# Information and Communication Technology - Specialism

# Leaving Certificate Applied

Revised 2021

Rialtas na hÉireann
Government of Ireland

NCCA
An Chomhairle Náisiúnta Curaclaim agus Measúnachta
National Council for Curriculum and Assessment

# Contents

# INTRODUCTION

## SENIOR CYCLE

Senior cycle students are approaching the end of their time in school and are focusing on the directions they would like to take in their future lives. Senior cycle plays a vital role in helping students to address their current needs as young adults and in preparing them for life in a changing economic and social context.

Senior cycle is founded on a commitment to educational achievement of the highest standard for all students, commensurate with their individual abilities. To support students as they shape their own future there is an emphasis on the development of knowledge and deep understanding; on students taking responsibility for their own learning; on the acquisition of key skills; and on the processes of learning. The broad curriculum, with some opportunities for specialisation, supports continuity from junior cycle and sets out to meet the needs of students, some of whom have special educational needs, but who all share a wide range of learning interests, aptitudes and talents. The curriculum at senior cycle promotes a balance between knowledge and skills, and the kinds of learning strategies relevant to participation in, and contribution to, a changing world where the future is uncertain.

Assessment in senior cycle involves gathering, interpreting and using information about the processes and outcomes of learning. It takes different forms and is used for a variety of purposes. It is used to determine the appropriate route for students through a differentiated curriculum, to identify specific areas of difficulty or strength for a given student and to test and certify achievement. Assessment supports and improves learning by helping students and teachers to identify next steps in the teaching and learning process.

## THE EXPERIENCE OF SENIOR CYCLE

The vision of senior cycle sees the learner at the centre of the educational experience. That experience will enable students to be resourceful, to be confident, to participate actively in society, to build an interest in learning, and to develop an ability to learn throughout their lives.

This vision of the learner is underpinned by the values on which senior cycle is based and it is realised through the principles that inform the curriculum as it is experienced by students in schools. The module descriptor has embedded key skills, clearly expressed learning outcomes, and is supported by a range of approaches to assessment; it is the vehicle through which the vision becomes a reality for the learner.

At a practical level, the provision of a high-quality educational experience in senior cycle is supported by:

- Effective curriculum planning, development, organisation and evaluation
- Teaching and learning approaches that motivate and interest students, that enable them to progress, that deepen and apply their learning, and that develop their capacity to reflect on their learning
- Professional development for teachers and school management that enables them to lead curriculum development and change in their schools
- A school culture that respects students, that encourages them to take responsibility for their own learning over time, and that promotes a love of learning.

Senior cycle education is situated in the context of a broader education policy that focuses on the contribution that education can make to the development of the learner as a person and as a citizen. It is an education policy that emphasises the promotion of social cohesion, the growth of society and the economy, and the principle of sustainability in all aspects of development.

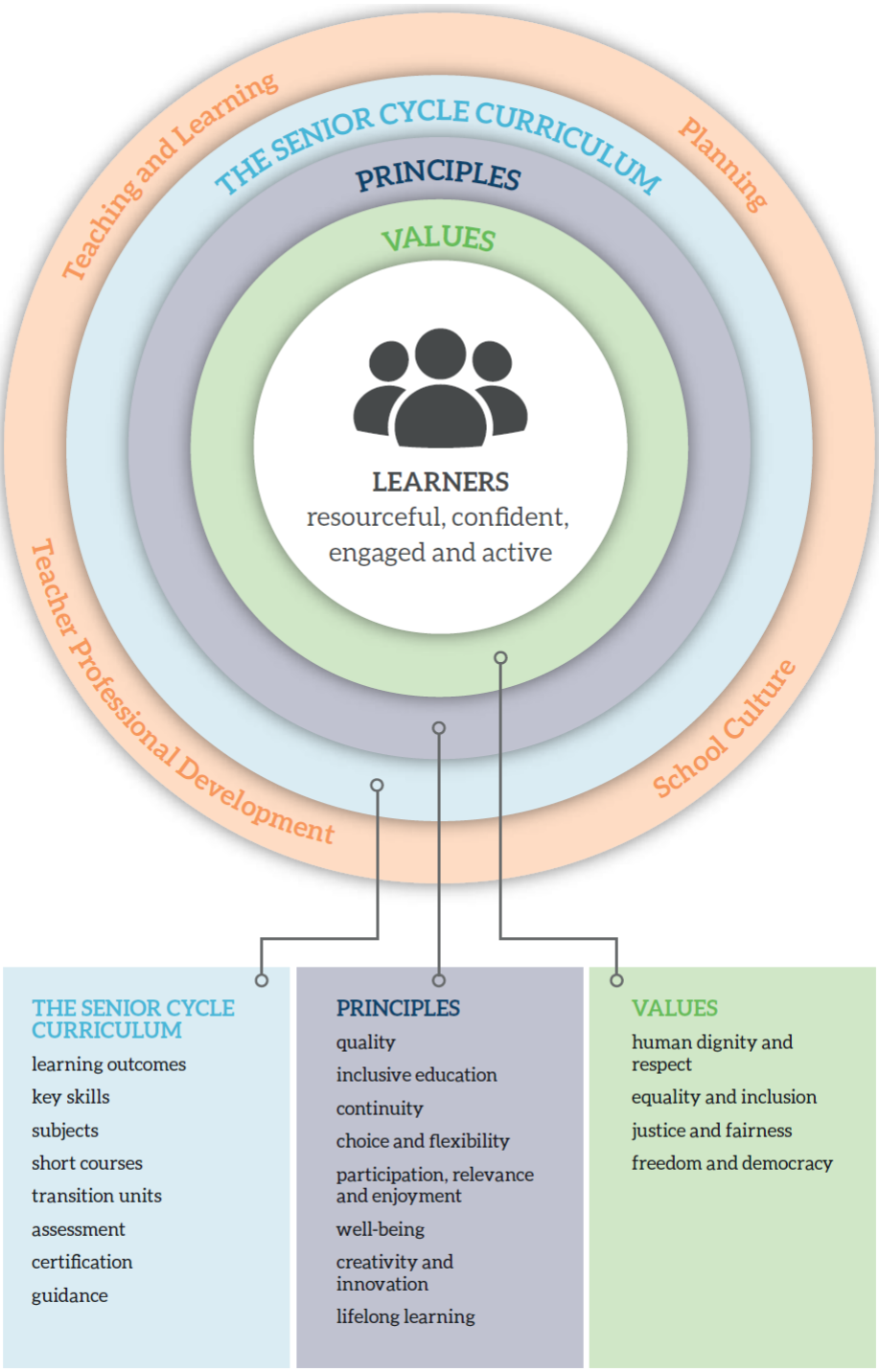



*Figure 1: Principles and values of the senior cycle curriculum*

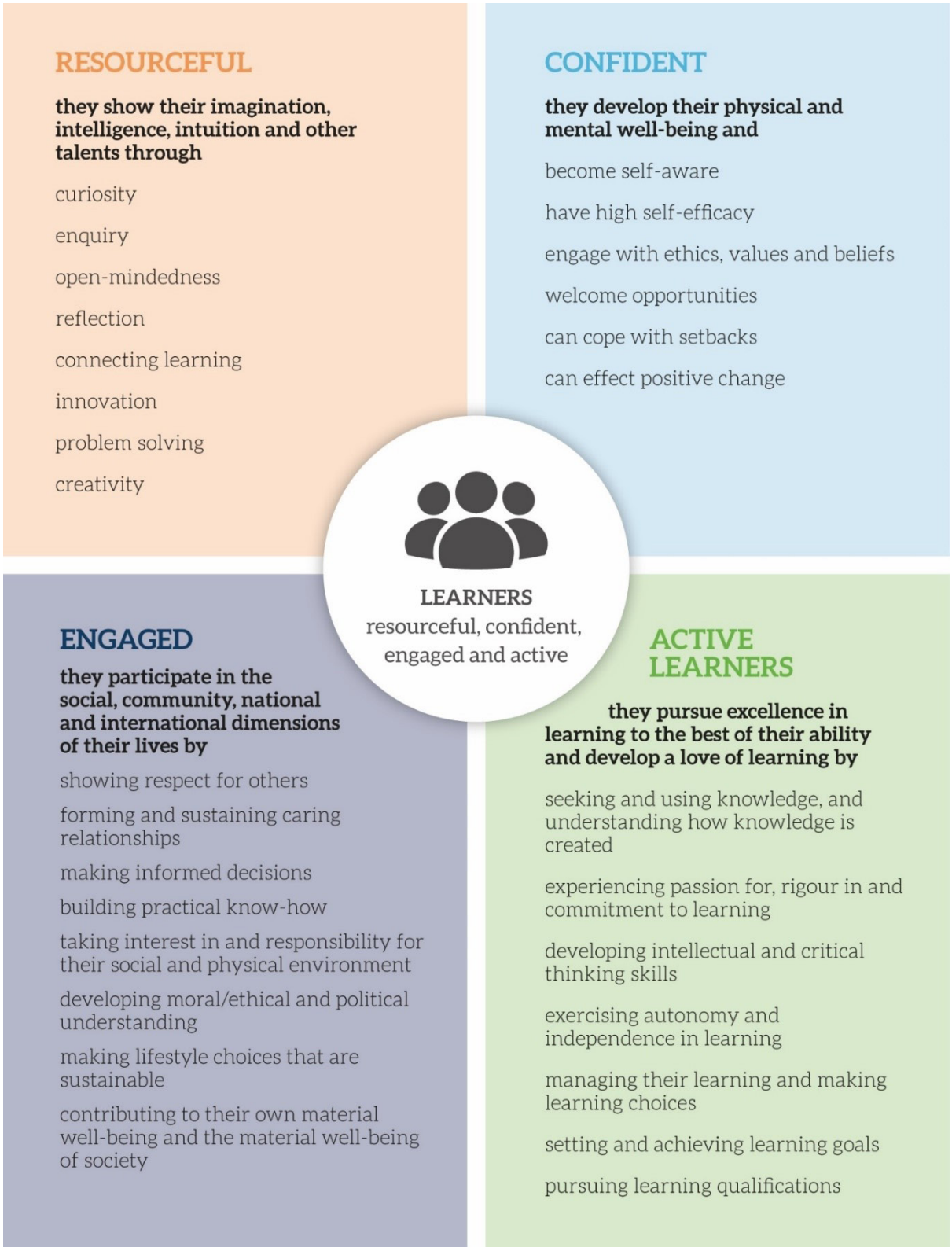



*Figure 2: Learners in senior cycle*

# RELATED LEARNING

The Leaving Certificate Applied ICT: Specialism module builds on the knowledge, attitudes and broad range of transferable skills that stem from the student's educational experience at early childhood, primary and post-primary junior cycle.

## Early childhood

Aistear, the early childhood curriculum framework, celebrates early childhood as a time of wellbeing and enjoyment where children learn from experiences as they unfold. The theme of Exploring and thinking is about children making sense of the things, places and people in their world by interacting with others, playing, investigating, questioning, and forming, testing and refining ideas. The theme of Communicating is about children sharing their experiences, thoughts, ideas, and feelings with others with growing confidence and competence, in a variety of ways and for a variety of purposes.

## Primary school

The curriculum area of Social, Environmental and Scientific Education (SESE) at primary school provides opportunities for children to actively explore and investigate the world around them from a human, social and cultural perspective. A scientific approach to investigations fosters the development of important skills, concepts and knowledge through which children can observe, question, investigate, understand and think logically about living things and their environments, materials, forces, everyday events and problems. The knowledge and skills acquired may be applied in designing and making activities in which children perceive a need to create or modify elements of their environments. Through their investigations, children develop informed, critical and scientific perspectives that acknowledge the importance of founding judgements on a respect for facts, accuracy and reason.

ICT builds on language skills developed at primary level. Through language, students learn to use appropriate sequencing, tenses and vocabulary to tell and retell stories and personal and procedural narratives of increasing complexity. They learn to use topic-specific language to give information, to explain and to justify their ideas and to predict and reflect upon actions, events and processes relating to real and imaginary contexts. Language skills developed at primary level will help students of ICT to appreciate the importance of the correct use of language and just how powerful words and language are in the context of social media.

## Junior cycle

Many of the Statements of Learning at junior cycle relate to ICT in the Leaving Certificate Applied (LCA), especially those statements focused on problem solving, design, communication, and understanding the role and contribution of technology in society. In addition, the key skills required for successful learning by students across the curriculum at junior cycle are relevant for ICT in the LCA. Many junior cycle subjects and short courses have close links with ICT particularly mathematics, science, CSPE, and the short courses in coding and digital media literacy.

## Senior cycle

ICT in the LCA is inherently a transdisciplinary subject, authentic and relevant to the real world. Transdisciplinary learning is not confined by traditional subjects but is supported and enriched by them. The knowledge and learning gained in LCA ICT can be enhanced and utilised across the LCA programme by enriching the tasks, learning and Key Assignments in other subject areas.

In this way, students will appreciate the power of ICT to represent complex situations and solutions in many discipline areas as well as in more complex real-life situations they encounter in their lives. The LCA ICT - Specialism module builds on the learning of the ICT Introductory module to develop competence in, and familiarity with, ICT programmes and applications that will be of immediate relevance for students in their coursework. Students will also develop skills and dispositions that will be relevant as they encounter challenges and problems in their lives outside of school and beyond this stage of education.

## Further study

Students live in a technologically-rich world. ICT in the LCA will afford students opportunities to build on the knowledge and skills that will help them to understand current computer technology and prepare them for emerging technologies.

ICT in the LCA incorporates a broad range of transferable and transdisciplinary skills such as problem solving, logical thinking and creative design. It also promotes skills of synthesis, evaluation, communication, time management, organisation, and teamwork. These skills and capabilities provide support for further study and lifelong learning.

## Community and society

Many important aspects of life in society are transacted through interaction with ICT. Therefore, the development of competence in this area, particularly in interpreting and critically evaluating information presented in a number of ways, is becoming imperative for developing and maintaining societies based in equality and democracy.

# RATIONALE

Information and Communication Technology: Specialism builds and expands on the skills, knowledge and attitudes developed in the mandatory module on the Introduction to Information and Communication Technology. Students will expand on their ability to process and represent data, and learn how to present their ideas using information and communication technologies.

Students will gain a more in-depth exposure into how information and communication systems work. They will also reflect on the ethical and social role of information and communication technologies and develop critical skills and enquiring attitudes towards their use in our society. It is intended that students who study these four modules will become knowledgeable, responsible and creative participants in our digital world and develop transferable skills and competencies to meet the challenges of both further education or training and a changing labour market.

## Aim

Leaving Certificate Applied Information and Communication Technology: Specialism aims to develop and foster the learner's creativity and problem solving, along with their ability to work both independently and collaboratively. Students will apply the fundamental practices and concepts of ICT and develop an appreciation of the diverse role of computing technology in society and the environment in which they live. Studying Information and Communication Technology will nurture students' interests and passions and empower them to engage confidently and actively with the world.

## Number and sequence of modules

**The four modules to be completed are as follows:**

**Module 1:** Word processing

**Module 2:** The presentation of ideas

**Module 3:** Spreadsheets

**Module 4:** The internet and digital literacy

The stated sequence of modules is advised as the assessment of Module 2 is incorporated into the assessment of the Vocational Education Task based on this specialism.

## Description of modules

**Module 1:** Word processing

This module builds and expands on the introduction to word processing mandatory module and will develop the skills and abilities of the student in successfully utilising a word processing application.

**Module 2:** The presentation of ideas

This module will help the student to present their ideas in multiple formats, utilising the best approaches and formats for their purpose and audience.

**Module 3:** Spreadsheets

This module will build and expand on the introduction to spreadsheets mandatory module and will develop the skills of the student in utilising a spreadsheet application, carrying out calculations on a spreadsheet and using appropriate formulas and functions.

**Module 4:** The internet and digital literacy

This module will build and expand on the introductory unit on the internet. Students will develop their knowledge and skills in using the World Wide Web for research purposes and their awareness of the ethical issues surrounding internet use. They will critically evaluate online information.

## General recommendations

The completion of the Introduction to Information and Communication Technology is a prerequisite for this course. While the modules may be completed in any order, the stated sequence allows for the assessment of Module 2: The Presentation of ideas as part of the Vocational Education Task linked with this specialism.

Assessment for learning techniques such as self-assessment and peer assessment are recommended. Success criteria should be clearly outlined at the beginning of lessons and differentiation applied. Students should present work in portfolios or e-portfolios if possible.

## Key skills

In senior cycle, there are five key skills (Figure 3) identified as central to teaching and learning across the curriculum: information processing; being personally effective; communicating; critical and creative thinking; and working with others.

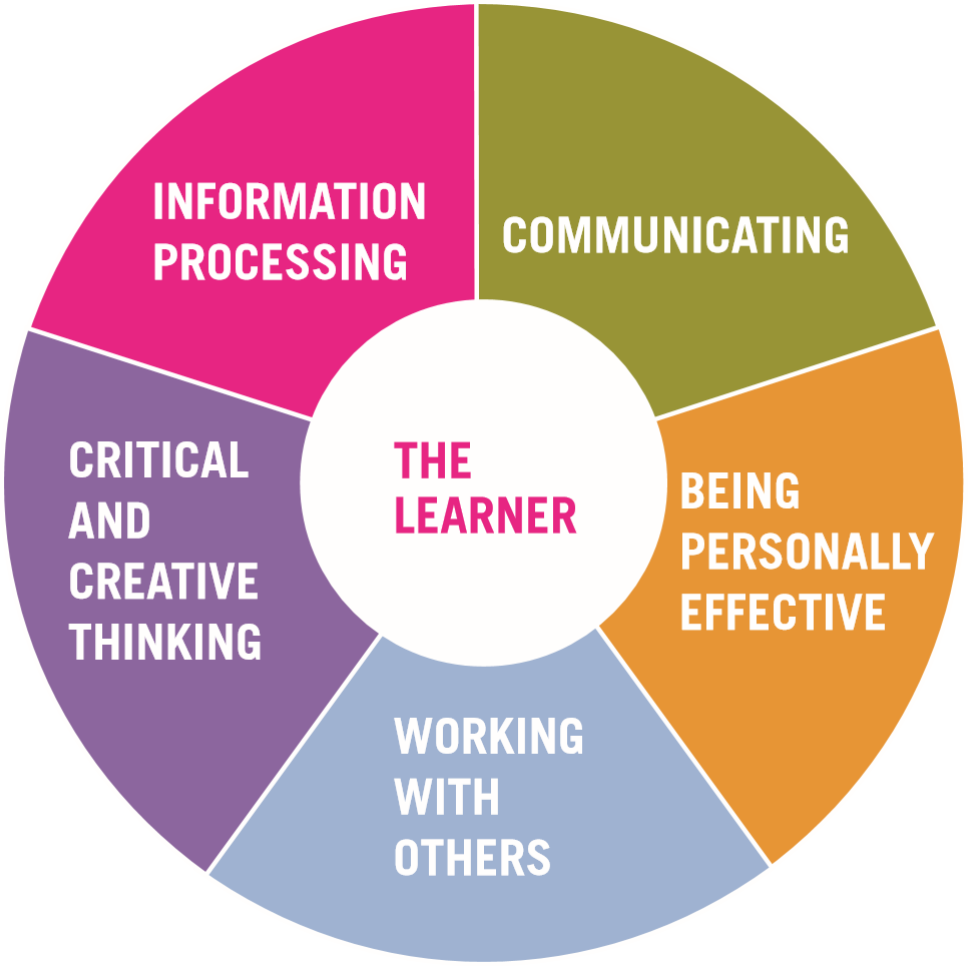



*Figure 3: Key skills for senior cycle*

The key skills are embedded within the learning outcomes of LCA ICT Specialism and are assessed in the context of those learning outcomes. This set of key skills, and the learning outcomes associated with them, became the Key Skills Framework (NCCA, 2009). The Key Skills Framework was developed to provide a common, unified approach for embedding the key skills across all future Leaving Certificate specifications. These skills are identified as being important for all students to achieve to the best of their ability, both during their time in school and in the future, and to fully participate in society, in family and community life, the world of work and lifelong learning. LCA ICT Specialism develops these skills in the following ways:

## Information processing

Making sense of ICT through engagement with authentic relevant contexts promotes independent research activities in which students are required to access a wide variety of external materials communicated in a variety of ways. The selection, evaluation, and recording of information are addressed, as students make decisions and judgments based on data and qualitative and quantitative information.

## Critical and creative thinking

Applying ICT to real-life contexts requires careful analysis of patterns and relationships, which develops skills of higher-order reasoning and problem solving. Hypothesising, making predictions, examining evidence, and reaching conclusions underpin the core of all the activities proposed in LCA ICT Specialism.

## Communicating

Effective communication skills are developed through collaborative project work. Students communicate face-to-face and through digital media. Although literacy skills are not targeted directly, they are required by students to participate fully in the learning experience.
Online research requires and builds analysis and interpretation skills. Students need to read a wide range of information sources. Students are required to express and share their opinions and to hypothesise the reason clearly; debate and argument ensues which encourages engaging in dialogue, listening attentively and eliciting opinions, views and emotions.
There are opportunities to develop communication skills further as students compose and present using a variety of media.

## Working with others

LCA ICT Specialism is underpinned by collaboration and working with others. Students gain some appreciation of group dynamics and the social skills needed to engage in collaborative work. This contributes to an appreciation that working collectively can help motivation, release energy, and capitalise on all the talents in a group.
One of the most beneficial outcomes of working with others is in identifying, evaluating and achieving collective goals. Students learn to negotiate and resolve differences of opinion as they discuss their different strategies and achieve compromise.

## Being personally effective

This key skill contributes to the personal growth of students: they become more self-aware and use this awareness to develop personal goals. An important dimension of this key skill is in building the know-how of students to recognise how to get things done, how to garner and use resources effectively, and how to act autonomously. There is more than one way to answer a problem or set up a problem-solving strategy; there is no golden key to the answer. Students must develop confidence in their self-direction and exhibit tenacity and rigour. To be personally effective, students must build on the metacognitive dimension of knowledge, whereby they develop strategies to learn and to build on previous knowledge.

# TEACHING AND LEARNING

Senior cycle students are encouraged to develop the knowledge, skills, attitudes and values that will enable them to become more independent in their learning and to develop a lifelong commitment to improving their learning.

LCA ICT Specialism supports the use of a wide range of teaching and learning approaches. The course is experiential in its structure and emphasises the practical application of ICT knowledge to the world around us. As students progress, they will develop problem-solving skills that are transferable across different tasks and different disciplines, enabling them to see the power of ICT.

By engaging in well-structured group discussions, students will develop skills in reasoned argument, listening to each other and reflecting on their own work and that of others.

Engaging with real problems is motivating for students; it allows them to see the relevance of ICT to situations that are important in their lives. The open-ended nature of authentic problems allows students to employ the ICT tools that they prefer as well as practise skills they need to reinforce.

Working towards the Key Assignments and tasks that students engage in will enable them to take charge of their own learning by setting goals, developing action plans, and receiving and responding to assessment feedback. As well as varied teaching strategies, varied assessment strategies will support learning and provide information that can be used as feedback so that teaching and learning activities can be modified in ways that best suit individual students. By setting appropriate and engaging tasks, asking higher-order questions and giving feedback that promotes learner autonomy, assessment will support learning as well as summarising achievement.

# DIFFERENTIATION

The LCA ICT Specialism module descriptor is differentiated to cater for students of differing abilities and levels of achievement.

## Differentiation through the learning outcomes

Learning outcomes should be achievable relative to each student's ability level. Learning outcomes promote teaching and learning processes that develop students' knowledge and understanding incrementally, enabling them to analyse, evaluate and apply knowledge to different situations as they progress.

## Differentiation in teaching and learning

LCA ICT Specialism provides numerous opportunities for teachers to teach the subject and select materials that meet the needs and interests of all students. The focus on the experiential approach to teaching and learning, which is central to LCA ICT Specialism, means that students can be engaged in learning activities that complement their own needs and ways of learning. The content matter of the course is specified in broad terms to allow the selection and exploration of topics in ways that are of most interest and relevance to the students.

Students vary in the amount and type of support they need to be successful. Levels of demand in any learning activity will differ as students bring different ideas and levels of understanding to it. The use of strategies for differentiated learning such as adjusting the level of skills required, varying the amount and the nature of teacher intervention, and varying the pace and sequence of learning will allow students to interact at their own level.

## Differentiation in assessment

Assessment of LCA ICT Specialism will be based on the learning outcomes in the specification. In the written assessment, the learning outcomes will be assessed by means of problems set in meaningful contexts, focusing on the application of basic facts and concepts. Examination questions will require students to demonstrate knowledge, understanding, application, analysis and evaluation appropriate to the Leaving Certificate Applied. Differentiation at the point of assessment will also be achieved through the stimulus material used, and the extent of the structured support provided for examination students at this level.

The Key Assignments provide the opportunity for students to display evidence of their learning appropriate to their level.

Successful completion of the Key Assignments will support students in their task assignment and written examination.

Course Overview:

# Modules and learning outcomes

| Module | Unit | Learning outcomes |
|---|---|---|
| 1. Word processing | 1. Basic theory | The student is able to:<br><br>1. Demonstrate proficiency in creating and managing a filing framework[1].<br><br>2. Create and edit basic word processing documents.<br><br>3. Apply different formats to documents to enhance them before printing, and show best practice in choosing the appropriate formatting options. |
| | 2. Entering and manipulating text | The student is able to:<br><br>1. Apply a variety of formatting options such as paragraphing, alignment and orientation to a document.<br><br>2. Demonstrate an ability to input text in a variety of formats, and adjust the settings to suit the purpose of the document.<br><br>3. Proof and edit a document in preparation for printing. |

[1] Filing framework: opening, saving, folders within folders, etc.

| Module | Unit | Learning outcomes |
|---|---|---|
| | 3. Additional techniques | The student is able to:<br><br>1. Insert and format tables, images and objects.<br><br>2. Demonstrate an ability to utilise features such as footer, headers, section breaks, page breaks, pagination and linked table of contents.<br><br>3. Evaluate the layout features of a text for the intended audience. |
| 2. The presentation of ideas | 1. Basic presentation skills | The student is able to:<br><br>1. Identify design principles in a range of presentation formats or media.<br><br>2. Apply those principles to appropriate presentations.<br><br>3. Analyse and evaluate the purpose,audience and requirements of a presentation in a range of formats and media.<br><br>4. Develop awareness of accessibility features and the principles of universal design[2]. |

[2] Universal design refers to the design of products and environments to be usable by all people, to the greatest possible extent, without the need for adaptation or specialised design. Principles of universal design include: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort and size and space for approach and use.

| Module | Unit | Learning outcomes |
|---|---|---|
| | 2. Creating and editing | The student is able to:<br><br>1. Represent information on a topic that is relevant to them in an appropriate digital format and justify the selection.<br><br>2. Edit, format, proof and publish the information in a suitable medium.<br><br>3. Present the information to their peers and consider the feedback received.<br><br>4. Discuss and evaluate the benefits and challenges of a range of digital formats. |
| | 3. Additional techniques | The student is able to:<br><br>1. Demonstrate proficiency in manipulating templates for presentation purposes.<br><br>2. Identify key features of best practice in presentation to engage an audience and apply these features.<br><br>3. Evaluate the advantages and disadvantages of different digital formats for different purposes. |
| 3. Spreadsheets | 1. Basic spreadsheet theory | The student is able to:<br><br>1. Understand the uses and functions of spreadsheets.<br><br>2. Create new spreadsheets based on default templates. |

| Module | Unit | Learning outcomes |
|---|---|---|
| | | 3. Work proficiently with spreadsheets and convert to other file formats.<br><br>4. Enter and manipulate data in worksheets and create logical formulas using standard functions. |
| | 2. Creating and editing | The student is able to:<br><br>1. Create spreadsheets involving different types of data such as VAT, percentages, currency, tax, time and dates, and enter formulas to generate results.<br><br>2. Generate and interpret charts, graphs and data tables appropriate to the data, to effectively communicate information from a spreadsheet.<br><br>3. Create and apply formulas and recognise error values in formulas. |
| | 3. Additional techniques | The student is able to:<br><br>1. Understand and apply a filter.<br><br>2. Create and apply formulas using standard spreadsheet functions such as sum, average, minimum, maximum, count and round functions.<br><br>3. Create formulas using cell references and arithmetic operators (addition, subtraction, multiplication, division). |

| Module | Unit | Learning outcomes |
|---|---|---|
| | | 4. Manipulate and edit spreadsheets and prepare for printing by using features such as changing margins, orientation, page set up, gridlines, selecting cell range and selected charts. |
| The internet and digital literacy | 1. Basic theory | The student is able to:<br><br>1. Understand concepts and safety considerations relating to the effective and ethical uses of digital technologies and the internet.<br><br>2. Understand the concepts and functions of online communities and applications.<br><br>3. Demonstrate an ability to use the many functions of email effectively such as sending attachments, searching, sorting and filing emails. |

| Module | Unit | Learning outcomes |
|---|---|---|
| | 2. Digital information literacy | The student is able to:<br><br>1. Search the internet to gather information on a specific topic of interest and accurately reference the material.<br><br>2. Compare information from various sources in order to evaluate its reliability, validity, accuracy and authority.<br><br>3. Discuss the ethical implications of internet use and their digital footprint in relation to issues such as privacy and data protection.<br><br>4. Appreciate the creation of their digital footprint and its consequence both positive and negative. |
| | 3. Principles and practices | The student is able to:<br><br>1. Present information in online digital formats suitable for the required audience.<br><br>2. Identify, critically examine and comment on digital media texts that highlight bias.<br><br>3. Debate, consider and understand ethical and legal issues such as creative rights, ownership and plagiarism on the internet. |

Module 1:

# Word processing

## PURPOSE

The purpose of this module is to build and expand on the basic skills developed by the students in the LCA Introduction to ICT module on word processing. It will facilitate the production of documents and provide opportunities for practical experience in using a word processing application in line with best practice.

## AIMS

This module aims to:

- Introduce students to the many applications of word processing in their lives
- Develop the skills and knowledge needed by students to effectively use word processing software
- Provide students with a range of opportunities to adapt and develop their skills.

## UNITS

**Unit 1:** Basic theory

**Unit 2:** Entering and manipulating text

**Unit 3:** Additional techniques

# UNIT 1: BASIC THEORY

## Learning outcomes

The student will be able to:

1. Demonstrate proficiency in creating and managing a filing framework[3].
2. Create and edit basic word processing documents.
3. Apply different formats to documents to enhance them before printing, and show best practice in choosing the appropriate formatting options.

## Teacher guidelines

**The following activities may form part of the classroom activities to fulfil these learning outcomes:**

- Building on the work initiated in the introductory module, establish best practice guidelines for saving, filing and retrieving documents created by the students. This can form the basis of a filing framework that can be built by the students as their needs progress.
- Using contextual tasks, students can explore manipulating documents and saving them in different formats for specific uses.
- Explore the use of the application's integrated options, such as the help function, to enhance products created.
- Students can explore the functionality of small word processing documents such as letters, business cards and labels that will be ready to share and distribute. Utilise peer and self-assessment in proofing, editing and preparing documents for printing.
- Discuss the importance of checking and correcting spelling before finally printing documents.
- Students can record and maintain a glossary of key terms.

[3] Filing framework: opening, saving, folders within folders, etc.

# UNIT 2: ENTERING AND MANIPULATING TEXT

## Learning outcomes

**The student will be able to:**

1. Apply a variety of formatting options such as paragraphing, alignment and orientation to a document.

2. Demonstrate an ability to input text in a variety of formats, and adjust the settings to suit the purpose of the document.

3. Proof and edit a document in preparation for printing.

## Teacher guidelines

**The following activities may form part of the classroom activities to fulfil these learning outcomes:**

- Using contextual tasks, students can manipulate texts to apply formatting options that best suit the purpose of the task, such as: paragraphing, columns and alignment for the production of a newsletter; inserting and manipulating tables and page orientation for a table quiz score sheet; manipulating font size, shape and colour in an information flyer.

- Use self and peer evaluation techniques to examine documents prepared.

- Proof and edit documents before printing.

- Students can record and maintain a glossary of key terms.

# UNIT 3: ADDITIONAL TECHNIQUES

## Learning outcomes

The student will be able to:

1. Insert and format tables, images and objects.
2. Demonstrate an ability to utilise features such as footer, headers, section breaks, page breaks, pagination and linked table of contents.
3. Evaluate the layout features of a text for the intended audience.
4. Apply design principles in the development and presentation of documents in line with best practice.

## Teacher guidelines

The following activities may form part of the classroom activities to fulfil these learning outcomes:

- Using contextual tasks, students should explore the use of features such as footer, headers, section and page breaks, pagination and linked table of contents.
- Explore the manipulation of tables, images, graphics and drawn objects into documents.
- Prepare documents for mail merge operations.
- Apply advanced mail merge techniques.
- Examine a selection of word processing texts to compare and contrast differences in response to the intended audience.
- Identify the intended audience and purpose of documents created and discuss features that aid clear communication.
- Students can record and maintain a glossary of key terms.

## MODULE 1: KEY ASSIGNMENTS

1. Identify a document that needs to be produced to complete LCA coursework. Apply appropriate word-processing features and techniques suitable for the purpose of the document. Proof, edit and print the document. Identify the skills and explain why they were used in the document.

2. Devise, edit and format a document to include a table(s) presenting information gathered. Present the information clearly and in a visually-appropriate manner.

Module 2:

# The Presentation of ideas

## PURPOSE

The purpose of this module is to build and expand on the basic skills developed by the students in the Introduction to Information and Communication Technology unit on the presentation of data. It will develop an appreciation for design principles in line with best practice and will give the students the opportunity to apply skills in a variety of formats.

## AIMS

This module aims to:

- develop an awareness in the students of the elements that help and hinder the clear presentation of ideas
- enable the students to apply those principles to a variety of presentation in a range of formats
- enable the students to utilise those skills in contextual settings in line with best practice
- extend and refine the students' ability to use digital technology, communication tools and the internet ethically, effectively and safely.

## UNITS

**Unit 1:** Basic presentation skills

**Unit 2:** Creating and editing

**Unit 3:** Additional techniques

# UNIT 1: BASIC PRESENTATION SKILLS

## Learning outcomes

The student will be able to:

1. Identify design principles in a range of presentation formats or media.
2. Apply those principles to appropriate presentations.
3. Analyse and evaluate the purpose, audience and requirements of a presentation in a range of formats and media.
4. Develop awareness of accessibility features and the principles of universal design[4]

## Teacher guidelines

The following activities may form part of the classroom activities to fulfil these learning outcomes:

- Examine a range of digital texts and evaluate the methods and techniques of presentation. This may include podcasts, infographics, audio files, visual texts, slide presentations, animations, coding (Scratch, Unity, etc.) and digital photography.
- Devise a list of key features to guide presentations.
- Develop an awareness of audience through comparison exercises.
- Use the skills and strengths of the class to decide on the digital formats to be explored.
- Students can record and maintain a glossary of key terms.

[4]Universal design refers to the design of products and environments to be usable by all people, to the greatest possible extent, without the need for adaptation or specialised design. Principles of universal design include: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort and size and space for approach and use.

# UNIT 2: CREATING AND EDITING

## Learning outcomes

**The student will be able to:**

1. Represent information on a topic that is relevant to them in an appropriate digital format and justify the selection.
2. Edit, format, proof and publish the information in a suitable medium.
3. Present the information to their peers and consider the feedback received.
4. Discuss and evaluate the benefits and challenges of a range of digital formats.

## Teacher guidelines

**The following activities may form part of the classroom activities to fulfil these learning outcomes:**

- Students should work with a variety of digital formats suitable for the context, abilities and facilities available.
- Key features/best principles devised in unit 1 should be applied to the presentation of ideas.
- Utilise peer and self-assessment techniques to improve on presentations.
- Present work to class or other groups in the chosen formats.
- The benefits and challenges of a range of digital formats may be examined under various headings such as universal design, presentation of factual information, clarity of presentation techniques and difficulties regarding sources/authenticity.
- Students can record and maintain a glossary of key terms.

# UNIT 3: ADDITIONAL TECHNIQUES

## Learning outcomes

**The student will be able to:**

1. Demonstrate proficiency in manipulating templates for presentation purposes.
2. Identify key features of best practice in presentation to engage an audience and apply these features.
3. Evaluate the advantages and disadvantages of different digital formats for different purposes.

## Teacher guidelines

**The following activities may form part of the classroom activities to fulfil these learning outcomes:**

- Develop skills and knowledge by applying advanced presentation techniques.
- Examine the inclusion of images, sound, animation, interactive components, gamification etc.
- Investigate methods of engaging audience across a number of media formats.
- Apply the techniques to work produced and debate the effectiveness of strategies.
- Students can record and maintain a glossary of key terms.

## MODULE 2: KEY ASSIGNMENTS

1. Develop two different presentations in formats of your choice on a topic that is of interest to you, applying the best practice techniques developed.

2. Reflect on your learning developed during this module. Justify the choices made and the real-life applications of the learning.

Module 3:

# Spreadsheets

## PURPOSE

This module will build and expand on the skills developed by the students on completion of the Introduction to Information and Communication Technology module on spreadsheets. It will develop their skills in performing simple calculations, and will provide practical experience in spreadsheet software.

## AIMS

**This module aims to:**

- introduce students to the applications of spreadsheets
- develop the skills and knowledge necessary to use spreadsheet software
- provide opportunities to use spreadsheets for a range of applications.

## UNITS

**Unit 1:** Basic spreadsheet theory

**Unit 2:** Creating and editing

**Unit 3:** Additional techniques

# UNIT 1: BASIC SPREADSHEET THEORY

## Learning outcomes

**The student will be able to:**

1. Understand the uses and functions of spreadsheets.

2. Create new spreadsheets based on default templates.

3. Work proficiently with spreadsheets and convert to other file formats.

4. Enter and manipulate data in worksheets and create logical formulas using standard functions.

## Teacher guidelines

**The following activities may form part of the classroom activities to fulfil these learning outcomes:**

- Students should build on the knowledge gained in the introductory module on spreadsheets, and work with spreadsheets and convert to different file formats such as pdf, csv.

- Explore the functions of integrated options, such as the help/ F1 function, within the application to enhance product.

- Using contextual tasks, students should explore the possibilities of utilising spreadsheets by entering data into cells, using best practice in creating lists such as including headings to allow for mail merge techniques to be applied, not leaving empty cells, consistency and simplicity in structure.

- Students should manipulate data in spreadsheets by selecting, sorting, copying, moving and deleting data and copying, moving, deleting, and renaming worksheets.

- Explore the functionality of the spreadsheet application through the creation and understanding of mathematical and logical formulas using standard spreadsheet functions.

- Set basic options and preferences in the application such as user name, default folder to open/ save.

- Students can record and maintain a glossary of key terms.

# UNIT 2: CREATING AND EDITING

## Learning outcomes

The student will be able to:

1. Create spreadsheets involving different types of data such as VAT, percentages, currency, tax, time and dates, and enter formulas to generate results.

2. Generate and interpret charts, graphs and data tables appropriate to the data, to effectively communicate information from a spreadsheet.

3. Create and apply formulas and recognise error values in formulas.

## Teacher guidelines

The following activities may form part of the classroom activities to fulfil these learning outcomes:

- Using contextual tasks, such as the enterprise task or running an event, students could utilise spreadsheets to display the types of data necessary for the task.

- Discuss the use of best practice in formula creation and recognise error values in formulas such as: #NAME!, #DIV/0!, #REF!

- Manipulate the format of numbers and text content in a spreadsheet by applying colours to cell content, hiding and deleting rows or columns, displaying or hiding toolbars, editing existing cell content and copying the content of a cell/cell range within and between worksheets.

- Investigate the creation and formatting of charts to communicate information meaningfully.

- Students can record and maintain a glossary of key terms.

# UNIT 3: ADDITIONAL TECHNIQUES

## Learning outcomes

The student will be able to:

1. Understand and apply a filter.
2. Create and apply formulas using standard spreadsheet functions such as sum, average, minimum, maximum, count and round functions.
3. Create formulas using cell references and arithmetic operators (addition, subtraction, multiplication, division).
4. Manipulate and edit spreadsheets and prepare for printing by using features such as changing margins, orientation, page set up, gridlines, selecting cell range and selected charts.

## Teacher guidelines

The following activities may form part of the classroom activities to fulfil these learning outcomes:

- Familiarise the students with terms such as character, field, record, file, data type and key field.
- Explore the use of the search command for specific content and sorting cell range by one criterion.
- Show how to access, browse and filter a spreadsheet.
- Show sort and filter methods and how to print a selection. Encourage students to adjust spreadsheet page settings and to check and correct spreadsheet content before printing.
- Students can record and maintain a glossary of key terms.

## MODULE 3: KEY ASSIGNMENTS

1. Apply a spreadsheet application to solve a problem from a topic of your choosing or a Task.

2. Use spreadsheets to graphically represent data and interpret the results.

Module 4:

# The internet and digital literacy

## PURPOSE

This module aims to develop students' skills and critical abilities in using the internet as a research and communication tool. It will encourage critical debate around ethical issues and give opportunities for students to apply their knowledge and skills in a practical manner.

## AIMS

**This module aims to:**

- introduce students to the knowledge and skills necessary to use the internet effectively, ethically and safely.
- provide opportunities to apply their knowledge and skills.
- encourage critical and ethical digital and internet use.

## UNITS

**Unit 1:** Basic theory

**Unit 2:** Digital information literacy

**Unit 3:** Principles and practices

# UNIT 1: BASIC THEORY

## Learning outcomes

The student will be able to:

1. Understand concepts and safety considerations relating to the effective and ethical uses of digital technologies and the internet.

2. Understand the concepts and functions of online communities and applications.

3. Demonstrate an ability to use the many functions of email effectively such as sending attachments, searching, sorting and filing emails.

## Teacher guidelines

The following activities may form part of the classroom activities to fulfil these learning outcomes:

- Investigating and examining commonly-used terms such as web browsers, user interface, cloud storage, data protection, virus, and spam.

- Building on the work from the introductory module, where students set up email accounts, they can investigate how to send, receive, file and sort emails with attachments, hyperlinks etc.

- Explore applications used such as mobile applications, calendar, web conferencing, Skype, Google apps, and virtual learning environments.

- Discuss issues of digital safety and the risks associated with online interactions such as cyber bullying, identity theft and the digital age of consent.

- Students can record and maintain a glossary of key terms.

# UNIT 2: DIGITAL INFORMATION LITERACY

## Learning outcomes

The student will be able to:

1. Search the internet to gather information on a specific topic of interest and accurately reference the material.

2. Compare information from various sources in order to evaluate its reliability, validity, accuracy and authority.

3. Discuss the ethical implications of internet use and their digital footprint in relation to issues such as privacy and data protection.

4. Appreciate the creation of their digital footprint and its consequence both positive and negative.

## Teacher guidelines

The following activities may form part of the classroom activities to fulfil these learning outcomes:

- Using a contextual task, students should utilise a search engine to carry out a range of targeted search tasks on a relevant topic. Discuss how to be aware of safety issues while browsing. Familiarise students with the use of search features and filters and how to refine results.

- Investigate authorship and authenticity in relation to the information found.

- Explore how to accurately reference information found.

- Use stories in the media to discuss the ethical implications of the internet in relation to digital footprint, privacy and data protection issues.

- Students can record and maintain a glossary of key terms.

# UNIT 3: PRINCIPLES AND PRACTICES

## Learning outcomes

**The student will be able to:**

1. Present information in online digital formats suitable for the required audience.
2. Identify, critically examine and comment on digital media texts that highlight bias.
3. Debate, consider and understand ethical and legal issues such as creative rights, ownership and plagiarism on the internet.

## Teacher guidelines

**The following activities may form part of the classroom activities to fulfil these learning outcomes:**

- Develop and explore new ways of presenting information such as a social media page, a website, a mobile application or a podcast.
- Discuss the advantages and disadvantages of such media.
- Critically examine texts to identify significant bias and depictions in the media.
- Debate issues of ownership and ethics with regard to the internet. Issues such as music and film downloading, ownership of photographic images, plagiarism of resources may be of interest.
- Examine concepts such as open source and creative commons material.
- Students can record and maintain a glossary of key terms.

# MODULE 4: KEY ASSIGNMENTS

- Using principles and best practice, investigate a topic using the internet and present the findings in an appropriate digital format.
- Reflect on the process of the investigation, including issues around bias, authenticity, authorship and ethics.

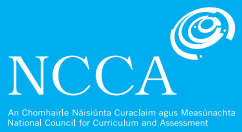
# Assessment guidelines

Assessment for Information and Communication Technology - Specialism is based on the aims, objectives and learning outcomes in this module descriptor developed through consultation between the NCCA and the SEC. The assessment components are as follows:

- Credits achieved due to attendance and completion of the key assignments for each module (4 credits).
- Practical performance and written examination (12 credits).
- In addition, the Vocational Education Task associated with this specialism will incorporate the assessment of Module 2: The Presentation of ideas, where the students will make a presentation as part of their interview.

The practical performance and written examination will follow the following structure:

| Topic | Options | Response format | Weighting |
|---|---|---|---|
| General theory | TBC | Complete on paper | 25% |
| Word processing | TBC | Practical assignment | 25% |
| Spreadsheets | TBC | Practical assignment | 25% |
| Internet | TBC | Practical assignment | 25% |


NCCA
An Chomhairle Náisiúnta Curaclaim agus Measúnachta
National Council for Curriculum and Assessment