

Coimisiún na Scrúduithe Stáit

State Examinations Commission

Leaving Certificate Examination 2025

Applied Mathematics

Mathematical Modelling Project

Reporting Booklet

Higher and Ordinary Level

100 marks

Examination Number: [Enter your 6-digit examination number here]

Date of Birth: [Format DD/MM/YYYY]

**Information for Candidates, Teachers and Schools**

**Completion of the report**

* Your report on your mathematical modelling project must be completed in this booklet, using the prescribed structure. This booklet has been supplied to you by the SEC in Microsoft Word (.docx) format. However, when you are signing off and submitting your coursework booklet, it must be converted to PDF format before being submitted through the Schools Portal. It is your responsibility to ensure that all electronic material submitted is free from viruses etc., so that the file can be opened for assessment.
* You should carefully proof-read the copy that you have printed from the PDF file, so as to ensure that all of your work is visible. Any work that is not visible on this printed copy will likewise not be visible to examiners marking the work digitally and can therefore not gain any marks. Once this check on the quality of the PDF format has been completed, you are required to print the final version of your PDF booklet as submitted. This printed copy of the final version of the PDF booklet as submitted and the digital version of the booklet should be retained safely by the school authorities until the appeals process has been completed.
* **Examiners will only mark work that is submitted in accordance with the instructions in this booklet and relevant circulars.**
* You must not change the structure or format of this booklet in any way and should adhere to the following formatting guidelines:
  + Your text should be in Arial, font size 12 and 1.5 line spacing.
  + You may make use of text editing features such as italics, bullets, postscript, etc.
  + Document margins have been set and should not be changed. The text margins for each A4 page are:
    - left margin 20 mm
    - right margin 20 mm
    - top margin 20 mm
    - bottom margin 35 mm
* You are not allowed to change these settings or otherwise circumvent these restrictions which are set to facilitate online marking. You are also not allowed to attach or include links to any other material.
* No part of the SEC text provided in this booklet should be modified by you. Your text should be confined only to the areas in the booklet where you are prompted to enter text between square brackets e.g. [Enter your text here].

**Subject Specific Information**

* The mathematical modelling report must be completed and handed over to your class teacher by **04 April 2025**.
* It is your responsibility to ensure that all electronic material submitted is free from viruses etc., so that the file can be opened for assessment.
* Your report must not exceed 900 words (excluding references, equations, diagrams, graphs, etc.).
* Your report must not include more than 20 images. An image can be any relevant table, graph, chart, diagram or photograph. The total file size of your digital report including all embedded images must not exceed 100 MB. Videos must not be included in your report.
* When referring in the body of the report to any specific image, the image must be properly labelled (Figure 1, Figure 2, etc.). Images should not be used as a means to include additional text. It is advisable not to use images where a person or persons in these images may be identifiable.
* Penalties may apply where the overall word count or image count or file size is exceeded.
* You must reference and acknowledge all research sources used, such as: publications – including books, professional journals and government reports; online sources and other types of media; any material generated using artificial intelligence (AI) software or applications; specialist organisations and relevant individuals. To include such material without properly referencing the source will be considered plagiarism. In addition, the copying from, or reproduction of, material from such sources may also be considered plagiarism.
* The State Examinations Commission will provide further information in relation to the appropriate file name to use and how to upload digital coursework to the Schools Portal.
* Your project must be backed up by the school on a secure encrypted storage system until the State Examinations Commission is satisfied that the projects have been received and are accessible. This will require material being retained until the examination process is complete, including until after the appeal process is completed.

**Authentication**

* The mathematical modelling project and report must be your own individual work – authenticated by yourself, by your teacher and by your school management authority. Authentication is an important part of how the State Examinations Commission ensures fairness to everybody in the assessment of coursework.
* While you may carry out background research relevant to the brief on your own and/or at home, all other parts of your project and your report must be completed under the supervision of your teacher in accordance with the conditions set down by the State Examinations Commission as outlined in Circulars S69/04 and S68/08, which are available at [www.examinations.ie](http://www.examinations.ie).
* Any case of suspected copying, plagiarism (which includes the use of AI software), improper assistance, or procurement of work prepared by another party will be thoroughly investigated. These actions are breaches of examination rules and attract the penalties described in the *Rules and Programme for Secondary Schools*. The penalties include: loss of the marks for the project, loss of the subject, loss of the entire examination in all subjects, or being debarred from the Certificate Examinations in subsequent years. There may be serious consequences for any person who provides you with inappropriate assistance, as this is an offence under the Education Act 1998.
* Your teacher must supervise your completion of both the project and the report. If your teacher cannot confirm that the project and report are your own work, and that you carried out the project and completed the report under your teacher’s supervision, the State Examinations Commission will not accept your report for assessment. In that case, you will forfeit the marks for this component of the examination. Teachers and the authorities of schools are familiar with the detailed requirements to ensure that practical and project work is valid for examination purposes. You should comply fully with all requests that are made by the teacher and the school in order to enable authentication of your work.
* **Note:** Responsibility for complying with examination requirements rests with **you**, the candidate. If the requirements are not followed, your teacher and school will have no choice but to bring this to the attention of the State Examinations Commission.

# **Report Structure and Mark Allocations**

**Introduction and Research (20 marks)**

* Background research on brief
* Identify specific problem(s) to be modelled
* Research specific problem(s)
* Identify relevant variables
* Present relevant data
* Provide citations and references

**The Modelling Process (50 marks)**

* Explain and justify model and assumptions
* Compute solutions
* Present solutions using appropriate mathematical and graphical representations
* Analysis of solution(s) – sensitivity to changes in assumptions; comparison with other solutions or real-world data
* Iterative process

**Interpretation of Results (15 marks)**

* Interpretation of solution(s) in real-world context
* Conclusions and reflections

**Communication and Innovation (15 marks)**

*This is not a distinct section of the report.*

* Innovative and creative approaches
* Overall coherence

# **Mathematical Modelling Project**

[Type the title of your mathematical modelling project into this space.]

# **Word Count**

Enter the number of words for each section only after you have finished your report.

### *Section* Number of words

*Introduction and Research [Enter the number of words here]*

*The Modelling Process [Enter the number of words here]*

*Interpretation of Results [Enter the number of words here]*

***Total [Enter the total number of words here]***

# **Introduction and Research (20 marks)**

**Important:** The text should be in Arial, font size 12pt, 1.5 line spacing. Please ensure that the above heading remains at the top of the page.

[Enter your text here.]

# **The Modelling Process (50 marks)**

**Important**: The text should be in Arial, font size 12pt, 1.5 line spacing. Please ensure that the above heading remains at the top of the page.

[Enter your text here.]

# **Interpretation of Results (15 marks)**

**Important**: The text should be in Arial, font size 12pt, 1.5 line spacing. Please ensure that the above heading remains at the top of the page.

[Enter your text here.]