



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Coursework

Information note for four Leaving Certificate
subjects with new subject specifications

- Agricultural Science – Individual Investigative Study
- Computer Science – Coursework Project
- Economics – Student Research Project
- Physical Education – Physical Activity Project

Observations to assist students and teachers in their engagement with coursework in four Leaving Certificate subjects with new subject specifications

Introduction

This document applies to the following coursework components, which are all either new or recently amended as a result of the introduction of a new subject specification:

- Agricultural Science – Individual Investigative Study
- Computer Science – Coursework Project
- Economics – Student Research Project
- Physical Education – Physical Activity Project

New specifications in Leaving Certificate Physical Education and Computer Science were introduced in schools in September 2018 and first examined, albeit a very small cohort, in 2020. In the case of Leaving Certificate Agricultural Science and Economics, new specifications were introduced in schools in September 2019 and first examined in 2021.

Each of these specifications includes a compulsory coursework component or components as part of the assessment arrangements for the subject. As the coursework component is either a new or substantially revised element in each of these subjects, the following information is being provided to assist students and teachers in their engagement with this coursework. The information draws on the experience and insights gained by the examining teams and Chief Examiner for each subject in the course of the marking process in 2021. As such, it is based on the primary evidence available in the form of actual candidate work and is intended to supplement the other supporting documentation available.

Coursework presented for assessment must be the candidate's own individual work, completed under the supervision of the class teacher, in full compliance with coursework regulations and requirements. The conditions for the completion, acceptance and authentication of coursework are set out in the State Examination Commission (SEC) circulars S68/08 and S69/04. Further subject-specific detail on completion and authentication requirements is given in the briefs that issue for each subject annually.

The information provided in this document should be read in the conjunction with these circulars and the range of subject specific documents including the subject specification, the coursework guidelines and all information provided by the SEC.

- The subject specification and assessment guidelines for each subjects are available at <https://www.curriculumonline.ie/Senior-cycle/>
- Examination papers and marking schemes for each subject available at <https://www.examinations.ie/exammaterialarchive/>
- The Brief and Instructions to Candidates document for each subject available at <https://www.examinations.ie/?l=en&mc=ex&sc=he> (when issued)

Agricultural Science – Individual Investigative Study (IIS)

As part of the new specification, candidates are required to complete a coursework component called an Individual Investigative Study (IIS). The IIS component constitutes 25% (100 marks) of the total award for this subject.

The IIS is issued as a common-level coursework brief early in Year 1 of Leaving Certificate. Assessment of the IIS is at two levels (Higher and Ordinary) and is marked by the same examiner as the candidate's terminal examination paper. The level at which the candidate completes their terminal written examination determines the level at which the IIS is assessed.

The coursework brief was issued in December 2019 to Year 1 Leaving Certificate candidates. The theme of the coursework brief for Leaving Certificate 2021 was *"Improving Sustainability in Irish Agriculture"*. Candidates were given instructions that they must carry out their own individual investigation and reference background research on a topic related to a farming enterprise and how it relates to sustainability. The report structure with a detailed list of indicative content including associated marks award for each section was outlined. In addition, a list of references to credible sources of material on sustainability as a starting point for candidate research was documented. A downloadable digital coursework booklet was issued by the State Examinations Commission at the start of Year 2 of Leaving Certificate for submission of the IIS. There is a 2500 maximum word count for the IIS.

In response to the Covid-19 pandemic and the related restrictions, candidates and teachers were given further guidelines in September 2020 in relation to the completion of their IIS coursework in the form of an *"Information note in relation to the completion of Leaving Certificate Agricultural Science Individual Investigative Study 2021"*. Candidates were now allowed to complete their coursework investigation as a group project, but had to write up their report as their own individual work. They were also now allowed to use secondary data (if required) as part of their investigation to mitigate difficulties they may have had in completing the experimental aspect of the coursework. Candidates were given the instruction in the brief to submit the final report to your teacher on or before 16 April 2021. This timeframe was extended to the end of April 2021.

These special arrangements for the IIS that applied in 2021 will also apply in 2022. An updated version of the above *"Information Note"* to that effect has been issued and can be downloaded on the State Examinations website by following this link: (<https://www.examinations.ie/misc-doc/BI-EX-66709803.pdf>).

Some good practice observed

The following good practices were observed with varying degrees of frequency in the coursework submitted by candidates for the 2021 examinations. Where they occurred, they assisted candidates in scoring well.

- Candidates used the structure of the IIS report as outlined in the digital booklet and were able to format and present their coursework following the structure provided.

- Candidates successfully presented and communicated their work while staying within the parameters of both word and image count.
- Candidates included at least one experiment which showed the gathering and processing of primary data.
- Candidates used both qualitative and quantitative data in their reports. While the use of both of these forms of data is not a requirement, the use of both often meant that candidates had gathered a rich evidence base for their analysis and conclusions.
- The inclusion of relevant photographs and diagrams illustrating aspects of their investigation enhanced the understanding and readability of the candidates' work.
- Candidates presented their collected data and analysis of their results clearly using tables and graphs.
- Candidates tried to link their investigation to background research and most candidates used research from valid sources. Many candidates made a good attempt to give a valid hypothesis
- Most candidates attempted to provide a list of references. A minority of candidates used the Harvard referencing system or similar and provided references to an excellent standard.
- In the *investigative process* section, candidates had good explanations of the method(s) undertaken, including some with innovative ideas. Candidates' reports that followed the scientific method and which had logical steps of progression were of a higher standard. Many candidates had clearly identified the variables they were investigating.
- The standard of candidate projects was richer where there was evidence of hands-on experience in a range of investigative locations, including in the field and/or in garden-based locations and/or in farm-based locations and/or in the laboratory.
- Candidates made a good effort at their introduction and background research, which included with varying degrees of effectiveness, linking their research work to the theme of sustainability.
- The COVID-related arrangement permitting the use of secondary data where primary data would normally be required provided some students with the opportunity to complete their coursework when they had no access to the facilities required for their work.

Advice on engaging with the coursework

The following advice will assist with ensuring that candidates demonstrate their levels of achievement to full effect when completing and reporting on their coursework.

- While most candidates attempted to reference their sources, the use of inline citations was not always evident and could be improved. In addition, candidates should use a suitable structure and style in the recording of their references.
- Candidates need more experience with research methods and the compiling of research which will aid them in the completion of their coursework. They should avoid just “copying and pasting” external material into the sections of the IIS report. They should show – through their own text – an understanding of any quoted material and of its relevance.
- Candidates need to make a greater link(s) between their particular investigation and their background research conducted. Any external material quoted or referenced should be sufficiently integrated with a definite link(s) to the candidates study and to the specified theme as given in the brief.
- In formulating their hypothesis, candidates should ensure that it matches with their background research and the details of their investigation.
- Candidates should include titles, labels, legends etc. as appropriate in all tables and graphs used in the presentation of data and information.
- Candidates should consider how best to represent their data. They should choose the type of graph, table, or other presentational form which best suits the data they wish to display. Replication of similar information in many formats should be avoided. One judiciously chosen representation (or perhaps two – one being tabular and the other graphical) is much more effective.
- In the event that a candidate is using a secondary data source they must cite the source of the data in their report.
- Candidate conclusions and discussions need further development. They should be informed by the analysis and interpretation of their data. This information should be used as justification of the argument(s) in support of or against the stated hypothesis.
- Many candidates took a narrow focus in their reflection by commenting only on alternative method(s) which could be used in the investigation. To develop this section better, candidates should refer back to the investigation undertaken and consider errors, modifications, the learning gained, the reliability, while relating their reflections on these back to the theme and hypothesis.
- In the event that one of the specified practical activities in the Agricultural Science specification is used as a basis of the IIS, it must be expanded upon and linked to the

theme as given in the brief. Duplication of practical activities already undertaken should be avoided.

- In order to fully understand the action required, candidates' understanding of the different action verbs used in the brief and the reporting booklet should be explored in class, e.g. evaluate, analyse, state, identify, etc.
- To support candidates' understanding of the use of secondary data, a range of secondary data sources could be incorporated into classroom learning. This will help to familiarise candidates with their use and how they should be interpreted, understood and analysed.
- Candidates should ensure that any calculations which are presented are clear and that all numerical quantities are assigned the correct unit (if applicable).
- To support the practical nature of the IIS, candidates when completing specified practical activities should use the opportunity to practice developing hypotheses, identifying independent and dependent variables, and identifying areas where accuracy and precision are needed in the investigation.
- Candidates should carefully proof-read their completed IIS report before submission.

Computer Science – Coursework Project

The Leaving Certificate Computer Science Coursework Project accounts for 30%, or 90 marks, of the total marks for Leaving Certificate Computer Science. The coursework element is based on Strand 3, Computer Science in Practice, of the subject specification. During the two years of study students complete four group activities called Applied Learning Tasks and the coursework is based on any number of or combination of the Learning Outcomes of these Applied Learning Tasks.

In 2021 candidates were given an extra two weeks to complete the coursework and were also informed which two of the four Applied Learning Tasks the coursework would be based on. The number of features that the coursework artefact would be expected to have was also reduced. These same arrangements that applied in 2021 will also apply in 2022.

In a normal year, the brief will be released on the first day back after the Christmas break in the final year of study, but in 2022 the brief will be released on Wednesday 8 December 2021, with a completion date of Tuesday 22 March 2022.

Some good practice observed

The following good practices were observed with varying degrees of frequency in the coursework submitted by candidates for the 2021 examinations. Where they occurred, they assisted candidates in scoring well.

- Some projects demonstrated a high level of innovation, thoughtful design and a skilled technical implementation.
- Some projects, while appearing relatively simple, were excellently designed and had an accompanying report that clearly demonstrated the process undertaken by the candidate.
- Candidates that undertook detailed research of both the brief and existing technical solutions tended to have a clearer design approach in their own artefact.
- Some candidates described problems that occurred during the development of their project in a very effective manner and explained how these problems were overcome.
- There were many examples of innovative use of technologies, including the use of sensors, the use of radio signals, and data storage in relational databases.
- Some candidates demonstrated an awareness of universal design and adaptive technology in order to develop a more inclusive artefact.

Advice on engaging with the coursework

The following advice will assist with ensuring that candidates demonstrate their levels of achievement to full effect when completing and reporting on their coursework.

- Candidates should use the video to demonstrate how they achieved each of the project requirements.
- Each project should be checked so that it can be opened on another device after being zipped. Numerous projects were either partially inaccessible or had videos or images in a cloud service that could not be accessed.
- The project brief should be referred to by candidates throughout the design and implementation of their project. This will ensure that the artefact is meeting the requirements laid out in the brief.
- The report should be laid out in the format described in the brief. This makes it easier for the examiner to ensure that the candidate is receiving the marks they deserve.
- It is important to elaborate on the design phase of the project and include such items as initial brainstorming of ideas, flowcharts, pseudocode, architecture diagrams, etc.
- While it is not a requirement, and not something that should be submitted with the project, candidates may find it useful to maintain a diary or journal of the whole process, as this will assist with the compilation of their report.
- Candidates need to be clear about the testing they carried out on their project. This should include the type of testing conducted, some sample test cases, and actions that occurred as a result of the testing.
- Images are an effective method of demonstrating the work undertaken in developing the artefact. This could include initial design sketches, flowcharts, system architecture diagrams, pseudocode, code, algorithms, etc.
- It is perfectly acceptable for the design of the artefact to change or be simplified during the process. Meeting the requirements and timelines, and avoiding being overly ambitious in the context of these constraints, are important aspects of design.
- Problem-solving is an integral part of computer science. Candidates are encouraged to describe any problems that occur during the design or implementation of the project and to explain how these problems were overcome.
- Where candidates have adapted code that is not their own, the original code should be referenced both in the comments and in the report.

Economics – Research Study Report

A new specification for Leaving Certificate Economics was introduced in schools in September 2019 and was examined for the first time in 2021. Assessment comprises of two elements: (1) a final written examination, and (2) a Research Study. The Research Study is awarded 100 marks, which is 20% of the overall marks for Leaving Certificate Economics. The brief, with its theme and associated topics, is common to Higher and Ordinary level with differentiation applied at the point of assessment. There is a separate marking scheme for Higher and Ordinary level. The scheme applied is determined by the level at which the candidate sits the written examination.

The brief issued to schools in early September 2020. A downloadable digital coursework booklet was provided by the SEC for the completion and submission of the Research Study Report. The report was due to be completed on the last day of school, in term one in sixth year. It was intended that the digital booklet would be submitted through the SEC school's portal. However, due to the COVID-19 pandemic, it was decided that schools would submit a printed copy of the candidates report with the written examination paper in June 2021.

The coursework brief, and digital booklet, for Leaving Certificate Economics 2022, are currently available on the SEC website at www.examinations.ie. The completion date for the Research Study Report is 22 December 2021. It is planned that the digital report will be submitted to the SEC using the school's portal. Further details will issue in due course.

Some good practice observed

The following good practices were observed, with varying degrees of frequency, in the coursework submitted by candidates for the 2021 examinations. Where they occurred, they assisted candidates in scoring well.

- Research reports were generally well presented and followed the indicative content, word count and structure as outlined in the research report documentation.
- A high degree of originality and innovation was evident in the majority of reports and it was clear that candidates researched their lines of inquiry. The individual lines of inquiry were varied, relevant and up to date.
- Candidates who focused their individual line of inquiry into one distinct, discrete area were generally awarded higher marks. The focused nature of their research facilitated candidates in having clear and specific achievable aims. It provided a structure and focus to the research process which in turn facilitated candidates to draw valid and relevant conclusions.
- Relevant theories and concepts were appropriately linked to the candidate's individual line of inquiry.
- The data used was valid, and applicable to the line of inquiry and spanned a range of different relevant and up to date sources.

- In the main, candidates used both qualitative and quantitative data as required and set out in the indicative content section of the student research brief.
- In a significant majority of cases the quality of presentation was of a high standard with candidates using a range of types of presentation including graphs, curves, and tables which were presented clearly and labelled accurately and appropriately.
- In some instances, in the conclusion section, a new line of inquiry for further research was presented, which emerged as a result of the analysis of the research. This demonstrated candidate's comprehensive engagement with their research findings.
- Candidate engagement with the brief was evident through the range of appropriate references and relevant data, resulting in a more comprehensive report.
- Candidates generally presented concise bibliographies that were correctly referenced.

Advice on engaging with the coursework

The following advice will assist with ensuring that candidates demonstrate their level of achievement fully when completing, and reporting on, their coursework.

- Candidates should ensure that their research is based on a clear and focused line of inquiry which provides opportunities for comprehensive analysis, development of arguments and judgments, evaluation and conclusions. This will also assist candidates in maintaining a structure to their report.
- Candidates should clearly set out the aims of the individual line of inquiry, how these aims will be achieved, and what it is they intend to research. The use of bullet points may assist with structure, focus and clarity.
- Consideration should be given to creating a question from the line of inquiry. Care should be taken not to present the conclusion in the introduction. Turning the line of inquiry into a question assists in maintaining focus, structure and coherence throughout the report.
- The analysis needs to be in-depth. Reporting research findings requires more than a summary or interpretation. Critical evaluation of data is required so that candidates can then form an argument or a judgment.
- Using prompt questions could scaffold the research process and assist candidates to maintain focus, structure and coherence when formulating their response.
- Judgements or arguments should be presented in the research process. In this regard candidates may also interrogate an alternative argument, or judgement, commenting on whether they agree or disagree and why.

- Ensure all tables, images, graphs and curves are clearly numbered and referenced correctly. Data should be presented clearly so that it is readable and legible, in particular data with figures – quality prevails over quantity.
- Conclusions should be drawn by referring to the intended aims in the introduction. Refer to each of the intended aims individually. The use of bullet points may help. If the intended aims, at the outset, lack structure, and focus and clarity, then this adversely impacts on the conclusion. Ensure that all points in the conclusion have been proven during the research process.
- Recommendations should be based on the findings from the research. Consideration should also be given to the impact of the recommendations – for example, is there a potential opportunity cost involved? Are there other implications associated with the recommendations?
- Candidates should ensure that they critically reflect on new knowledge or understanding gained, how their thinking, behaviour or opinions have changed or developed since the beginning of the process, and the importance of this.

Physical Education – Physical Activity Project

A new specification for Leaving Certificate Physical Education was introduced on a phased basis in September 2018 and was examined for the first time in 2020. The assessment of Physical Education has three elements – (1) a written examination, which accounts for 50% of the marks (2) a Physical Activity Project which accounts for 20% of the marks and (3) a Performance Assessment accounting for the remaining 30% of the marks available for this subject.

In 2021, the Performance Assessment component was not assessed. The proportion of marks normally allocated to the performance assessment component was reallocated to the Physical Activity Project component. As a result, in 2021, this component accounted for 50% of the marks.

Candidates are required to complete a Physical Activity Project on a chosen physical activity. The timeline for completion of the Physical Activity Project is eight to ten weeks, between October and December of the Leaving Certificate academic year. Guidance for schools, including the deadline for completion, and the digital Coursework Booklet are issued by the SEC at the end of September in the Leaving Certificate year. The Physical Activity Project must be completed in the digital coursework booklet issued by the SEC and must comply with the instructions to candidates contained within the booklet. Physical Activity Projects are submitted to the SEC using the schools' online portal.

Some good practice observed

The following good practices were observed with varying degrees of frequency in the coursework submitted by candidates for the 2021 examinations. Where they occurred, they assisted candidates in scoring well.

- In-depth performance analysis of the physical activity in its entirety was conducted in Section A of the project. Candidates clearly and explicitly considered and justified the key factors that influence performance in the physical activity, and used a wide range of performance analysis tools correctly to test these factors.
- Video and software tools for biomechanical and/or skill and technique analysis were used successfully and relevantly, contributing positively to the project.
- Candidates provided a clear presentation of performance data in comparison to normative scores and descriptive data.
- Performance goals were clearly defined, distinct, challenging and realistic. Some candidates used the SMART principle of goal setting when setting performance goals, where this was the case, the goals were clearly defined, challenging, realistic and appropriate.
- Training/practice programmes presented were detailed, accurate and relevant to the performance goal identified. The programme incorporated a wide range of relevant strategies which were based on sound theoretical principles.

- Relevant adjustments were made to the training/practice programmes over the course of implementation.
- In Section C candidates included comprehensive analyses of performance post training/practice, making links between pre-training test results, norms and interrelated aspects of performance.
- Candidates provided detailed evidence of engagement with the Physical Activity Project, video footage and images were presented which clearly and explicitly related to the point(s) the material was intended to support. Footage had been gathered over time.
- Candidates presented clearly labelled appendices, which were referenced appropriately when being discussed (figure 1, figure 2 etc), and a comprehensive list of sources was presented in the bibliography.

Advice on engaging with the coursework

The following advice will assist with ensuring that candidates demonstrate their levels of achievement to full effect when completing and reporting on their coursework.

- Prior to commencing study of the Leaving Certificate Physical Education specification, and to assist and guide the selection of an appropriate and acceptable physical activity on which to complete the project, all relevant documentation should be read and the guidance strictly adhered to. This includes the specification, assessment guidelines and all documentation issued by the SEC pertaining to the Physical Activity Project.
- Candidates are required to study three physical activities, each of the three physical activities must come from a different physical activity area. The six physical activity areas are set out on page 12 of the subject specification.
- The Performance Assessment should be completed in one of the three chosen physical activities.
- The Physical Activity Project may be completed on a physical activity from one of the other five physical activity areas listed on page 12 of the specification. Alternatively, the Physical Activity Project may be completed on an out of school physical activity. In this instance, it remains the case that the physical activity chosen for the Physical Activity Project must not be from the same physical activity area as the physical activity chosen for the Performance Assessment. Furthermore, any physical activity chosen for the Physical Activity Project that is not listed on page 12 of the specification must comply with the requirements set out on page 5 of the Assessment Guidelines for the Physical Activity Project.

For example, if the class is studying soccer, long jump and swimming strokes and the candidate plans to complete their Performance Assessment in soccer then they may not complete their Physical Activity Project on golf as they both sit under the physical activity area of games. Similarly, if a candidate in the same class plans to

complete their Performance Assessment in long jump, they may not complete their Physical Activity Project in pole vault because they both sit under the physical activity area of athletics.

- Performance analysis should be clear, concise and cover a range of theoretical principles relevant to performance in the chosen physical activity.
- An appropriate range of analysis tools should be used in carrying out the performance analysis. While the use of video and image collages is not permitted, two-image split-screen comparisons are permitted in both appendices (pictures) and videos (video clip), where they are used as an analysis tool to compare aspects of skill and technique and/or for biomechanical analysis.
- Performance goals should be challenging, realistic and based on the results of the performance analysis carried out.
- The rationale provided for performance goals should be based on sound theoretical principles and link to the performance analysis.
- All training/practice programmes developed to enhance specific aspects of performance should be grounded in sound theoretical principles. The programmes developed should be reflective of both the results of performance analysis and the performance goal that it is based on.
 - In developing practice schedules for goals based on psychological preparation / psychological aspects of performance, candidates should consider relevant and reliable strategies for the enhancement of psychological preparation for performance.
 - In developing a plan for the enhancement of performance based around goals in the area of diet and nutrition, the programme for enhancement should consider key aspects of nutrition and reliable strategies for improving diet/nutrition for at least one key point in dietary preparation (before, during or after performance).
 - In developing practice schedules for goals based on the improvement of skill and technique candidates should consider the principles of effective practice, different types of practice and suitable practice methods.
 - In developing training programmes around components of fitness training methods, principles of training and periodisation of the training year should be considered.
- Candidates should be encouraged to engage in critical reflection regularly throughout the implementation of their training/practice programme and present this reflection in Section B of the Physical Activity Project.
- Section C is the conclusion of the project and should refer to each of the three areas identified on page 6 of the digital coursework booklet.

- Projects from a given centre should be varied and different.
- Instructions on word count, page count, the use of images and video files are provided in the digital coursework booklet. Non-compliance with these requirements will see penalties being applied to the candidate work.
- It is not sufficient to complete the Physical Activity Project on one specific exercise or skill. For example, it is not sufficient to do a Physical Activity Project on the Power Clean weight training exercise, nor is it sufficient to do a Physical Activity Project on free taking in hurling.
- Candidates should ensure that the chosen physical activity involves the performer as the source of exertion of force/effort/power. This ensures that biomechanical analysis and the analysis of skill/technique is based on the analysis of movement completed by the performer. It also allows for such aspects of performance to be linked to specific components of fitness. For example, the force being produced as a volleyball player jumps to spike a ball can be analysed using biomechanical analysis tools; it can also be linked to Newton's Laws of Motion and a relationship between this force and the muscular strength, speed and power of the performer can be investigated.