hooked — Hammered — Drilled — Brushed — Spline shapes — Line — Circle 	
5. Enhance the visual presentation of a model by setting object properties and applying textures to objects.	<ul style="list-style-type: none"> — Material Channels — Colour — Diffusion — Luminance — Import, create, and modify textures 	<ul style="list-style-type: none"> — Curves — Rectangle — Ellipse — Star — Compound objects — Union — Division — Subtraction — Intersection — Morphing — Organic shapes — Metaballs — Bones — Skinning — Transparency — Reflection — Glow — Textures — Texture mapping
6. Light an object to create shadows, shading, reflection, and ray tracing.	<ul style="list-style-type: none"> — Characteristics of lighting — Shadows — Shading — Reflection 	<ul style="list-style-type: none"> — Ray tracing — Lighting styles — High key — Low key
7. Describe the characteristics and purposes of perspective and orthogonal viewing.	<ul style="list-style-type: none"> — Display models — Perspective — Orthogonal 	

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Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
8. Critique and suggest improvements for a 3-D model, using given criteria.	<ul style="list-style-type: none"> • Critique 3-D models and communicate suggestions for improvement: <ul style="list-style-type: none"> — Does it suit the audience? — Does it meet the purpose? — Does it accurately represent the object or idea? — How could it be improved technically?
9. Accept a critique of a 3-D model and make changes based on the feedback.	<ul style="list-style-type: none"> • Make changes to model based on feedback.

Broadcast Media

Course Code	Credits	Level
0231	0.5	35S

The purpose of the course is to provide students with an understanding of all phases of the media production process (preproduction planning, production, and post-production) from a variety of perspectives (news, sports, entertainment...). The course includes technical aspects of media production for the world wide web, radio, and television. Students should have skills creating video and creating web pages prior to taking the course. Students will plan, develop, and broadcast multimedia.

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Create and edit announcer copy for an audio broadcast. (<i>Examples: news items, music top hits...</i>)	<ul style="list-style-type: none"> • Review samples of announcer copy from radio broadcasts. • Create and edit announcer copy for an audio broadcast: <ul style="list-style-type: none"> — School announcements — Community events — News items — Local news — Sports — Weather — Commercial — Music top hits
2. Record sound files.	<ul style="list-style-type: none"> — Record voice — Record sound
3. Edit sound files using hardware and software tools to add and create desired effects. (<i>Examples: fade, clip, mix, equalize, compress, adjust gain...</i>)	<ul style="list-style-type: none"> — Import sound files — Discuss intellectual property rights — Edit sound files and add effects — Fade — Clip — Mix — Equalize — Compress — Adjust gain

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
4. Create and record an audio program with voice and sound files. (<i>Examples: announcements, sports, community events...</i>)	<ul style="list-style-type: none"> Create and record an audio program: <ul style="list-style-type: none"> School announcements Community events News items Local news Sports Weather Commercial Music top hits
5. Discuss the advantages and disadvantages of various sound file formats and compression codecs.	<ul style="list-style-type: none"> Determine the best sound file format for the delivery medium. Compress sound files for storage and delivery.
6. Create and edit announcer copy and stage directions for a video broadcast. (<i>Examples: news items, music top hits, weather...</i>)	<ul style="list-style-type: none"> Review samples of announcer copy from video broadcasts. Create and edit announcer copy with stage directions for a video broadcast: <ul style="list-style-type: none"> School announcements Community events News items Local news Sports Weather Commercial Game show
7. Record video files.	<ul style="list-style-type: none"> Record video based on stage directions. Transfer video files to a video editing program.
8. Edit video files using hardware and software tools to add and create desired effects. (<i>Examples: special effects, transitions, mixing...</i>)	<p>Editing Video</p> <ul style="list-style-type: none"> Add special effects. Create transitions.
9. Create and record a video program. (<i>Examples: school event, community event, variety show...</i>)	<ul style="list-style-type: none"> Create and record a video program.
10. Discuss and select the video format best suited to the purpose, audience, and available technology.	<ul style="list-style-type: none"> Discuss different video formats: <ul style="list-style-type: none"> Analog AVI MOV Select the best format available to the class for the purpose of the video.
11. Create audio and video clips for broadcast via a web page. (<i>Examples: avi, mov, streaming audio/video...</i>)	<ul style="list-style-type: none"> Extract clips from the video project and prepare them for broadcast via a web page.

Interactive Media

Course Code	Credits	Level
0237	0.5	35S

The purpose of the course is to provide students with the skills and knowledge to create interactive media products that combine video, audio, and interactive components. Prior to taking the course, students should have skills in creating audio and video and an understanding of the media production process. Students will plan, develop, and publish interactive media.

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
1. Define the purpose and audience for a product.	<ul style="list-style-type: none"> Define the audience for the product. Work with the audience for the product to determine its purpose.
2. Develop and present a project proposal.	<p>Review Samples of Interactive Media Products</p> <ul style="list-style-type: none"> Work in teams to develop a written proposal for a project. <p>Project Ideas:</p> <ul style="list-style-type: none"> Promotional package for the school Promotional package for a small community or business Electronic interactive school yearbook School team journal How-to manual Interactive game Learning package for other students
3. Document a product design, including: <ul style="list-style-type: none"> Storyboard Written script Design document (treatment) Functional specifications Production methodology Production timeline 	<ul style="list-style-type: none"> Produce the design document.

(continued)

Specific Learning Outcomes (<i>Students will...</i>)	Topics for Consideration
4. Produce a project that includes the following, as needed: <ul style="list-style-type: none"> • Interface • Text • Images • Audio • Video • Animation • Code/script • Database 	<ul style="list-style-type: none"> • Produce the product.
5. Create a support document for the user of a product.	<ul style="list-style-type: none"> • Create an instructional sheet or help file to assist the end user of the product.
6. Create a promotional plan for a product.	<ul style="list-style-type: none"> • Plan to promote the product.
7. Evaluate how effectively a product fulfilled its purpose.	<ul style="list-style-type: none"> • Present the product to the intended audience. • Collect feedback from the intended audience on whether the product fulfilled its original purpose.

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Notes



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