The ENGAA Guidebook

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For FREE ENGAA Resources including worked through essay plans by expert tutors, visit: stepmaths.co.uk/free-engaa

General

What is the Engineering Admissions Assessment?

The Engineering Admissions Assessment (ENGAA) is a pre-interview assessment for students applying to study Engineering (including Chemical Engineering via Engineering: H810) at the University of Cambridge.

What is the purpose of the ENGAA?

The ENGAA is designed to determine your potential to achieve as a student in a demanding undergraduate Engineering course. They are assessing your ability to use scientific and mathematical knowledge in unfamiliar contexts. It is therefore designed to test **how you think** using **what you know**. It is designed to be tough and challenging as it is a way for Cambridge Admissions to differentiate between students who otherwise have likely achieved the top grades in school.

Test Specifics

How is the ENGAA structured?

The ENGAA is composed of two sections lasting a total of 2 hours;

- Section 1: A multiple-choice assessment consisting of two parts with 40 questions in total
    - Part 1: Mathematics and Physics (20 Questions)
    - Part 2: Advanced Mathematics and Advanced Physics (20 Questions)

  All questions in this section are multiple choice and of equal weighting. You will score 1 mark for every correct answer and not gain a mark for every incorrect or unanswered question. You have a total of 60 minutes for this

section: it is recommended you split your time equally and spend 30 minutes on each section.

- Section 2: Advanced Physics (20 Questions)
  You will have a total of 60 minutes to complete this section.

Download free ENGAA tutorial videos from our website, by going to:
stepmaths.co.uk/free-engaa

Do I have to take Maths and/or Physics A-Level to take the ENGAA?

Yes. You are required to take **both** Maths and Physics A-Level to apply to study Engineering at Cambridge and, therefore, to sit the ENGAA.

Will I struggle with the ENGAA Maths questions if I didn't take Further Maths A-Level?

Not necessarily. Given that only a select few colleges will require you to take Further Maths A-Level or take the STEP exam, you are not expected to have knowledge further than A-Level content to sit the ENGAA. If you have just finished 1st Year A-Level Maths, there may, however, be some topics you have not met before or still struggle with. It is advised that you get to grips with these topics well before you sit the ENGAA.

What is the difference between 'Maths and Physics' and 'Advanced Maths and Advanced Physics'?

Mainly the content covered. The topics covered by the Advanced Section aren't necessarily harder but just different. You may find that some of the questions on the Advanced section are actually easier than questions in Part 1. Generally speaking, the topics in Advanced tend to be those covered later on in the A-Level syllabus and therefore assumed to be tougher, but that is not always the case.

What topics are covered in Section 1 Part 1 (Maths and Physics)?

The Maths topics covered include:

- Numbers: BIDMAS (Whole Numbers, Integers, Fractions, Decimals, and Numbers in Index Form), Factors and Multiples, Indices and Roots, Index Laws, Fraction Manipulation, Percentages, Direct and Indirect Proportions, Ratio Notation, Number Operations, Upper and Lower Bounds, Number Operations, and Approximations.
- Algebra: Expression Manipulation, Index Laws, Linear Equations (including simultaneous), Factorisation, Substituting Formulas, Inequalities, Sequences, Cartesian Coordinates, Straight Line Equations, Graph Intersections, Simultaneous Equations, Interpreting Graphs, Real-Life Problems
- Geometry: Angle Properties, Sum of Exterior and Interior Angles, Quadrilateral Properties, 2D Symmetry (reflectional and rotational), Similar Shapes, Pythagoras, Geometric Proofs, Circle Theorems, 2D Transformations

- Measures: Perimeters, Areas and Circumferences, Volumes and Surface Areas, Vectors, Map Interpretation, Shape Enlargement, Unit Conversion, Standard Index Prefixes, Compound Measures, Three-Figure Bearings, Measurement Inaccuracies.
- Statistics: Bias, Flaws, Discrete and Continuous Data, Data Extraction, Interpret Charts and Graphs, Calculate Averages and Ranges, Correlation, Compare/Use Statistical Measures.
- Probability: Relative Frequency and Theoretical Models, List Outcomes, Mutually Exclusive Outcomes, Venn Diagrams, Add/Multiply Probabilities, Tree Diagrams, and Comparing Experimental and Theoretical Probabilities.

The Physics topics covered include:

- Electricity: Electrostatics, Current, Symbols and Diagrams, and Power and Energy.
- Motion and Energy: Kinematics, Forces and Motion, Energy, and Energy Conversion.
- Thermal Physics: Conduction, Convection, Radiation, and Matter
- Waves: Nature and Sound Waves.
- Electromagnetic Spectrum: EM Waves and The Spectrum.
- Radioactivity: Atomic Structure, Radioactive Decay, Ionising Radiation, Half-Life, and Nuclear Fission/Fusion.

What topics are covered in Section 1 Part 2 (Advanced Maths and Advanced Physics)?

The Maths topics covered include

- Algebra and Functions: Indices Laws, Surd Manipulation, Quadratic Functions, Inequalities, and Algebraic Manipulation of Polynomials.
- Sequences and Series: Arithmetic and Geometric Series, Recurrence Relations, and Binomial Expansion.
- Coordinate Geometry: Straight Line, and Circle Equation/Properties.
- Trigonometry: Sine/ Cosine Rules, Area of a Triangle using Sine, Radian Measure, Special Triangles/Angles, Sine, Cosine and Tangent Graphs (symmetry and periodicity) and Functions, Trigonometric Identities, Solution to Trigonometric Equations in Intervals, and CAST.
- Exponentials and Logarithms: Graphs, Log Laws, and Solving Equations with Unknown Indices.
- Differentiation: Tangent/Normal Gradients, Second Order Differentiation, Stationary Points, and Increasing/Decreasing Functions.
- Integration: Definite/Indefinite Integration, Fundamental Theorem of Calculus, Combining Integrals, Trapezium Rule, Differential Equations.
- Graphs of Functions: Sketch Graphs, Transformations, Altering Values, Differentiation, Intersections, and Geometric Interpretations.

The Physics topics covered include:

- Forces and Equilibrium: Vector Nature, Components and Resultants, Moments, Normal and Frictional Components, Equilibrium, Coefficient of Friction, and Gravity.
- Kinematics: Graphical Methods, 1D Motion, and Equations of Motion.

- Newton's Laws: Linear, Vertical or Inclined Motion, Problems Involving Two Bodies Connected
- Momentum: Linear Momentum, Conservation, and Coalescence.
- Energy: Gravitational Potential Energy, Kinetic Energy, and Conservation of Energy.

What topics are covered in Section 2?

ALL topics covered in Section 1 are also needed for Section 2. However, the focus is on applying the same Physics and Maths knowledge in Physics questions that require more problem solving skills than Section 1.

For help with familiarising yourself with this content and applying it to ENGAA questions, use our FREE revision videos at: stepmaths.co.uk/free-engaa

What is the difference between the questions in Section 1 and Section 2?

Although there is significant overlap in the content for Section 1 and Section 2, Section 2 will likely involve you applying your knowledge in unfamiliar contexts. This is designed to test your problem solving and creative thinking skills. These questions will almost certainly take you longer to work out which is why you have the same amount of time (60 minutes) to answer fewer questions (20).

What do I do if I am struggling for time on the ENGAA?

As it is a multiple-choice paper and is marked positively, you can guess answers if absolutely necessary. It is recommended that you work through each section at a steady pace to ensure you have time to answer all the questions. If you have a number of questions left and less than 30 seconds, it may be advisable to guess answers.

If you find you are running out of time, it is recommended you skip through questions and answer those you know you can do quickly and confidently. Although it is recommended you spend about 90 seconds per question in section 1, and 3 minutes in section 2, some may require longer. It may be best to leave these questions to the end and use all your remaining time on them. Pick up marks from questions you know you can answer quickly first and then work through the harder ones.

How to Apply

Where can I take the ENGAA?

The ENGAA can only be taken at an authorised test centre. You can ask the Examinations Officer of your current school or college to register you and you will be able to take the exam on site. If you have already left school or college, you could go back to your old school and sit the paper there. If neither of these options are available to you then you will have to search for an authorised test centre to register you.

When can I take the ENGAA?
You will have to register for the ENGAA by 15th October in Year 13. You will sit the test just after the October half-term.

How can I apply for the ENGAA?
You cannot register yourself to take the ENGAA; the test centre is responsible for registering you. If you are currently attending a school or college you can ask the Examinations Officer to register you.

If, however, you are not attending a school or college, then you can visit your old school and talk to the Examinations Officer there and they may register you for the ENGAA. If not, you may need to look for other test centres nearby and ask them to register you.

Will I be charged to take the ENGAA?
Cambridge University does not charge candidates registered at an official test centre.

Results

When will I get my ENGAA score?
Exact dates will vary from college to college, but you will usually hear back in January.

Can I receive feedback on my ENGAA score?
Yes, feedback will be provided as part of Cambridge's usual feedback process.

How important is my ENGAA score?
The ENGAA is fairly important as it is one of the few quantitative measures of a student's academic potential used in the admissions process. Given that most applicants will have received high numbers of A and A* grades, the ENGAA helps differentiate students who may otherwise appear very similar. Given the recent scrapping of AS exams, the ENGAA is even more important as a way to highlight your academic capabilities to Admission Tutors. Alongside your personal statement and references, it helps provide a more holistic view of you as a student and your potential at university. However, it is important to remember there are other indicators of your academic capability throughout your application and the ENGAA is only one of the parts.

A strong ENGAA score is often a good indicator of whether or not you will be called to interview.

How is the ENGAA graded?

The ENGAA is graded on a scale from 1.0-9.0. The test is graded so that the average candidate scores a 4.0.

What is a 'good' ENGAA score?

Generally speaking, around 60% or a score of 6.0+ is seen as a respectable score. Given that Engineering is such a competitive course, gaining a score of 6.0+ is in no way a guarantee for an interview. There is no set score necessary to gain an interview as it varies from college to college but some Admissions Tutors may set specific base scores for their college when calling applicants to interview. Obviously, the stronger your score the better but it is designed to be difficult and for few applicants to achieve a perfect score of 9.0.

Can I re-sit the ENGAA if I am not happy with my score?

Given that the ENGAA is only sat once a year, there is no opportunity to re-sit the paper for application in the same year. If you desperately feel a re-sit is necessary, you will have to re-apply to Cambridge the following year.

Revision

Where can I find past papers?

Past papers can be found here: ***stepmaths.co.uk/free-engaa***

It is recommended you do as many as possible before the test, so you are familiar with the types of questions asked and the time pressure faced. Although you may be confident with the content of the ENGAA, the style of the paper is likely to be very different from anything you have sat before. Doing past papers will ensure that, come test day, your exam technique won't hold you back and you can perform your very best.

When should I start revising for the ENGAA?

It is recommended you start revising for the ENGAA in the summer before Year 13. The ENGAA is unlikely to be similar to any test you have sat in the past and it will take time to familiarise yourself with the format and the skills necessary to sit the exam. This makes cramming just before the test largely unhelpful and, to an extent, counterproductive.

How should I revise for the ENGAA?

The best way to revise for the ENGAA is to sit past papers in timed conditions. It is a highly time-pressured test and so it is necessary to get used to the timings before you sit the exam.

Given that there is a very limited number of ENGAA papers available, it may be advisable to do questions from other admissions papers that are similar, such as MAT, NSAA, or PAT.

For help revising for the ENGAA, you can access our collection of FREE revision videos at: stepmaths.co.uk/free-engaa

Other

What equipment is needed to sit the ENGAA?

A soft pencil is required, and a rubber is also recommended. The use of a dictionary, even a bilingual one, and a calculator are not allowed.

Is extra time allowed for candidates whose first language is not English?

No. Extra time is not permitted for candidates whose first language is not English.

What do I do if I need Access Arrangements?

Access Arrangements are available if you have a disability or a special requirement entitling you to support for other exams.

You will need to inform the test centre of your condition before they register you for the ENGAA. You may need to provide details and medical evidence of your disability or special requirement.

What are the guidelines for laptop use?

A candidate using a laptop must not be able to disturb the other candidates and the laptop screen must not be visible to them.

If the candidate requiring a laptop is taken to a separate room then they will require an individual invigilator.

Candidates using a laptop should format their work in Arial font, size 11, single-spaced. Automatic spell checkers and grammar checkers must be disabled.

At the end of the test, the candidate using the laptop must be present when their script is printed off, to confirm that the work is theirs. The candidate's name, candidate number, candidate initials and centre number should be clearly written on the printout.

Can I apply for Special Consideration?

Should you feel that temporary illness, injury or other issues affected your test score, you can ask for this to be taken into account as special consideration. A special consideration form must be completed within seven days of sitting the test. If you

want to apply for special consideration, talk to the Examinations Officer at your test centre as soon as possible.

Good luck with your ENGAA preparation; if you have any questions, please visit stepmaths.co.uk and contact us!