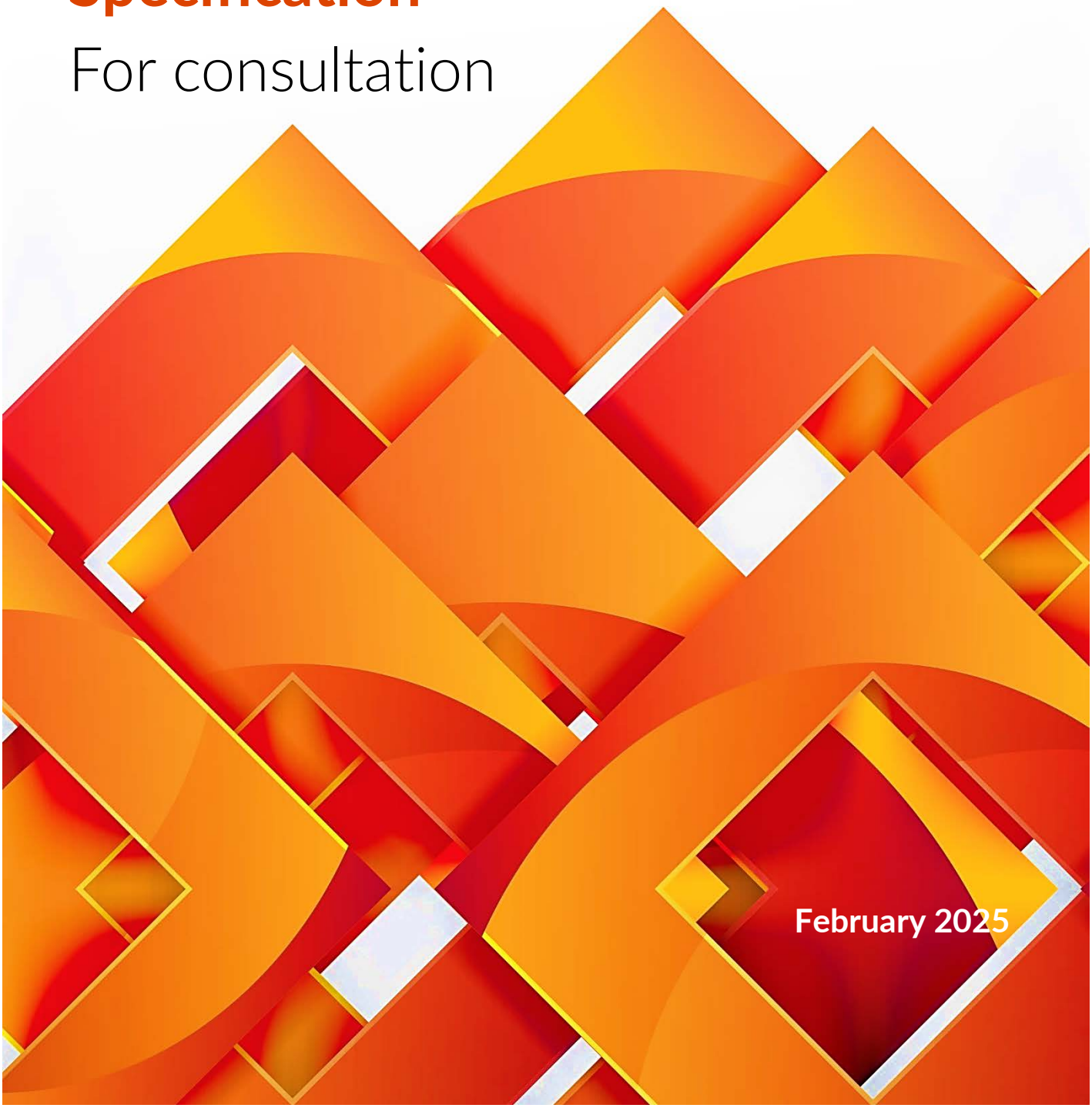
NCCA
An Chomhairle Náisiúnta Curaclaim agus Measúnachta
National Council for Curriculum and Assessment

Draft Leaving Certificate Construction Technology Specification

For consultation



February 2025

Contents

Senior cycle

Senior cycle aims to educate the whole person and contribute to human flourishing. Students' experiences throughout senior cycle enrich their intellectual, social and personal development and their overall health and wellbeing. Senior cycle has 8 guiding principles.

Senior Cycle Guiding Principles	
Wellbeing and relationships	Choice and flexibility
Inclusive education and diversity	Continuity and transitions
Challenge, engagement and creativity	Participation and citizenship
Learning to learn, learning for life	Learning environments and partnerships

These principles are a touchstone for schools and other educational settings, as they design their senior cycle. Senior cycle consists of an optional Transition Year, followed by a two-year course of subjects and modules. Building on junior cycle, learning happens in schools, communities, educational settings, and other sites, where students' increasing independence is recognised. Relationships with teachers are established on a more mature footing and students take more responsibility for their learning.

Senior cycle provides a curriculum which challenges students to aim for the highest level of educational achievement, commensurate with their individual aptitudes and abilities. During senior cycle, students have opportunities to grapple with social, environmental, economic, and technological challenges and to deepen their understanding of human rights, social justice, equity, diversity and sustainability. Students are supported to make informed choices as they choose different pathways through senior cycle and every student has opportunities to experience the joy and satisfaction of reaching significant milestones in their education. Senior cycle should establish firm foundations for students to transition to further, adult and higher education, apprenticeships, traineeships and employment, and participate meaningfully in society, the economy and adult life.

The educational experience in senior cycle should be inclusive of every student, respond to their learning strengths and needs, and celebrate, value, and respect diversity. Students vary in their family and cultural backgrounds, languages, age, ethnic status, beliefs, gender, and sexual identity as well as their strengths, needs, interests, aptitudes and prior knowledge, skills, values and dispositions. Every student's identity should be celebrated, respected, and responded to throughout their time in senior cycle.

At a practical level, senior cycle is supported by enhanced professional development; the involvement of teachers, students, parents, school leaders and other stakeholders; resources;

research; clear communication; policy coherence; and a shared vision of what senior cycle seeks to achieve for our young people as they prepare to embark on their adult lives. It is brought to life in schools and other educational settings through:

- effective curriculum planning, development, organisation, reflection and evaluation
- teaching and learning approaches that motivate students and enable them to improve
- a school culture that respects students and promotes a love of learning.

Rationale

Leaving Certificate Construction Technology fosters a holistic understanding of the built environment, providing opportunities for students to develop confidence to navigate challenges and contribute to a sustainable future. It cultivates an appreciation for architectural heritage while promoting innovation, craft excellence, and environmentally responsible design. Students explore the interconnectedness of architectural design, construction techniques, and environmental considerations, developing an awareness for their impact on the natural world, society, individual behaviours, and the economy.

Leaving Certificate Construction Technology instils a sense of environmental responsibility in students, encouraging eco-friendly decision-making, sustainable building and craft practices, and a strong emphasis on design. By integrating learning about STEM concepts, such as inquiry and problem-solving, students deepen their understanding of material properties, energy efficiency, and sustainable construction principles. This enables them to make informed decisions regarding materials, construction methods, and environmental conservation.

The Leaving Certificate Construction Technology classroom is an active learning environment where students integrate theory with practice and foster technological literacy and capability through a wide range of learning experiences. This hands-on approach nurtures critical thinking, problem-solving, creativity, craft skills, and communication abilities, empowering students to tackle real-world challenges and shape a sustainable future.

Beyond the classroom, the subject prepares students for a range of diverse futures, including apprenticeships, further and higher education, and STEM-related professions. Through a balanced curriculum that integrates traditional craft skills with modern technologies, it fosters adaptability and life-long learning, ensuring students are equipped for evolving professional landscapes and active citizenship.

Aims

The aim of Leaving Certificate Construction Technology is to provide students with an experience that develops their interest in and enthusiasm for learning relating to the built environment. It aims to equip students to become technologically literate and responsible citizens, in ethical and sustainable ways; who will embrace life-long learning and sustainable living and be prepared for future challenges and opportunities.

More specifically, Leaving Certificate Construction Technology enables students to:

- learn about the relevant core concepts and fundamental principles of construction
- develop a holistic understanding of the built environment by enhancing visual literacy, appreciating sustainability, recognising its impact on societal wellbeing, and drawing insights from both the past and present
- enhance their technological literacy and capability, by applying the necessary knowledge, skills, values, and dispositions to design, innovate and develop creative solutions that address challenges within the built environment
- develop an awareness of future pathways and opportunities through the learning experiences offered in Construction Technology.

Continuity and progression

Leaving Certificate Construction Technology provides continuity and progression, building on the knowledge, skills, values, and dispositions from students' early childhood education through to the junior cycle curriculum, and extends to wider experiences within the school and progresses beyond senior cycle.

Junior Cycle

The learning in each junior cycle technology subject focuses on the development of fundamental knowledge and skills that are transferable across the suite of technology subjects and areas of learning in other subjects. As a result, preparing students for learning in the technology subjects is not just about teaching towards the technology but towards the skills that are fundamental to the technology subjects and are transferable into other areas of their learning. In junior cycle students develop key skills, such as Being Creative, Managing Information and Thinking, and Working with Others through innovation, collaboration, and

exploration in an active learning environment. These activities engage students in a design journey, taking ideas from conception to realisation, ultimately fostering technological competence that is adaptable to senior cycle technology disciplines. Furthermore, they lay the foundation for the development of key competencies of senior cycle.

In Wood Technology, students explore the natural and made world through the medium of design, seeking out opportunities to creatively and innovatively apply the material/resource in making and shaping their environment. Among the junior cycle technology subjects, Wood Technology plays a significant role in preparing students for further study in subjects like Construction Technology.

Beyond senior cycle

The study of Construction Technology can lead to many exciting and rewarding careers and builds an excellent foundation for students transferring into apprenticeships, traineeships, further education, higher education, and the world of work. Leaving Certificate Construction Technology provides students with a foundation for a wide range of careers in areas such as architecture, construction, engineering, education, manufacturing, and management.

Student learning in senior cycle

Student learning in senior cycle consists of everything students learn **within** all of the subjects and modules they engage with **and** everything students learn which spans and overlaps **across** all of their senior cycle experiences. The overarching goal is for each student to emerge from senior cycle more enriched, more engaged and more competent as a human being than they were when they commenced senior cycle.

For clarity, the learning which spans **across** all of their senior cycle experiences is outlined under the heading 'key competencies'. The learning which occurs **within** a specific subject or module is outlined under the heading 'strands and learning outcomes'. However, it is vital to recognise that key competencies and subject or module learning are developed in an integrated way. By design, key competencies are integrated across the rationale, aims, learning outcomes and assessment sections of specifications. In practice, key competencies are developed by students in schools via the pedagogies teachers use and the environment they develop in their classrooms and within their school. Subjects can help students to develop their key competencies; and key competencies can enhance and enable deeper subject learning. When this integration occurs, students stand to benefit

- during and throughout their senior cycle

- as they transition to diverse futures in further, adult and higher education, apprenticeships, traineeships and employment, and
- in their adult lives as they establish and sustain relationships with a wide range of people in their lives and participate meaningfully in society.

When teachers and students make links between the teaching methods students are experiencing, the competencies they are developing and the ways in which these competencies can deepen their subject specific learning, students become more aware of the myriad ways in which their experiences across senior cycle are contributing towards their holistic development as human beings.

Key competencies

Key competencies is an umbrella term which refers to the knowledge, skills, values and dispositions students develop in an integrated way during senior cycle.

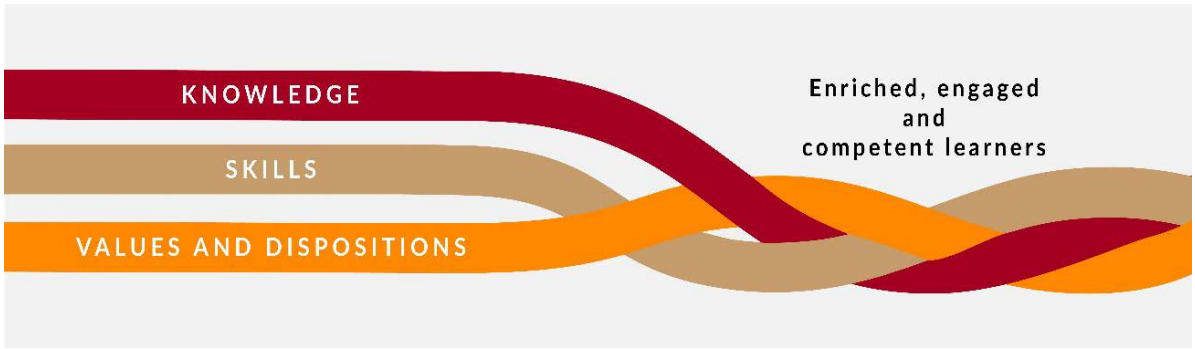


Figure 1 The components of key competencies and their desired impact

The knowledge which is specific to this subject is outlined below under 'strands of study and learning outcomes'. The epistemic knowledge which spans across subjects and modules is incorporated into the key competencies.

Figure 2 Key Competencies in Senior Cycle, supported by literacies and numeracy.

These competencies are linked and can be combined; can improve students' overall learning; can help students and teachers to make meaningful connections between and across different areas of learning; and are important across the curriculum.

The development of students' literacies and numeracy contributes to the development of competencies and vice-versa. Key competencies are supported when students' literacies and numeracy are well developed and they can make good use of various tools, including technologies, to support their learning.

The key competencies come to life through the learning experiences and pedagogies teachers choose and through students' responses to them. Students can and should be helped to develop their key competencies irrespective of their past or present background, circumstances or experiences and should have many opportunities to make their key

competencies visible. Further detail in relation to key competencies is available at https://ncca.ie/en/senior-cycle/senior-cycle-redevelopment/student-key-competencies/

The key competencies can be developed in Leaving Certificate Construction Technology in a range of ways.

As students engage with real-world construction challenges, they apply technological learning to issues such as structural integrity and environmental impact in the design and construction of dwellings. Through this process, they will have opportunities to develop the key competency of **Thinking and Solving Problems** by applying critical thinking in both familiar and new situations. As they analyse these challenges critically, students both enhance their understanding of the built environment and develop an open-minded approach to solving problems enabling them to devise innovative and sustainable solutions to address these challenges.

Participating in society is both developed and applied when students engage with ethical construction practices, investigate housing issues such as accessibility and social impact, and reflect on their own understanding of how housing affects social well-being and community development. By studying sustainable materials and processes, they develop and express their own ideas, taking an active role in promoting solutions that contribute to sustainable futures. This empowers them to question and challenge current practices while advocating for responsible use and the principles of the circular economy. This enables them to become active citizens who promote sustainable development and positive change.

Students are **being creative** when they explore problems, interact with materials and processes, investigate possibilities, and draw on existing ideas to create unique solutions to construction challenges. By addressing these challenges, they transform ideas into actions, producing innovative and sustainable projects that balance aspects such as functionality, aesthetics, and the need for a sustainable design.

Communicating is both developed and applied through engagement in discussions about architectural and structural details, using various communication forms in participatory classroom environments. Through discussion-based pedagogies, students' ability to express opinions, ask questions, and deepen their understanding by exploring different points of view and multiple possibilities, are enhanced. Students will also have opportunities to learn to communicate meaningfully and effectively, in the context of construction technology, by

conveying architectural and structural details through sketches, scaled drawings, diagrams, models, and through a range of digital tools.

The competency of **Working with others** in Construction Technology is developed and demonstrated through experiential learning activities, such as projects and experimentation. These activities foster teamwork by encouraging communication, problem-solving, and the sharing of ideas. Through these experiences, students will develop interpersonal skills and understand the importance of collaboration. This encourages them to act with integrity, take responsibility for their own work and the work of the group, and learn from and credit the work and ideas of others.

By advancing their initial design ideas into completed projects, students experience a sense of achievement and **cultivate wellbeing**. Through this learning journey, they become aware of and take care of their physical wellbeing by using tools and equipment safely. They also support their peers, contributing to a more inclusive and supportive class and school environment. As they face challenges in their project work, students build resilience and develop self-confidence and find enjoyment in completing tasks.

Managing learning and Self is fostered as students engage in design-based activities where they reflect on their progress and set goals to support personal growth and ensure project success. They make informed choices and take responsibility for their learning, adapting strategies to support their progress in Construction Technology. By evaluating and reflecting on their work, students build a sense of self-efficacy, which helps them pursue their goals with confidence, driving their growth and success in the subject while developing valuable skills for life.

In Leaving Certificate Construction Technology, students develop **literacies and numeracy** by expanding their technical vocabulary and applying it to real-world situations. They enhance their numeracy through precise measurements and calculations, and their literacy skills through interpreting architectural plans, technical documents, and documenting their learning. By using various forms of communication, including graphic, oral, digital, practical, and written, students gain valuable skills for their future careers and everyday life.

Strands of study and learning outcomes

This Leaving Certificate Construction Technology specification is designed for a minimum of 180 hours of class contact time.

The Leaving Certificate Construction Technology specification sets out the knowledge, skills, values and dispositions for students in four strands:

- The Built Environment
- Design, Craft Skills, and Materials
- Building Fabric
- Services and Control Technology.

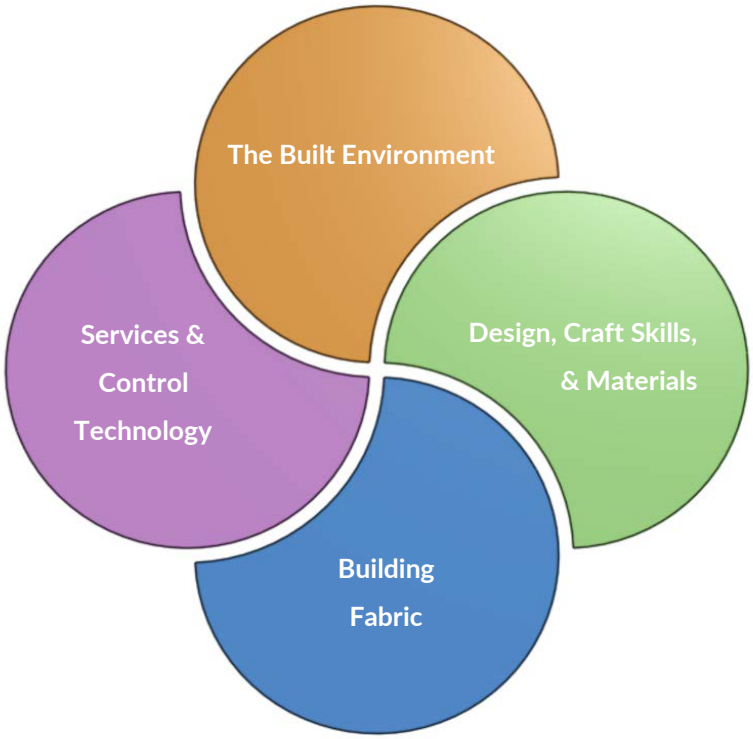


Figure 3 Overview of strands

The specification emphasises a non-linear, integrated approach to learning across the strands. The learning outcomes in the strands The Built Environment; Design, Craft Skills, and Materials; Building Fabric; and Services and Control Technology describes the core concepts, principles, and theories that students learn about and experience in Construction Technology.

Learning outcomes should be achievable relative to students' individual aptitudes and abilities. Learning outcomes promote teaching and learning processes that develop students' knowledge, skills, values and dispositions incrementally, enabling them to apply their key competencies to different situations as they progress.

The learning experience at both Ordinary and Higher levels will be tailored to support students in developing their knowledge and skills at an appropriate depth and complexity. At both levels, students will build essential competencies, with Higher level placing a stronger focus on applying learning in complex and real-world contexts.

Ordinary level students will engage with structured and guided tasks, allowing them to apply knowledge and skills in familiar situations with clear support. Higher level students will be encouraged to think more independently, developing the ability to identify and apply appropriate knowledge and skills in both familiar and unfamiliar contexts. This approach fosters deeper critical thinking, problem-solving, and adaptability in real-world scenarios.

Ordinary level	Higher level
Students engage with a broad body of knowledge developing understanding of core concepts and principles. Students will demonstrate the capacity to apply this knowledge in familiar contexts.	Students actively engage with a broad body of knowledge and show a high level of skill in analysing and synthesising key concepts and principles. They can apply and adapt this knowledge independently, demonstrating proficiency in both familiar and new contexts.
Students develop competency in a range of skills, demonstrating ability to source and use information, follow established procedures and techniques and produce accurate work. Students will apply their skills effectively in the creation and realisation of artefacts and solutions to relevant tasks in familiar contexts.	Students demonstrate and apply a broad range of specialised skills to evaluate and use information, to plan and develop investigative strategies, and to determine solutions to varied and unfamiliar problems. They will select and apply relevant skills in the creation and realisation of artefacts to a high level of precision in a wide variety of both familiar and new contexts.
Students develop numeracy and literacy skills to interpret information and data. These skills will be applied to demonstrate understanding, communicate findings and make informed decisions as part of their learning.	Students demonstrate high level competence in numeracy and literacy skills, using them to interpret complex information and data. They apply these skills to demonstrate their understanding, communicate findings with clarity, and make well-informed decisions throughout their learning process.

Table 1: Design of learning outcomes for ordinary and higher level

A narrative overview of each strand is provided below, followed by a table. The right-hand column contains learning outcomes which describe the knowledge, skills, values and dispositions students should be able to demonstrate after a period of learning. While the learning outcomes are numbered, this is for ease of identification and does not imply a hierarchy of approach. The left-hand column outlines specific areas that students learn about. Taken together, these provide clarity and coherence with the other sections of the specification. Appendix 1 sets out a glossary of action verbs used in the learning outcomes.

Strand 1: Built Environment

In the Built Environment, students learn to appreciate the importance of sustainability in the construction of buildings and the need for sustainable housing and a sustainable planet. Students understand that, by making informed ethical choices regarding the built environment, they have agency to change the world for the better.

Students learn about the evolution of building types over time and understand buildings in a holistic manner - not as stand-alone structures but as structures closely connected to their site, society, climate, region, country and the planet. Students appreciate how housing impacts the shaping of community identity, environmental sustainability and social cohesion.

As students work independently and with others, they appreciate the crucial importance of health and safety when working with tools and machinery, for their own personal safety and for the safety of others.

Students appreciate the importance of the conservation of heritage sites and structures and how design challenges were resolved by previous generations through the use of locally sourced materials and skills. Students learn how Universal Design principles inform inclusive design and ease-of-use of modern buildings.

Strand 1 Learning outcomes

Students learn about	Students should be able to
Design principles of a domestic dwelling for the built environment • building/structural design • building form • function • balance • proportion • harmony • innovation • orientation • sustainability • environmental impact • accessibility	1.1. describe the natural and built environment emphasising the critical role of shelter and settlement in human existence and its impact on the environment. 1.2. analyse elements of architectural design in the built environment. 1.3. discuss features that contribute to design excellence in housing design. 1.4. evaluate the quality and aesthetics of buildings. 1.5. justify measures for the preservation and sustainable management of buildings.
Environmental and architectural heritage of dwellings • historical and cultural significance • vernacular, and ecological significance of heritage sites and structures • value to communities and society • informing future building practices	1.6. recognise the importance of the architectural past in influencing a contemporary built environment. 1.7. assess the impact of environmental and architectural alterations on heritage sites. 1.8. justify the preservation and sustainable management of environmental and architectural heritage.

Urban and rural design of a dwelling • Site selection • Site investigations • Planning permission • Local services • Cultural sensitivity	1.9. examine the selection of a site for a dwelling. 1.10. investigate local and national planning processes. 1.11. describe the planning permission process for a dwelling house. 1.12. devise the site layout for a dwelling that will integrate with the surrounding environment.
Personal safety and Safety on a Construction Site • Hazards • Risks • Control measures	1.13. describe current health and safety regulations in a Construction Technology classroom and on construction sites. 1.14. apply risk management strategies to a range of activities in both a Construction Technology classroom and in a construction environment. 1.15. apply current health and safety protocols including the appropriate use of Personal Protection Equipment. 1.16. collaborate with others in maintaining a safe working environment.
Universal Design applied to a domestic dwelling • Approaching the dwelling • Entering the dwelling • Moving within the dwelling • Space for living • Systems and elements.	1.17. describe principles of universal design related to a domestic dwelling. 1.18. evaluate social and lifelong impacts of universal design for occupants of a domestic dwelling. 1.19. apply principles of universal design of domestic dwellings in response to design challenges.

Strand 2: Design, Craft Skills, and Materials

Through the study of Design, Craft Skills, and Materials, students experience the working properties of a range of different materials. As they develop confidence in using hand and power tools, students appreciate making as a creative experience, enjoying the process of crafting high-quality artefacts. Students appreciate the importance of presenting their work in an organised and aesthetically pleasing manner.

As students develop their design capabilities, they become competent in the language of design, iteratively develop their ideas, and understand that design excellence underpins all design decisions. Students recognise that all design decisions impact both locally and globally; and understand the need for ethical decision-making in the sourcing, processing, use and reuse of materials.

Students develop their critical thinking skills through a continuous evaluation of their own progress. They use the insights gained from this process to make better informed decisions about design and their personal growth.

Strand 2 Learning outcomes

Students learn about	Students should be able to
Sustainable use of materials • lifecycle of materials • circular economy • embodied carbon	2.1. discuss the environmental impact of materials considering the lifecycle of materials within the context of the circular economy. 2.2. evaluate how the sustainable use of materials can protect the environment. 2.3. justify the sustainable use of materials in design and realisation of a range of tasks.
Materials: properties and use Properties • density • strength • durability • flexibility • thermal conductivity • vapour permeability • workability • appearance	2.4. describe different types of construction materials, their properties, and their appropriate use. 2.5. justify the selection and suitability of materials to inform decisions in the realisation of tasks.

Design skills	2.6. recognise good design, quality materials, and effective processes and techniques. 2.7. investigative and research set tasks, design challenges and briefs. 2.8. create innovative solutions, including artefacts, for design problems, tasks, and briefs.
Project management	2.9. devise a plan of actions and personal goals necessary in the completion of tasks. 2.10. manage information, thinking and schedules to complete tasks. 2.11. evaluate their skills development and the progress of projects.
Woodcraft skills, processes and techniques • hand craft skills • machine and power tool skills • processes and techniques	2.12. execute a range of craft skills, processes and techniques to the required level of proficiency. 2.13. justify the selection of craft skills, processes, and techniques in the creation of artefacts or tasks. 2.14. create artefacts in response to a range of design tasks.
Graphical communication • freehand sketching • construction design detailing • scaled drawings • CAD modelling • working drawings • Physical modelling or prototyping • Building Information Modelling (BIM)	2.15. interpret graphical representations used in the design of the built environment, furniture design, and construction design and technology detailing. 2.16. communicate design ideas and concepts using a variety of graphical communication techniques. 2.17. explain the basic principles of Building Information Modelling (BIM) and its role in the construction industry.
Communication skills	2.18. present their work in a clear, organised, and aesthetically engaging manner.

	2.19. use a variety of presentation techniques and technologies to communicate ideas, thinking, and technical information to complete tasks.
Personal reflection	2.20. evaluate their own learning to inform future decisions and choices.

Strand 3: Building Fabric

A study of the Building Fabric enables students to understand how sustainable buildings are designed and constructed. Through the students' evaluation of a range of building types, they develop an understanding of the architectural principles and detailing underpinning the creation of energy-efficient, resilient, sustainable, and aesthetically appealing buildings. They gain an appreciation of the importance of building regulations as they apply to domestic dwellings.

Students develop an awareness of the fragility of the environment and the importance of using resources economically in the construction, heating, lighting and operation of buildings. Students explore how the principles of passive design can help harness nature to reduce energy requirements and create pleasing homes.

Strand 3 Learning outcomes

Students learn about	Students should be able to
Building design principles of a domestic dwelling • structural integrity • thermal performance • preventing moisture ingress • airtightness • water vapour control • ventilation • sound insulation • fire prevention	3.1. analyse the important principles in the design of the building fabric. 3.2. apply knowledge of building design principles to construction elements. 3.3. recognise how building design principles are integrated into the construction detailing of a domestic house. 3.4. describe methods of retrofitting the building fabric to improve the quality and function of existing dwellings.
Functions of the building fabric in a domestic dwelling • Protection from the weather • Thermal performance • Structural support and stability	3.5. identify elements of building fabric and their function in a domestic dwelling. 3.6. analyse the design detailing within the building fabric.

• Moisture control and ventilation • Acoustic performance • Aesthetic value and design • Fire safety • Durability and maintenance • Sustainability and environmental impact	

Substructure
• foundation construction
• Ground floor construction
 	
Superstructure
• External wall construction
  o Concrete
  o Timber
  o composite
• upper floor construction
• roof construction
  o Cut roof
  o Truss roof
  o Flat roof
• Internal stairs construction
• Internal wall construction
• external wall openings
• windows
• doors
	3.7. explain the function of the substructure and superstructure elements in a domestic house.
	
	3.8. evaluate the selection of building materials in the construction detailing of a domestic dwelling.
	3.9. describe construction methods used in the building of a domestic dwelling.
	3.10. explain key concepts of building design that contribute to creating energy-efficient, resilient, and sustainable building envelopes.
	3.11. interpret and produce drawings of construction details and technical diagrams to demonstrate an understanding of dwelling house construction.

Passive design Resilient design • mitigate climate-related risks such as flooding, storms and extreme temperatures Design for health, wellness and comfort • biophilic design • design for delight • indoor temperature • air quality • access to natural light • views of nature • spaces for social interaction • flexible spaces Ecological building design • materials • construction techniques	3.12. describe principles of passive design in a domestic dwelling. 3.13. discuss how existing and new dwellings can be designed to cater for changing climates. 3.14. describe the impact of climate change on the built environment, and identify strategies to enhance resilience. 3.15. demonstrate an understanding of the relationship between the built environment and wellness. 3.16. analyse the environmental impact of building design, choice of materials, and construction techniques. 3.17. discuss solutions that minimise resource consumption, reduce carbon emissions, and promote biodiversity.
Building regulations and standards	3.18. identify and apply the relevant building regulations and standards as they apply to domestic dwellings.

Strand 4: Services and Control Technology

The study of Services and Control Technology enables students to research, understand and explain the factors that contribute to a healthy indoor environment and the link between these factors and the health and wellbeing of the occupants. Students develop an understanding of how buildings are heated and ventilated and how to evaluate the various means, both passive and active, used to heat and ventilate domestic dwellings. Students learn how the provision of renewable energies ensures that buildings have a light ecological footprint on the earth. They appreciate the importance of water conservation and of providing clean water for human consumption and understand and evaluate waste management systems used to treat and manage waste to ensure minimum environmental degradation.

Students gain an understanding of the design and application of various smart home technologies and how these technologies help reduce energy use in the home and enhance the indoor environment for the occupants.

Strand 4 Learning outcomes

Students learn about	Students should be able to
Indoor dwelling environment Aspects: • space heating • thermal comfort • acoustic comfort • visual comfort • indoor air quality • natural light • ventilation • olfactory comfort	4.1. discuss the aspects that contribute to a comfortable and healthy internal environment of a dwelling house. 4.2. analyse how these aspects influence the overall wellbeing of occupants.
Heat energy in dwellings • Heat energy • heat transfer principles o Conduction o Convection o Radiation	4.3. explain the principles of heat transfer. 4.4. describe how thermal properties impact the energy efficiency of a dwelling.

• thermal conductivity (ƛ) of construction materials • thermal resistance (R) of construction materials • thermal resistivity (r) • surface resistance • thermal transmittance calculations • U-value calculation • Calculate energy loss and its cost in a building element	4.5. calculate U-value of domestic construction details and the rate, amount, and cost of energy loss in a dwelling. 4.6. describe measures used to enhance the energy efficiency of new and existing dwellings.
Operational carbon of a domestic dwelling	4.7. discuss the impact on the environment of operational carbon of building materials and construction processes.
Airtightness in a domestic dwelling	4.8. explore airtightness standards, methods, materials and testing for a domestic dwelling. 4.9. describe detailing to reduce energy loss in a domestic dwelling.
Ventilation in a domestic dwelling	4.10. analyse the importance of indoor air-quality 4.11. describe ventilation systems and their suitability for use in domestic dwellings.
Energy sources and space heating systems in domestic houses • boilers • biomass/biofuel • heat pumps • renewable • solar • onsite microgeneration	4.12. discuss the appropriateness of energy sources used in the built environment. 4.13. evaluate different space heating systems for a domestic house. 4.14. describe how space heating systems distribute heat in a dwelling house.

Water supply in a domestic dwelling • Cold water supply • Hot water supply • Renewable supply and conservation	4.15. describe the functions of components and systems used in the cold and hot water supply. 4.16. describe the design layout of cold and hot water systems. 4.17. describe the integration of renewable energy heat sources into a hot water system.
Electricity in a domestic dwelling • distribution to and within the domestic dwelling • principles of electrical safety and wiring • electricity intake • consumer unit • onsite electricity generation	4.18. explain how electrical energy is delivered to a dwelling through electricity intake and consumer unit. 4.19. explain the principles of electrical safety in a house. 4.20. describe and sketch the wiring layout in a domestic dwelling. 4.21. analyse the integration of renewable energy systems into a domestic dwelling.
Drainage systems for a domestic dwelling • above ground pipework layout o Single stack system • below ground pipework layout o Onsite treatment systems	4.22. identify the design principles of drainage systems, distinguishing between surface water drainage and foul water drainage. 4.23. describe the pipework layout of drainage systems for a domestic dwelling. 4.24. explain the components and functions of an on-site wastewater treatment system for a domestic dwelling. 4.25. evaluate how wastewater treatment methods, contribute to effective waste management, water conservation and reuse, and environmental sustainability.
Smart home technologies • home hubs • lighting • heating and ventilation controls • security system	4.26. evaluate how smart technologies contribute to efficient use and resource management in a domestic dwelling.

• smoke and carbon dioxide detectors • energy monitoring and power controls	

Teaching for student learning

Teaching for student learning in Construction Technology emphasises active and problem-based learning, enabling students to apply theoretical knowledge to real-world situations. A pedagogical approach grounded in hands-on learning actively engages students through direct interaction with materials, tools, or environments related to the subject matter. This engagement can occur in various settings, such as the classroom, at home, or out of school settings. Students connect new experiences to prior knowledge through active participation in tasks or projects.

Problem-based learning encourages investigation, collaboration, and supports students to develop solutions through methods such as trial and error or prototyping. For example, designing and building a model to explore the structural integrity of a building combines theoretical knowledge with practical construction skills. This iterative process fosters resilience as students learn from failures and adapt strategies to overcome challenges.

Incorporating digital tools and resources, such as parametric modelling or building information modelling, enhances learning and caters to diverse learning preferences. Hands-on learning activities should be adaptable to different student needs, learning preferences, and interests.

Differentiation ensures all students can succeed, regardless of their prior learning or level of achievement. For example, while some students may use physical objects to explore thermal insulation, others might engage with digital simulations or solve problems on paper.
Scaffolded learning plays a critical role in supporting students' learning in Construction Technology. At the beginning of learning activities, teachers may provide support and guidance through step-by-step instructions, models, or demonstrations. This assistance is gradually reduced as students develop competence and confidence. For example, a teacher might first demonstrate a practical skill, then guide students through practice, and finally encourage them to perform it independently.

The pedagogical approaches in Construction Technology support the development of senior cycle key competencies such as Communicating, Working with Others, and Participating in Society. Through problem-solving and hands-on experiences, students articulate their ideas, adapt to challenges, and refine solutions in real-world contexts. Scaffolded learning and differentiation ensure that all learners develop confidence and autonomy. These approaches support students to develop the competencies necessary to engage meaningfully in teamwork, decision-making, and lifelong learning.

Regular formative feedback deepens student understanding by highlighting strengths, suggesting areas for improvement, and can be provided either orally or in writing. When given orally, students are encouraged to take notes and use the feedback to improve their future work. Self-assessment and peer reviews further encourage reflection, helping students recognise their strengths and areas for development while building resilience.

Meaningful student reflection is central to Construction Technology, enabling deeper engagement with the learning process. Meaningful student reflection goes beyond simply describing what happened in a task or activity; it involves thoughtful analysis of the learning process, recognising strengths and areas for improvement, understanding the impact of their choices, and planning for future growth. Setting personal learning goals, incorporating both practical and theoretical elements, ensures students have clear targets for growth and improvement. Journals or portfolios are effective ways for students to document their learning journey and track progress over time. Teachers may support students to reflect on their actions and make connections between their hands-on experiences and theoretical concepts.

Planning for student learning is vital to enhancing the learner experience and ensuring all students reach their potential. Lesson design should integrate theory with practical learning, involving collaborative planning among Construction Technology teachers in the school department. For instance, theoretical concepts like thermal resistance can be immediately reinforced with practical activities or demonstrations, while hands-on investigations can also serve as a starting point for exploring and developing an understanding of these concepts in real-world contexts.

Assessments should evaluate both theoretical knowledge and practical skills. Assessment integration supports a concurrent approach to teaching the subject and maximises the use of available teaching time to deliver the curriculum. Project-based assessments and real-world application projects are examples of integrated assessment models.

Assessment

Assessment in senior cycle involves gathering, interpreting, using and reporting 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 strength or difficulty 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.

As well as varied teaching strategies, varied assessment strategies will support student learning and provide information to teachers and students that can be used as feedback so that teaching and learning activities can be modified in ways that best suit individual learners. By setting appropriate and engaging tasks, asking questions and giving feedback that promotes learner autonomy, assessment will support learning and promote progression, support the development of student key competencies and summarise achievement.

Assessment for certification

Assessment for certification is based on the rationale, aims and learning outcomes of this specification. There are three assessment components: a written examination and two additional assessment components, Exploring the Constructed Environment and a Craft Skills Assessment. The written examination will be at higher and ordinary level. The Exploring the Constructed Environment component will be based on a common brief, while the Craft Skills Assessment will be based on a prescribed task. Each component will be set and examined by the State Examinations Commission (SEC).

In the written examination, Leaving Certificate Construction Technology will be assessed at two levels, Higher and Ordinary (Table 2). Examination questions will require students to demonstrate learning appropriate to each level. 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 different levels.

Table 2 Overview of assessment for certification

Assessment component	Weighting	Level
Exploring the Constructed Environment	30%	Common Brief
Craft Skills Assessment	20%	Common Prescribed Task
Written examination	50%	Higher and Ordinary Levels

Additional assessment component 1: Exploring the Constructed Environment

Exploring the Constructed Environment provides an opportunity for students to apply evidence of their learning across all strands of the specification. Through this component, students will design and create a solution in response to a brief relating to a constructed environment challenge. They will:

- investigate the brief and context through research to understand key aspects
- design a creative, functional solution that aligns with the brief and demonstrates innovative thinking
- create a solution that meets the requirements with attention to detail
- evaluate the solution, offering feedback and clear recommendations for improvement.

Students will also apply senior cycle key competencies developed through their engagement with Leaving Certificate Construction Technology, including thinking and solving problems, being creative, communicating, and managing learning and self, as they complete this component.

The Exploring the Constructed Environment component is designed to naturally integrate into the flow of learning and teaching, exploiting its potential to be motivating for students.[1] Engagement with this component also supports students to see the relevance of the built environment in their lives.

Students complete their Exploring the Constructed Environment component in Year 2 in response to the common brief issued by the State Examinations Commission (SEC). This brief will be published annually by the SEC. This brief will set out the requirements of the AAC and will also support teachers in planning for teaching learning and assessment to support students in focusing on the knowledge, skills, values and dispositions that will be required to complete the AAC.

Upon completion, students will prepare their submission in accordance with the brief provided and submit in a format specified by the SEC.

A separate document, *Guidelines to Support the Exploring the Constructed Environment AAC* gives guidance on a range of matters related to the organisation, implementation, and oversight of this AAC.

[1] It is envisaged that the AAC will take up to 35 hours to complete. Further details will be provided in the *Guidelines to support the Exploring the Constructed Environment component.*

Descriptors of quality for Exploring the Constructed Environment

The descriptors below relate to the learning achieved by students in the Exploring the Constructed Environment component. In particular, the component requires students to:

- Investigate
- Design
- Create
- Evaluate and reflect.

Table 3: Descriptors of quality: Exploring the Constructed Environment

	Students demonstrating a high level of achievement	Students demonstrating a moderate level of achievement	Students demonstrating a low level of achievement
Investigate	thorough investigation of the brief and context, with detailed research and deep exploration and understanding of key aspects.	moderate investigation of the brief with some research and with some exploration and understanding of key aspects.	limited investigation of the brief with minimal exploration and understanding of key aspects.
Design	develops a creative, functional design solution which displays excellent planning, innovation, and thorough consideration of the brief and context.	develops a functional design solution which displays some planning and innovation, and moderate consideration of the brief and context.	develops a basic design solution which displays limited planning and innovation with little consideration of the brief and context.
Create	creates a well-executed solution, exhibiting a high level of skills. Solution fulfils intended requirements with excellent attention to detail and quality.	creates a functional solution, exhibiting a moderate level of skills. Solution partly meets intended requirements with moderate attention to detail and quality.	creates a poorly executed solution, exhibiting a limited level of skills. Solution meets few intended requirements with limited attention to detail and quality.
Evaluate and reflect	provides a detailed, critical evaluation with insightful relevant reflection and clear recommendations for improvement.	provides some critical evaluation with moderate relevant reflection and some recommendations for improvement.	provides minimal evaluation with little reflection, and limited recommendations for improvement.

Additional assessment component 2: Craft Skills Assessment

The Craft Skills Assessment provides an opportunity for students to show evidence of their learning and competence relating to their practical skills development. Through this component, students will create an artefact in response to a prescribed task. They will:

- interpret drawings and dimensional information
- mark out materials, demonstrating a level of precision
- demonstrate craft skills with precision, attention to detail, and accuracy and finish throughout
- assemble with precision, accuracy, and completeness.

Students will also apply the key competencies developed through their engagement with Leaving Certificate Construction Technology, through opportunities for numerical reasoning, critical thinking, problem-solving, self-management, and effective communication as they complete this component.

The Craft Skills Assessment is designed to naturally integrate into the flow of learning and teaching, exploiting its potential to be motivating for students.[2] Engagement with this component also supports students to see the relevance of the built environment in their lives.

Students complete their Craft Skills Assessment in year 2 in response to the prescribed task issued by the State Examinations Commission (SEC). This prescribed task will be published annually by the SEC. This prescribed task will set out the requirements of the AAC and will also support teachers in planning for teaching learning and assessment to support students in focusing on the knowledge, skills, values and dispositions that will be required to complete the AAC.

Upon completion, students will prepare their submission in accordance with the prescribed task provided and submit in a format specified by the SEC.

A separate document, *Guidelines to Support the Craft Skills Assessment* gives guidance on a range of matters related to the organisation, implementation, and oversight of this AAC.

[2] It is envisaged that the AAC will take up to 3 hours to complete. Further details will be provided in the *Guidelines to support the Craft Skills Assessment*.

Descriptors of quality for the Craft Skills Assessment

The descriptors below relate to the learning achieved by students in the Craft Skills Assessment. In particular, the component requires students to:

- Interpret drawings, and mark out skills
- Demonstrate craft skills
- Assemble components.

Table 4: Descriptors of quality: Craft Skills Assessment

	Students demonstrating a high level of achievement	Students demonstrating a moderate level of achievement	Students demonstrating a low level of achievement
Interpret drawings and mark out	comprehensive interpretation of drawings and dimensional information. Accurate marking out of materials, demonstrating a high level of precision.	moderate interpretation of drawings and dimensional information. Marking out of materials, demonstrating a moderate level of precision.	limited interpretation of drawings and dimensional information. Incomplete marking out of materials, demonstrating a low level of precision.
Demonstrate craft skills	demonstrate an excellent level of craft skills with high precision and attention to detail. Achieves accuracy and a high-quality finish throughout.	demonstrate a moderate level of craft skills with reasonable precision and attention to detail. Achieves moderate accuracy and an acceptable finish throughout.	demonstrate a low level of craft skills with limited precision and attention to detail. Achieves a poor level of accuracy and finish throughout.
Assemble components	The artefact is assembled with excellent precision, accuracy, and completeness.	The artefact is assembled with moderate precision, accuracy, and completeness.	The artefact is assembled with limited precision, accuracy, and completeness.

Written examination

The written examination will consist of a range of question types. The senior cycle key competencies (figure 2) are embedded in the learning outcomes and will be assessed in the context of the learning outcomes. The written examination paper will include a selection of questions that will assess, appropriate to each level:

- The learning described in the four strands
- The application of student learning to real-world issues relating to Construction Technology.

Reasonable accommodations

This Leaving Certificate Construction Technology specification requires that students engage with the nature of the subject on an ongoing basis throughout the course. The assessment for certification in Leaving Certificate Construction Technology involves a written examination worth 50% of the available marks and two additional components worth 50%. In this context, the scheme of Reasonable Accommodations, operated by the State Examinations Commission (SEC), is designed to assist students who would have difficulty in accessing the examination or communicating what they know to an examiner because of a physical, visual, sensory, hearing, or learning difficulty. The scheme assists such students to demonstrate what they know and can do, without compromising the integrity of the assessment. The focus of the scheme is on removing barriers to access, while retaining the need to assess the same underlying knowledge, skills, values, and dispositions as are assessed for all other students and to apply the same standards of achievement as apply to all other students. The Commission makes every effort when implementing this scheme to accommodate individual assessment needs through these accommodations.

There are circumstances in which the requirement to demonstrate certain areas of learning when students are being assessed for certification can be waived or exempted, provided that this does not compromise the overall integrity of the assessment.

More detailed information about the scheme of Reasonable Accommodations in the Certificate Examinations, including the accommodations available and the circumstances in which they may apply, is available from the State Examinations Commission's Reasonable Accommodations Section.

Before deciding to study Leaving Certificate Construction Technology, students, in consultation with their school and parents/guardians should review the learning outcomes of this specification and the details of the assessment arrangements. They should carefully consider whether or not they can achieve the learning outcomes, or whether they may have a special educational need that may prevent them from demonstrating their achievement of the outcomes, even after reasonable accommodations have been applied. It is essential that if a school believes that a student may not be in a position to engage fully with the assessment for certification arrangements, they contact the State Examinations Commission.

Leaving Certificate Grading

Leaving Certificate Construction Technology will be graded using an 8-point grading scale. The highest grade is a Grade 1; the lowest grade is a Grade 8. The highest seven grades (1-7) divide the marks range 100% to 30% into seven equal grade bands 10% wide, with a grade 8 being awarded for percentage marks of less than 30%. The grades at Higher level and Ordinary level are distinguished by prefixing the grade with H or O respectively, giving H1-H8 at Higher level, and O1-O8 at Ordinary level.

Table 5: Leaving Certificate Grading

Grade	% marks
H1/O1	90 - 100
H2/O2	80 < 90
H3/O3	70 < 80
H4/O4	60 < 70
H5/O5	50 < 60
H6/O6	40 < 50
H7/O7	30 < 40
H8/O8	< 30

Appendix 1: Glossary of action verbs

Action verb	Students should be able to
Analyse	study or examine something in detail, break down in order to bring out the essential elements or structure; identify parts and relationships, and to interpret information to reach conclusions
Apply	select and use information and/or knowledge and understanding to explain a given situation or real circumstances
Assess	judge, evaluate or estimate the nature, ability, quality or value of something
Calculate	obtain a numerical answer showing the relevant stages in the working
Collaborate	work jointly with another or others on an activity or project
Communicate	present using appropriate language in a suitable format
Create	bring something into existence; to cause something to happen as a result of one's actions
Demonstrate	prove or make clear by reasoning or evidence, illustrating with examples or practical application
Describe	give a detailed account of the main points of the topic, using words, diagrams, sketches, and/or images
Design	conceive, create and execute according to plan
Develop	advance a piece of work or an idea from an initial state to a more advanced state
Devise	plan, develop or create something by careful thought
Discuss	offer a considered, balanced review that includes a range of arguments, perspectives, factors or hypotheses, grounded in appropriate evidence
Evaluate (data/information)	collect and examine data to make judgments and appraisals; describe how evidence supports or does not support a conclusion in an inquiry or investigation; identify the limitations of data in conclusions; make judgments about the ideas, solutions or methods
Evaluate (ethical judgement)	collect and examine evidence to make judgments and appraisals; describe how evidence supports or does not support a judgement;

	identify the limitations of evidence in conclusions; make judgments about the ideas, solutions or methods
Examine	look closely at arguments, data, information and/or stories in order to uncover origins, assumptions, perspectives, trends and/or relationships
Execute	to carry out fully, to put completely into effect
Explain	give a detailed account supported by reasons or causes
Identify	recognise patterns, facts, or details; provide an answer from a number of possibilities; recognise and state briefly a distinguishing fact or feature
Interpret (data)	use knowledge and understanding to recognise trends and draw conclusions from given information
Interpret (non-data)	express ideas about the intended meaning of
Investigate	observe, study or examine in detail in order to establish facts, and reach new insights and/or conclusions
Justify	give valid reasons or evidence to support an answer or conclusion
Manage	to work upon or try to alter for a purpose
Present	Make objects perceivable to others
Recognise (data/information)	identify facts, characteristics or concepts that are critical (relevant/appropriate) to the understanding of a situation, event, process or phenomenon
Use	apply knowledge or rules to put theory into practice

Appendix 2: Glossary of terms

Term	Meaning
Artefact	A realised piece of work with a specific purpose or function.
Craft excellence	This is an umbrella term that relates to accuracy of work, quality of finishing, correct application of tools and equipment.
Model	A physical or digital scaled representation of a construction element, assembly, or architectural detail used for analysis, visualisation, or communication in building design and construction.
Prototypes	This is a rough model of the final product that a student can then refine and perfect before they create the final product. It is the first full-size, complete item of a product, which distinguishes it from a model where scale is arbitrary.
Task	Refers to any piece of work undertaken by students, such as project work, assignments, coursework, or specific learning activities.
Solution	This is a practical, theoretical, or technical response to a problem or challenge, demonstrating students' understanding and application of construction principles, materials, and techniques.