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# ICDL Standard Syllabus

## Contents of the ICDL Standard Modules

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Syllabus 6.0

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Syllabus 6.0

### **Online Collaboration**

Syllabus 1.0

### **IT Security**

Syllabus 2.0

### **Image Editing**

Syllabus 2.0

### **Computing**

Syllabus 1.0





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## ICDL Standard – prove your extensive digital skills

The ICDL Standard certificate proves that you can use a computer competently and efficiently as well as your extensive practical skills in using common Office programmes and further important applications. The ICDL Foundation has created new modules and updated the test contents according to the latest developments.

This ICDL syllabus describes the knowledge you need to pass ICDL Standard modules. You can also use this booklet as a checklist to find out which skills you still need to acquire. To obtain an ICDL Standard certificate you need to pass all four Base modules plus three Standard modules of your choice. The contents of the ICDL Base modules are listed in the ICDL Base syllabus. Most ICDL Test Centres offer courses for the ICDL modules. You can take the corresponding exams at any one of about 300 ICDL Test Centres in Switzerland and the Principality of Liechtenstein, whether you participated in a course there or not.

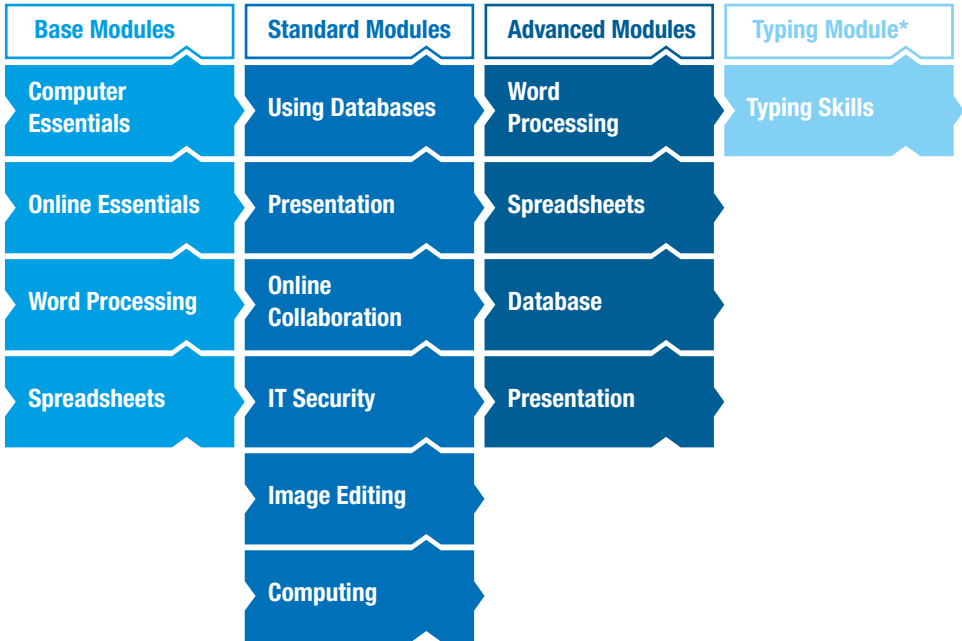
You can get more information on the advanced certificates, ICDL Advanced and ICDL Expert, as well as an overview of all ICDL Test Centres on [www.icdl.ch](http://www.icdl.ch).

Our webshop offers a range of courseware suitable for the preparation for the ICDL exams [shop.ecdl.ch](http://shop.ecdl.ch)

Prof. Dr. Thomas M. Stricker

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Swiss Informatics Society and  
Managing Director of Digital Literacy AG

# ICDL Modules and Certificates



## ICDL Base Certificate



4 Base Modules

## ICDL Standard Certificate



4 Base Modules

+ any 3 Standard Modules

## ICDL Advanced Certificate



1 Advanced Module of your choice

## ICDL Expert



3 Advanced Modules of your choice

## ICDL Profile Certificate



Min. of 4 Modules of your choice

## Typing Certificate\*



1 Typing Module

\* This module/certificate was developed by the Austrian Computer Society and is endorsed by the ECDL Foundation. You can add a Typing Skills test to an ICDL Profile certificate that contains at least four ICDL modules.

# Using Databases

This module sets out essential concepts and skills relating to understanding the concept of a database and demonstrating competence in using a database application.

## Module Goals

Successful candidates will be able to:

- ▶ Understand what a database is and how it is organised
- ▶ Create a simple database and view the database content in various modes
- ▶ Create a table, define and modify fields, and create relationships between tables. Enter and edit data in a table
- ▶ Use filters and queries to retrieve specific information from a database
- ▶ Create a form to enter, modify and delete records and data in records
- ▶ Create routine reports and prepare outputs ready for print or electronic distribution

Category	Skill Set	Ref.	Task Item
<b>1. Understanding Databases</b>	1.1 Key Concepts	1.1.1	Understand what a database is.
		1.1.2	Understand that information is the processed output of data.
		1.1.3	Understand how a database is organised in terms of tables, records and fields.
		1.1.4	Understand that all database data is stored in tables. Understand that changes are automatically saved.
		1.1.5	Know some of the common uses of databases like: social networks, booking systems, government records, bank account records, hospital patient details.
	1.2 Database Organisation	1.2.1	Understand that each table in a database should contain data related to a single subject type.
		1.2.2	Understand that each record in a database should contain data related to a single subject.

Category	Skill Set	Ref.	Task Item
		1.2.3	Understand that each field in a table should contain only one element of data.
		1.2.4	Understand that field content is associated with an appropriate data type like: text, number, date/time, yes/no.
		1.2.5	Understand that fields have associated field properties like: field size, format, default value.
		1.2.6	Understand what a primary key is.
		1.2.7	Understand that the main purpose of an index is to speed up search queries.
	1.3 Relationships	1.3.1	Understand that the main purpose of relating tables in a database is to minimise duplication of data.
		1.3.2	Understand that a relationship is built by matching a unique field in one table with a field in another table.
		1.3.3	Understand the importance of maintaining the integrity of relationships between tables.
<b>2. Using the Application</b>	2.1 Working with Databases	2.1.1	Open, close a database application.
		2.1.2	Open, close a database.
		2.1.3	Create a new database and save to a location on a drive.
		2.1.4	Display, hide built-in toolbars. Restore, minimise the ribbon.
		2.1.5	Use available help resources.
	2.2 Common Tasks	2.2.1	Open, save, close a table, query, form, report.
		2.2.2	Switch between view modes in a table, query, form, report.
		2.2.3	Delete a table, query, form, report.
		2.2.4	Navigate between records in a table, query, form. Navigate between pages in a report.
		2.2.5	Sort records in a table, form, query output in ascending, descending numeric, alphabetic order.
<b>3. Tables</b>	3.1 Records	3.1.1	Add, delete records in a table.
		3.1.2	Add, modify, delete data in a record.

Category	Skill Set	Ref.	Task Item
	3.2 Design	3.2.1	Create and name a table and specify fields with their data types like: text, number, date/time, yes/no.
		3.2.2	Apply field property settings: field size, number format, date/time format, default value.
		3.2.3	Understand consequences of changing data types, field properties in a table.
		3.2.4	Create a simple validation rule for numbers.
		3.2.5	Set a field as a primary key.
		3.2.6	Index a field with, without duplicates allowed.
		3.2.7	Add a field to an existing table.
		3.2.8	Adjust the width of column(s) in a table.
	3.3 Relationships	3.3.1	Create a one-to-many relationship between tables.
		3.3.2	Delete a one-to-many relationship between tables.
		3.3.3	Apply referential integrity between tables.
<b>4. Retrieving Information</b>	4.1 Main Operations	4.1.1	Use the search command for a specific word, number, date in a field.
		4.1.2	Apply a filter to a table, form.
		4.1.3	Remove filter from a table, form.
	4.2 Queries	4.2.1	Understand that a query is used to extract and analyse data.
		4.2.2	Create a named single-table query using specific search criteria.
		4.2.3	Create a named two-table query using specific search criteria.
		4.2.4	Add criteria to a query using one or more operators: = (Equal), <> (Not equal to), < (Less than), <= (Less than or equal to), > (Greater than), >= (Greater than or equal to).
		4.2.5	Add criteria to a query to sort records in ascending, descending numeric, alphabetic order.
		4.2.6	Add criteria to a query using one or more logical operators: AND, OR, NOT.
		4.2.7	Use a wildcard in a query like: * or %, ? or _.
		4.2.8	Edit a query: modify, remove criteria.



Category	Skill Set	Ref.	Task Item
		4.2.9	Edit a query: add, remove, move, hide, unhide fields.
		4.2.10	Run a query.
<b>5. Forms</b>	5.1 Using Forms	5.1.1	Understand that a form is used to display, add and edit records.
		5.1.2	Create and name a simple form.
		5.1.3	Use a form to insert new records.
		5.1.4	Use a form to delete records.
		5.1.5	Use a form to add, modify, delete data in a record.
		5.1.6	Add, modify text in headers, footers in a form.
<b>6. Outputs</b>	6.1 Reports, Data Export	6.1.1	Understand that a report is used to present selected information from a table, query.
		6.1.2	Create and name a simple report based on a table, query.
		6.1.3	Create and name a grouped report. Sort records and calculate summary information like: sum, minimum, maximum, average.
		6.1.4	Edit a report: change arrangement of data fields, headings.
		6.1.5	Edit a report: add, modify text in headers, footers.
		6.1.6	Export a table, query output in spreadsheet, text file, csv, XML format to a location on a drive.
		6.1.7	Export a report output in pdf format to a location on a drive.
	6.2 Printing	6.2.1	Change table, form, query output, report orientation: portrait, landscape. Change paper size.
		6.2.2	Print a page, selected record(s), complete table.
		6.2.3	Print all records, specific page(s) using form layout.
		6.2.4	Print the result of a query.
		6.2.5	Print specific page(s) in a report, print complete report.

# Presentation

This module sets out essential concepts and skills relating to demonstrating competence in using presentation software.

## Module Goals

Successful candidates will be able to:

- ▶ Work with presentations and save them in different file formats, locally or in the cloud
- ▶ Use available help resources to enhance productivity
- ▶ Understand different presentation views and when to use them, choose different built-in slide layouts, designs and themes
- ▶ Enter, edit and format text and tables in presentations. Recognise good practise in applying unique titles to slides and creating consistent slide content by using the master slide
- ▶ Choose, create and format charts to communicate information meaningfully
- ▶ Insert, edit and align pictures and drawn objects
- ▶ Apply animation and transition effects to presentations, and check and correct presentation content before printing and presenting

Category	Skill Set	Ref.	Task Item
<b>1. Using the Application</b>	1.1 Working with Presentations	1.1.1	Open, close a presentation application. Open, close presentation(s).
		1.1.2	Create a new presentation based on default template, other available template locally or online.
		1.1.3	Save a presentation to a location on a local, online drive. Save a presentation under another name to a location on a local, online drive.
		1.1.4	Save a presentation as another file type like: pdf, show, image file format.
		1.1.5	Switch between open presentations.
1.2 Enhancing Productivity		1.2.1	Set basic options/preferences in the application: user name, default folder to open, save files.
		1.2.2	Use available help resources.
		1.2.3	Use magnification/zoom tools.

Category	Skill Set	Ref.	Task Item
		1.2.4	Display, hide built-in toolbars. Restore, minimise the ribbon.
<b>2. Developing a Presentation</b>	2.1 Presentation Views	2.1.1	Understand the uses of different presentation view modes: normal, slide sorter, master, notes page, outline, slide show.
		2.1.2	Switch between presentation view modes: normal, slide sorter, master, notes page, outline.
		2.1.3	Recognise good practice in adding slide titles: use a different title for each slide to distinguish between slides in outline view, when navigating in slide show view.
	2.2 Slides	2.2.1	Apply a different built-in slide layout to a slide.
		2.2.2	Apply a built-in design template, theme to a presentation.
		2.2.3	Apply background colour on specific slide(s), all slides in a presentation.
		2.2.4	Add a new slide with a specific slide layout like: title slide, title and content, title only, blank.
		2.2.5	Copy, move slides within the presentation, between open presentations.
	2.3 Master Slide	2.2.6	Delete slide(s).
		2.3.1	Recognise good practice in maintaining a consistent design and format throughout a presentation by using the master slide.
2.3.2		Insert a graphical object (picture, drawn object) into a master slide. Remove a graphical object from a master slide.	
		2.3.3	Apply text formatting in a master slide: font sizes, font types, font colour.
<b>3. Text</b>	3.1 Handling Text	3.1.1	Recognise good practice in creating slide content: use short concise phrases, bullet points, numbered lists.
		3.1.2	Enter text in a placeholder in normal view. Enter text in outline view.
		3.1.3	Edit text in a presentation.
		3.1.4	Copy, move text within a presentation, between open presentations.
		3.1.5	Delete text.
		3.1.6	Use the undo, redo command.

Category	Skill Set	Ref.	Task Item
		3.1.7	Apply, modify, remove indents on text, bulleted lists, numbered lists.
	3.2 Formatting	3.2.1	Apply text formatting: font size, font type.
		3.2.2	Apply text formatting: bold, italic, underline, shadow.
		3.2.3	Apply font colour to text.
		3.2.4	Apply case changes to text.
		3.2.5	Align text: left, centre, right in a text frame.
		3.2.6	Apply spacing above, below text, bulleted lists, numbered lists. Apply line spacing within text, bulleted lists, numbered lists: single, 1.5 lines, double.
		3.2.7	Switch between the different standard bullet, number styles in a list.
		3.2.8	Insert, edit, remove a hyperlink.
	3.3 Tables	3.3.1	Create, delete a table.
		3.3.2	Enter, edit text in a table.
		3.3.3	Select cells, rows, columns, entire table.
		3.3.4	Insert, delete rows and columns.
		3.3.5	Modify column width, row height.
<b>4. Charts</b>	4.1 Using Charts	4.1.1	Input data to create built-in charts in a presentation: column, bar, line, pie.
		4.1.2	Select a chart.
		4.1.3	Change the chart type.
		4.1.4	Add, remove, edit a chart title.
		4.1.5	Add data labels to a chart: values/numbers, percentages.
		4.1.6	Change the background colour of a chart.
		4.1.7	Change the column, bar, line, pie slice colours in a chart.
	4.2 Organisation Charts	4.2.1	Create an organisation chart with a labelled hierarchy using a built-in organisation chart feature.
		4.2.2	Change the hierarchical structure of an organisation chart.
		4.2.3	Add, remove co-workers, subordinates in an organisation chart.

Category	Skill Set	Ref.	Task Item
<b>5. Graphical Objects</b>	5.1 Insert, Manipulate	5.1.1	Insert a graphical object (picture, drawn object) into a slide.
		5.1.2	Select graphical object(s).
		5.1.3	Copy, move graphical objects, charts within the presentation, between open presentations.
		5.1.4	Resize a graphical object maintaining, not maintaining aspect ratio. Resize a chart.
		5.1.5	Delete a graphical object, chart.
		5.1.6	Rotate, flip a graphical object.
	5.1.7	Align graphical object(s) relative to a slide: left, centre, right, top, bottom.	
	5.1.8	Align graphical objects relative to each other: left, centre, right, top, bottom, middle.	
	5.2 Drawing	5.2.1	Add different types of drawn object to a slide: line, arrow, block arrow, rectangle, square, oval, circle, text box.
		5.2.2	Enter text into a text box, block arrow, rectangle, square, oval, circle.
5.2.3		Change drawn object background colour, line colour, line width, line style.	
5.2.4		Change arrow start style, arrow finish style.	
5.2.5		Apply a shadow to a drawn object.	
5.2.6		Group, ungroup drawn objects in a slide.	
5.2.7		Bring a drawn object one level forward, one level backward, to the front, to the back of other drawn objects.	
<b>6. Prepare Outputs</b>	6.1 Preparation	6.1.1	Add, remove built-in transition effects between slides.
		6.1.2	Add, remove preset animation effects for different slide elements.
		6.1.3	Add presenter notes to slide(s).
		6.1.4	Hide, show slide(s).
		6.1.5	Enter text into footer of specific slide(s), all slides in a presentation.
		6.1.6	Apply automatic slide numbering, automatically updated date, fixed date to the footer of specific slide(s), all slides in a presentation.

Category	Skill Set	Ref.	Task Item
	6.2 Check and Deliver	6.2.1	Spell check a presentation and make changes like: correcting spelling errors, ignoring specific words, deleting repeated words.
		6.2.2	Change slide orientation to portrait, landscape. Select appropriate output format for slide presentation like: paper, on-screen show.
		6.2.3	Print a presentation using output options like: entire presentation, specific slide(s), handouts, notes pages, outline view of slides, number of copies of a presentation.
		6.2.4	Start a slide show from first slide, from current slide. End a slide show.
		6.2.5	Navigate to next slide, previous slide, specified slide during a slide show.

# Online Collaboration

This module sets out concepts and skills relating to the setup and use of online collaborative tools, such as storage, productivity applications, calendars, social media, web meetings, learning environments, and mobile technology.

## Module Goals

Successful candidates will be able to:

- ▶ Understand the key concepts relating to online collaboration and cloud computing
- ▶ Set up accounts to prepare for online collaboration
- ▶ Use online storage and web-based productivity applications to collaborate
- ▶ Use online and mobile calendars to manage and plan activities
- ▶ Collaborate and interact using social networks, blogs, and wikis
- ▶ Schedule and host online meetings and use online learning environments
- ▶ Understand key mobile technology concepts and use features such as e-mail, applications, and synchronisation

Category	Skill Set	Ref.	Task Item
<b>1. Collaboration Concepts</b>	1.1 Key Concepts	1.1.1	Recognise that ICT (Information and Communication Technology) can support and promote online collaboration.
		1.1.2	Identify the main types of services supporting online collaboration like: cloud computing, mobile technology. Identify the main types of tools supporting online collaboration like: common productivity applications, social media, online calendars, online meetings, online learning environments.
		1.1.3	Identify key characteristics of online collaborative tools like: multiple users, real time, global reach, concurrent access.
		1.1.4	Outline the benefits of using online collaborative tools like: shared files and calendars, reduced travel expense, ease of communication, enhanced teamwork, global access.

Category	Skill Set	Ref.	Task Item
		1.1.5	Be aware of the risks associated with using online collaborative tools like: unauthorised access to shared files, insufficient management of version control, malware threats, identity/data theft, service interruptions.
		1.1.6	Recognise the importance of intellectual property rights and the appropriate use of content when using online collaborative tools.
	1.2 Cloud Computing	1.2.1	Understand ways in which cloud computing facilitates online and mobile collaboration like: storage of shared documents and files, access to a range of online applications and tools.
		1.2.2	Outline the benefits of cloud computing for users like: reduced costs, enhanced mobility, scalability, automatic updates.
		1.2.3	Outline the risks of cloud computing like: dependence on provider, data protection and control, potential loss of privacy.
<b>2. Preparation for Online Collaboration</b>	2.1 Common Setup Features	2.1.1	Understand that additional applications, plug-ins may need to be installed to use certain online collaborative tools.
		2.1.2	Identify common equipment used to support online collaboration like: webcam, microphone, speakers.
		2.1.3	Recognise that firewall restrictions may cause access issues for users of a collaborative tool.
	2.2 Setup	2.2.1	Download software to support online collaborative tools like: VOIP, IM, document sharing.
		2.2.2	Register and/or set up a user account for a collaborative tool. Deactivate, delete/close a user account.
<b>3. Using Online Collaborative Tools</b>	3.1 Online Storage and Productivity Applications	3.1.1	Understand the concept of online storage solutions and identify common examples.
		3.1.2	Identify the limitations of online storage like: size limit, time limit, sharing restrictions.
		3.1.3	Upload, download, delete online files, folders.



Category	Skill Set	Ref.	Task Item
		3.1.4	Understand that common productivity applications can be accessed via the web. Identify common examples of web-based productivity applications like: word processing, spreadsheets, presentations.
		3.1.5	Identify features of web-based productivity applications: allows files to be updated by multiple users in real-time, allows files to be shared.
		3.1.6	Create, edit and save files online.
		3.1.7	Share, unshare a file, folder to allow other users to view, edit, own a file, folder.
		3.1.8	View, restore previous versions of a file.
	3.2 Online Calendars	3.2.1	Share a calendar. Grant permission to view, edit a shared calendar.
		3.2.2	Show, hide shared calendars.
		3.2.3	Use a shared calendar to create an event, recurring event.
		3.2.4	Set a reminder for an event.
		3.2.5	Invite, uninvite people, resources to an event. Accept, decline an invitation.
		3.2.6	Edit, cancel an existing event.
	3.3 Social Media	3.3.1	Identify social media tools that support online collaboration like: social networks, wikis, forums and groups, blogs, micro blogs, content communities.
		3.3.2	Set up, modify available permissions/privacy options like: read access, write access, user invites.
		3.3.3	Find, connect to social media users, groups. Remove connections.
		3.3.4	Use a social media tool to post a comment, link.
		3.3.5	Use a social media tool to reply to, forward a comment.
		3.3.6	Use a social media tool to upload content like: images, videos, documents.
		3.3.7	Remove posts from social media. Be aware that permanently deleting posts and photos may be difficult.

Category	Skill Set	Ref.	Task Item
		3.3.8	Use a wiki to add to or update a specific topic.
	3.4 Online meetings	3.4.1	Open, close online meeting application. Create a meeting: time, date, topic. Cancel the meeting.
		3.4.2	Invite, uninvite participants, set access rights.
		3.4.3	Start, end a meeting.
		3.4.4	Share, unshare desktop, files in an online meeting.
		3.4.5	Use available chat features in an online meeting.
		3.4.6	Use video, audio features in an online meeting.
	3.5 Online Learning Environments	3.5.1	Understand the concept of an online learning environment. Identify online learning environments like: Virtual Learning Environments (VLEs) and Learning Management Systems (LMS).
		3.5.2	Understand the features, functions available within an online learning environment like: calendar, noticeboard, chat, assessment records.
		3.5.3	Access a course in an online learning environment.
		3.5.4	Upload, download a file in an online learning environment.
		3.5.5	Use a course activity like: quiz, forum.
<b>4. Mobile Collaboration</b>	4.1 Key Concepts	4.1.1	Identify types of mobile devices like: smartphone, tablet.
		4.1.2	Understand that mobile devices use an operating system. Identify common operating systems for mobile devices.
		4.1.3	Understand the term Bluetooth and its use.
		4.1.4	Understand internet connection options available for mobile devices: wireless (WLAN), mobile internet (3G, 4G). Understand associated features of these options like: speed, cost, availability.
		4.1.5	Understand key security considerations for mobile devices like: use a PIN, backup content, turn wireless/Bluetooth on/off.
	4.2 Using Mobile Devices	4.2.1	Connect to the Internet securely using wireless, mobile technology.
		4.2.2	Search the web.

Category	Skill Set	Ref.	Task Item
		4.2.3	Send, receive e-mail.
		4.2.4	Add, edit, remove a calendar event.
		4.2.5	Share pictures, videos using options like: e-mail, messaging, social media, Bluetooth.
	4.3 Applications	4.3.1	Identify common applications like: news, social media, productivity, maps, games, ebooks.
		4.3.2	Understand that applications are obtained from application stores. Identify common application stores for mobile devices.
		4.3.3	Search for a mobile device application in an application store. Recognise that there may be purchase, usage costs associated with an application.
		4.3.4	Install, uninstall an application on a mobile device.
		4.3.5	Update applications on a mobile device.
		4.3.6	Use an application on a mobile device like: voice or video communication, social media, map.
	4.4 Synchronisation	4.4.1	Understand the purpose of synchronising content.
		4.4.2	Set up synchronisation settings.
		4.4.3	Synchronise mobile devices with mail, calendar, other devices.

# IT Security

This module sets out concepts relating to the secure use of ICT in daily life and skills used to maintain a secure network connection, use the Internet safely and securely, and manage data and information appropriately.

## Module Goals

Successful candidates will be able to:

- ▶ Understand the importance of keeping information and data secure, and identify common data/privacy protection, retention and control principles
- ▶ Recognise threats to personal security from identity theft and potential threats to data from using cloud computing
- ▶ Be able to use passwords and encryption to secure files and data
- ▶ Understand the threat of malware and be able to protect a computer, device or network from malware and address malware attacks
- ▶ Recognise common network and wireless security types and be able to use personal firewalls and personal hotspots
- ▶ Protect a computer or device from unauthorised access and be able to safely manage and update passwords
- ▶ Use appropriate web browser settings and understand how to authenticate websites and browse the web securely
- ▶ Understand communication security issues that can arise from using e-mail, social networks, voice over Internet protocol, instant messaging and mobile devices
- ▶ Back up and restore data to local and cloud storage locations and delete and dispose of data and devices securely

Category	Skill Set	Ref.	Task Item
<b>1. Security Concepts</b>	1.1 Data Threats	1.1.1	Distinguish between data and information.
		1.1.2	Understand the terms cybercrime, hacking.
		1.1.3	Recognise malicious, accidental threats to data from individuals, service providers, external organisations.
		1.1.4	Recognise threats to data from extraordinary circumstances like: fire, floods, war, earthquake.
		1.1.5	Recognise threats to data from using cloud computing like: data control, potential loss of privacy.

Category	Skill Set	Ref.	Task Item
1.2 Value of Information		1.2.1	Understand basic characteristics of information security like: confidentiality, integrity, availability.
		1.2.2	Understand the reasons for protecting personal information like: avoiding identity theft, fraud, maintaining privacy.
		1.2.3	Understand the reasons for protecting workplace information on computers and devices like: preventing theft, fraudulent use, accidental data loss, sabotage.
		1.2.4	Identify common data/privacy protection, retention and control principles like: transparency, legitimate purposes, proportionality.
		1.2.5	Understand the terms data subjects and data controllers and how data/privacy protection, retention and control principles apply to them.
		1.2.6	Understand the importance of adhering to guidelines and policies for ICT use and how to access them.
1.3 Personal Security		1.3.1	Understand the term social engineering and its implications like: unauthorised computer and device access, unauthorised information gathering, fraud.
		1.3.2	Identify methods of social engineering like: phone calls, phishing, shoulder surfing.
		1.3.3	Understand the term identity theft and its implications: personal, financial, business, legal.
		1.3.4	Identify methods of identity theft like: information diving, skimming, pretexting.
1.4 File Security		1.4.1	Understand the effect of enabling/disabling macro security settings.
		1.4.2	Understand the advantages, limitations of encryption. Be aware of the importance of not disclosing or losing the encryption password, key, certificate.
		1.4.3	Encrypt a file, folder, drive.
		1.4.4	Set a password for files like: documents, spreadsheets, compressed files.

Category	Skill Set	Ref.	Task Item
<b>2. Malware</b>	2.1 Types and Methods	2.1.1	Understand the term malware. Recognise different ways that malware can be concealed on computers and devices like: Trojans, rootkits, backdoors.
		2.1.2	Recognise types of infectious malware and understand how they work like: viruses, worms.
		2.1.3	Recognise types of data theft, profit generating/extortion malware and understand how they work like: adware, ransomware, spyware, bot-nets, keystroke logging, diallers.
	2.2 Protection	2.2.1	Understand how anti-virus software works and its limitations.
		2.2.2	Understand that anti-virus software should be installed on computers and devices.
		2.2.3	Understand the importance of regularly updating software like: anti-virus, web browser, plug-in, application, operating system.
		2.2.4	Scan specific drives, folders, files using anti-virus software. Schedule scans using anti-virus software.
		2.2.5	Understand the risks of using obsolete and unsupported software like: increased malware threats, incompatibility.
	2.3 Resolving and Removing	2.3.1	Understand the term quarantine and the effect of quarantining infected/suspicious files.
		2.3.2	Quarantine, delete infected/suspicious files.
2.3.3		Understand that a malware attack can be diagnosed and resolved using online resources like: websites of operating system, anti-virus, web browser software providers, websites of relevant authorities.	
<b>3. Network Security</b>	3.1 Networks and Connections	3.1.1	Understand the term network and recognise the common network types like: local area network (LAN), wireless local area network (WLAN), wide area network (WAN), virtual private network (VPN).
		3.1.2	Understand how connecting to a network has implications for security like: malware, unauthorised data access, maintaining privacy.

Category	Skill Set	Ref.	Task Item
		3.1.3	Understand the role of the network administrator in managing authentication, authorisation and accounting, monitoring and installing relevant security patches and updates, monitoring network traffic, and in dealing with malware found within a network.
		3.1.4	Understand the function, limitations of a firewall in personal, work environment.
		3.1.5	Turn a personal firewall on, off. Allow, block an application, service/feature access through a personal firewall.
	3.2 Wireless Security	3.2.1	Recognise different options for wireless security and their limitations like: Wired Equivalent Privacy (WEP), Wi-Fi Protected Access (WPA)/ Wi-Fi Protected Access 2 (WPA2), Media Access Control (MAC) filtering, Service Set Identifier (SSID) hiding.
		3.2.2	Understand that using an unprotected wireless network can lead to attacks like: eavesdroppers, network hijacking, man in the middle.
		3.2.3	Understand the term personal hotspot.
		3.2.4	Enable, disable a secure personal hotspot, and securely connect, disconnect devices.
<b>4. Access Control</b>	4.1 Methods	4.1.1	Identify measures for preventing unauthorised access to data like: user name, password, PIN, encryption, multi- factor authentication.
		4.1.2	Understand the term one-time password and its typical use.
		4.1.3	Understand the purpose of a network account.
		4.1.4	Understand that a network account should be accessed through a user name and password and locked, logged off when not in use.
		4.1.5	Identify common biometric security techniques used in access control like: fingerprint, eye scanning, face recognition, hand geometry.
	4.2 Password Management	4.2.1	Recognise good password policies, like: adequate password length, adequate letter, number and special characters mix, not sharing passwords, changing them regularly, different passwords for different services.

Category	Skill Set	Ref.	Task Item
		4.2.2	Understand the function, limitations of password manager software.
<b>5. Secure Web Use</b>	5.1 Browser Settings	5.1.1	Select appropriate settings for enabling, disabling autocomplete, autosave when completing a form.
		5.1.2	Delete private data from a browser like: browsing history, download history, cached Internet files, passwords, cookies, autocomplete data.
	5.2 Secure Browsing	5.2.1	Be aware that certain online activity (purchasing, banking) should only be undertaken on secure web pages using a secure network connection.
		5.2.2	Identify ways to confirm the authenticity of a website like: content quality, currency, valid URL, company or owner information, contact information, security certificate, validating domain owner.
		5.2.3	Understand the term pharming.
	5.2.4	Understand the function and types of content-control software like: Internet filtering software, parental control software.	
<b>6. Communications</b>	6.1 E-Mail	6.1.1	Understand the purpose of encrypting, decrypting an e-mail.
		6.1.2	Understand the term digital signature.
		6.1.3	Identify possible fraudulent e-mail, unsolicited e-mail.
		6.1.4	Identify common characteristics of phishing like: using names of legitimate organisations, people, false web links, logos and branding, encouraging disclosure of personal information.
		6.1.5	Be aware that you can report phishing attempts to the legitimate organisation, relevant authorities.
	6.1.6	Be aware of the danger of infecting a computer or device with malware by opening an e-mail attachment that contains a macro or an executable file.	
	6.2 Social Networking	6.2.1	Understand the importance of not disclosing confidential or personal identifiable information on social networking sites.



Category	Skill Set	Ref.	Task Item
		6.2.2	Be aware of the need to apply and regularly review appropriate social networking account settings like: account privacy, location.
		6.2.3	Apply social networking account settings: account privacy, location.
		6.2.4	Understand potential dangers when using social networking sites like: cyber bullying, grooming, malicious disclosure of personal content, false identities, fraudulent or malicious links, content, messages.
		6.2.5	Be aware that you can report inappropriate social network use or behaviour to the service provider, relevant authorities.
	6.3 VoIP and Instant Messaging	6.3.1	Understand the security vulnerabilities of instant messaging (IM) and Voice over IP (VoIP) like: malware, backdoor access, access to files, eavesdropping.
		6.3.2	Recognise methods of ensuring confidentiality while using IM and VoIP like: encryption, non-disclosure of important information, restricting file sharing.
	6.4 Mobile	6.4.1	Understand the possible implications of using applications from unofficial application stores like: mobile malware, unnecessary resource utilisation, access to personal data, poor quality, hidden costs.
		6.4.2	Understand the term application permissions.
		6.4.3	Be aware that mobile applications can extract private information from the mobile device like: contact details, location history, images.
		6.4.4	Be aware of emergency and precautionary measures if a device is lost like: remote disable, remote wipe, locate device.
<b>7. Secure Data Management</b>	7.1 Secure and Backup Data	7.1.1	Recognise ways of ensuring physical security of computers and devices like: do not leave unattended, log equipment location and details, use cable locks, access control.
		7.1.2	Recognise the importance of having a backup procedure in case of loss of data from computers and devices.

Category	Skill Set	Ref.	Task Item
		7.1.3	Identify the features of a backup procedure like: regularity/frequency, schedule, storage location, data compression.
		7.1.4	Back up data to a location like: local drive, external drive/media, cloud service.
		7.1.5	Restore data from a backup location like: local drive, external drive/media, cloud service.
	7.2 Secure Deletion and Destruction	7.2.1	Distinguish between deleting and permanently deleting data.
		7.2.2	Understand the reasons for permanently deleting data from drives or devices.
		7.2.3	Be aware that content deletion may not be permanent on services like: social network site, blog, Internet forum, cloud service.
		7.2.4	Identify common methods of permanently deleting data like: shredding, drive/media destruction, degaussing, using data destruction utilities.

# Image Editing

This module sets out essential concepts and skills relating to the ability to understand the main concepts underlying digital images and to use an image editing application to enhance images, apply effects, and prepare an image for printing and publishing.

## Module Goals

Successful candidates will be able to:

- ▶ Know about the main concepts of using digital images and understand graphic format options and colour concepts
- ▶ Open an existing image, save an image in different formats, and set image file options
- ▶ Use built-in options such as displaying toolbars, palettes to enhance productivity
- ▶ Capture and save an image, use various selection tools, and manipulate images
- ▶ Create and use layers, work with text, use effects and filters, and use drawing and painting tools
- ▶ Prepare images for printing or publishing

Category	Skill Set	Ref.	Task Item
<b>1. Imaging Concepts</b>	1.1 Digital Images	1.1.1	Identify common uses of digital images like: web and print publishing, distribution by e-mail and mobile phone, home printing, digital photo frames.
		1.1.2	Understand the terms pixel, resolution and identify the key features of a digital image: composed of discrete pixels, represented digitally in binary code.
		1.1.3	Understand the terms lossy, lossless image file compression.
		1.1.4	Understand the term copyright and the implications for image use. Understand the terms royalty-free images and rights-managed images.
	1.2 Graphic Formats	1.2.1	Understand the terms raster and vector graphics and distinguish between them. Identify common raster (jpeg, gif) and vector (svg, eps) formats.

Category	Skill Set	Ref.	Task Item
		1.2.2	Recognize proprietary digital image editing application formats: psd, psp, xcf, cpt.
	1.3 Colour Concepts	1.3.1	Understand the term colour model and recognize common colour models: RGB, HSB, CMYK, grayscale.
		1.3.2	Understand the terms colour palette, colour depth.
		1.3.3	Understand the terms hue, saturation, colour balance.
		1.3.4	Understand the terms contrast, brightness, gamma.
		1.3.5	Understand the term transparency.
<b>2. Image Capture</b>	2.1 Capturing Images	2.1.1	Save an image from a digital camera to a location on a drive.
		2.1.2	Use the print screen facility to capture a full screen, active window.
		2.1.3	Save an image from an image library, web page to a location on a drive.
		2.1.4	Open a scanning application and scan an image: preview, set scanning parameters, scan, save.
<b>3. Using the Application</b>	3.1 Image Creation	3.1.1	Open, close an image editing application. Open, close image files.
		3.1.2	Create a new image file and set options: colour model, size, resolution, background colour.
		3.1.3	Create a new image file from clipboard.
		3.1.4	Switch between open image files.
		3.1.5	Save an image to a location on a drive. Save an image under another name to a location on a drive.
		3.1.6	Save, export an image as another file type like: jpeg, gif, tiff, png.
	3.2 Settings	3.2.1	Set background colour, foreground colour.
		3.2.2	Set grid properties: units, horizontal spacing, vertical spacing, colour.
	3.3 Enhancing Productivity	3.3.1	Set basic options/ preferences in the application like: transparency, grid settings, measurement units.
		3.3.2	Use available Help functions.

Category	Skill Set	Ref.	Task Item
		3.3.3	Use magnification/zoom tools.
		3.3.4	Use the undo, redo command. Use the undo history.
		3.3.5	Display, hide built-in toolbars, palettes, windows.
<b>4. Working with Images</b>	4.1 Selection	4.1.1	Select an entire image, layer(s).
		4.1.2	Set selection tool properties: relationship between multiple selections, feathering, anti-aliasing, width, height.
		4.1.3	Select part of an image using selection tools: rectangular, elliptic, magic wand, magnetic lasso, freehand image.
		4.1.4	Inverse a selection.
		4.1.5	Save a selection, load a saved selection.
	4.2 Image Manipulations	4.2.1	Change the canvas size of an image.
		4.2.2	Resize an image in pixels, measurement units.
		4.2.3	Crop an image.
		4.2.4	Copy, move image(s), selection within an image.
		4.2.5	Rotate, mirror an image, selection within an image.
	4.3 Layers	4.3.1	Define and understand the term layer.
		4.3.2	Create, copy, delete a layer.
		4.3.3	Set layer properties: name, hide, show, lock, opacity, blending mode.
		4.3.4	Arrange, merge, link, flatten layers.
		4.3.5	Transform layer(s): scale, rotate, flip, move, trim.
		4.3.6	Convert a drawn object to a raster layer.
		4.3.7	Create an animated gif from layers.
	4.4 Text	4.4.1	Add, edit, delete text.
		4.4.2	Copy, move text.
		4.4.3	Align text: left, centre, right, justified.
		4.4.4	Apply text formatting: font sizes, font types, font colour.
		4.4.5	Apply a text warp.

Category	Skill Set	Ref.	Task Item
	4.5 Effects and Filters	4.5.1	Apply artistic, distortion effects: pixelate, emboss, wind, ripple, twirl, desaturate.
		4.5.2	Apply blur effects: gaussian, motion.
		4.5.3	Apply lighting effects: lighting, flare.
		4.5.4	Apply adjustments: brightness- contrast, hue-saturation, colour balance.
		4.5.5	Apply sharpen, unsharpen mask.
		4.5.6	Apply red eye reduction.
<b>5. Drawing and Painting</b>	5.1 Drawing Tools	5.1.1	Add a line to an image: straight line, free drawn line, curves. Set, modify line weight, style and colour.
		5.1.2	Add a shape to an image: rectangle, ellipse, n-shaped polygon. Set, modify line, fill style and colour.
	5.2 Painting Tools	5.2.1	Pick up a colour value with the dropper.
		5.2.2	Fill a portion of an image with the gradient tool, selecting opacity/transparency, radial, linear, position, rotation.
		5.2.3	Colour a portion of an image with the paint-brush tool, selecting colour, shape, size.
		5.2.4	Erase a portion of an image with the eraser tool, selecting its shape and size.
		5.2.5	Fill a portion of an image with colour using the paint bucket tool.
		5.2.6	Clone a portion of an image using a clone tool, selecting size, opacity.
<b>6. Prepare Outputs</b>	6.1 Setup	6.1.1	Preview an image.
		6.1.2	Select appropriate colour depth, resolution, image size, graphic format for web, screen, print use.
	6.2 Print	6.2.1	Change print output orientation: portrait, landscape. Change paper size.
		6.2.2	Print an image to an installed printer using defined options, default settings.

# Computing

This module sets out essential concepts and skills relating to the ability to use computational thinking and coding to create simple computer programs.

## Module Goals

Successful candidates will be able to:

- ▶ Understand key concepts relating to computing and the typical activities involved in creating a program
- ▶ Understand and use computational thinking techniques like problem decomposition, pattern recognition, abstraction and algorithms to analyse a problem and develop solutions
- ▶ Write, test and modify algorithms for a program using flowcharts and pseudocode
- ▶ Understand key principles and terms associated with coding and the importance of well-structured and documented code
- ▶ Understand and use programming constructs like variables, data types, and logic in a program
- ▶ Improve efficiency and functionality by using iteration, conditional statements, procedures and functions, as well as events and commands in a program
- ▶ Test and debug a program and ensure it meets requirements before release

Category	Skill Set	Ref.	Task Item
<b>1. Computing Terms</b>	1.1 Key Concepts	1.1.1	Define the term computing.
		1.1.2	Define the term computational thinking.
		1.1.3	Define the term program.
		1.1.4	Define the term code. Distinguish between source code, machine code.
		1.1.5	Understand the terms program description and specification.
		1.1.6	Recognise typical activities in the creation of a program: analysis, design, programming, testing, enhancement.
		1.1.7	Understand the difference between a formal language and a natural language.

Category	Skill Set	Ref.	Task Item
<b>2. Computational Thinking Methods</b>	2.1 Problem Analysis	2.1.1	Outline the typical methods used in computational thinking: decomposition, pattern recognition, abstraction, algorithms.
		2.1.2	Use problem decomposition to break down data, processes, or a complex problem into smaller parts.
		2.1.3	Identify patterns among small, decomposed problems.
		2.1.4	Use abstraction to filter out unnecessary details when analysing a problem.
		2.1.5	Understand how algorithms are used in computational thinking.
	2.2 Algorithms	2.2.1	Define the programming construct term sequence. Outline the purpose of sequencing when designing algorithms.
		2.2.2	Recognise possible methods for problem representation like: flowcharts, pseudocode.
		2.2.3	Recognise flowchart symbols like: start/stop, process, decision, input/output, connector, arrow.
		2.2.4	Outline the sequence of operations represented by a flowchart, pseudocode.
		2.2.5	Write an accurate algorithm based on a description using a technique like: flowchart, pseudocode.
		2.2.6	Fix errors in an algorithm like: missing program element, incorrect sequence, incorrect decision outcome.
<b>3. Starting to Code</b>	3.1 Getting Started	3.1.1	Describe the characteristics of well-structured and documented code like: indentation, appropriate comments, descriptive naming.
		3.1.2	Use simple arithmetic operators to perform calculations in a program: +, -, /, *.
		3.1.3	Understand the precedence of operators and the order of evaluation in complex expressions. Understand how to use parenthesis to structure complex expressions.
		3.1.4	Understand the term parameter. Outline the purpose of parameters in a program.



Category	Skill Set	Ref.	Task Item
		3.1.5	Define the programming construct term comment. Outline the purpose of a comment in a program.
		3.1.6	Use comments in a program.
	3.2 Variables and Data Types	3.2.1	Define the programming construct term variable. Outline the purpose of a variable in a program.
		3.2.2	Define and initialise a variable.
		3.2.3	Assign a value to a variable.
		3.2.4	Use appropriately named variables in a program for calculations, storing values.
		3.2.5	Use data types in a program: string, character, integer, float, Boolean.
		3.2.6	Use an aggregate data type in a program like: array, list, tuple.
		3.2.7	Use data input from a user in a program.
		3.2.8	Use data output to a screen in a program.
<b>4. Building using Code</b>	4.1 Logic	4.1.1	Define the programming construct term logic test. Outline the purpose of a logic test in a program.
		4.1.2	Recognise types of Boolean logic expressions to generate a true or false value like: =, >, <, >=, <=, <>, !=, ==, AND, OR, NOT.
		4.1.3	Use Boolean logic expressions in a program.
	4.2 Iteration	4.2.1	Define the programming construct term loop. Outline the purpose and benefit of looping in a program.
		4.2.2	Recognise types of loops used for iteration: for, while, repeat.
		4.2.3	Use iteration (looping) in a program like: for, while, repeat.
		4.2.4	Understand the term infinite loop.
		4.2.5	Understand the term recursion.
	4.3 Conditionality	4.3.1	Define the programming construct term conditional statement. Outline the purpose of conditional statements in a program.
		4.3.2	Use IF...THEN...ELSE conditional statements in a program.

Category	Skill Set	Ref.	Task Item
	4.4 Procedures and Functions	4.4.1	Understand the term procedure. Outline the purpose of a procedure in a program.
		4.4.2	Write and name a procedure in a program.
		4.4.3	Understand the term function. Outline the purpose of a function in a program.
		4.4.4	Write and name a function in a program.
	4.5 Events and Commands	4.5.1	Understand the term event. Outline the purpose of an event in a program.
		4.5.2	Use event handlers like: mouse click, keyboard input, button click, timer.
		4.5.3	Use available generic libraries like: math, random, time.
<b>5. Test, Debug and Release</b>	5.1 Run, Test and Debug	5.1.1	Understand the benefits of testing and debugging a program to resolve errors.
		5.1.2	Understand types of errors in a program like: syntax, logic.
		5.1.3	Run a program.
		5.1.4	Identify and fix a syntax error in a program like: incorrect spelling, missing punctuation.
		5.1.5	Identify and fix a logic error in a program like: incorrect Boolean expression, incorrect data type.
	5.2 Release	5.2.1	Check your program against the requirements of the initial description.
5.2.2		Describe the completed program, communicating purpose and value.	
5.2.3		Identify enhancements, improvements to the program that may meet additional, related needs.	

## Notes

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