

ESAT vs TMUA: which one do you need?

The short answer

Your **exact university, course and entry year** decide. ESAT serves selected engineering and science courses through subject modules. TMUA serves selected mathematics and related courses through two maths papers. A subject name alone is not enough.

The decision takes thirty seconds

Open the official page for every course on your UCAS list. Write the named test and, for ESAT, the named modules. If one choice says ESAT and another says TMUA, you may need both. There is no universal rule that one test cancels the other.

Use the table to route yourself, then confirm on the university course page before booking.

1 The tell

If advice begins “Engineering students take...” rather than naming the university and course, it is too broad to book from. Imperial Design Engineering and Mechanical Engineering are both engineering, but require different ESAT module sets.

Cambridge, course by course

Course or department	Test	Modules or note
Chemical Engineering and Biotechnology	ESAT	Mathematics 1, plus two from Biology, Chemistry, Physics and Mathematics 2
Engineering	ESAT	Mathematics 1, Mathematics 2 and Physics
Natural Sciences	ESAT	Mathematics 1, plus two from Biology, Chemistry, Physics and Mathematics 2
Veterinary Medicine	ESAT	Mathematics 1, plus two from Biology, Chemistry, Physics and Mathematics 2
Computer Science	TMUA	TMUA is listed; Peterhouse and Trinity also list CSAT
Economics	TMUA	TMUA is listed
Mathematics	TMUA	TMUA is listed

Imperial, course by course

Course or department	Test	Modules or note
Aeronautics	ESAT	Mathematics 1, Mathematics 2, Physics
Chemical Engineering	ESAT	Mathematics 1, Mathematics 2, Chemistry
Civil and Environmental Engineering	ESAT	Mathematics 1, Mathematics 2, Physics
Dyson School of Design Engineering	ESAT	Mathematics 1, Mathematics 2
Electrical and Electronic Engineering	ESAT	Mathematics 1, Mathematics 2, Physics
Life Sciences	ESAT	Mathematics 1, Chemistry, Biology
Mechanical Engineering	ESAT	Mathematics 1, Mathematics 2, Physics
Physics	ESAT	Mathematics 1, Mathematics 2, Physics
Business School	TMUA	Not an ESAT module choice
Computing	TMUA	Not an ESAT module choice
Mathematics	TMUA	Not an ESAT module choice

The broader 2027 course router also lists ESAT for Oxford Engineering and UCL Electronic and Electrical Engineering, while listing TMUA for examples including Oxford Mathematics and Computer Science, and UCL Mathematics and Economics. Combined courses and departmental variations are exactly why the live page wins.

The formats differ in timing and reasoning

Feature	ESAT	TMUA
Structure	Five modules available; Mathematics 1 is compulsory, then the course sets the rest	Two papers: Applications of Mathematical Knowledge and Mathematical Reasoning
Unit of work	27 questions in 40 minutes per module	20 questions in 75 minutes per paper
Average budget	88.9 seconds per question	225 seconds per question
Content	Maths 1, Maths 2 and sciences, depending on course	Mathematics throughout
Score	Separate 1.0 to 9.0 module scores; no total	1.0 to 9.0 scale for the test
Feel	Rapid recognition, compact application, approximation and option testing	Longer arguments, logic and sustained reasoning

The time budgets explain the emotional difference. ESAT often rewards seeing the shortest valid route before finishing the longest one. TMUA gives more room, then spends it on argument, definitions and logic. Both punish passive formula recall.

2 Try it

Train the exact ESAT modules on your course page or both TMUA papers. If you need both tests, share algebra fluency but keep separate timed sets, because 89-second decisions and 225-second arguments are different sports.

Worked ESAT maths: recognise the invariant

Worked example Inverse square-root proportion without a calculator

Response time T seconds is inversely proportional to the square root of power P watts. When $P = 9$, $T = 20$. What power gives $T = 12$?

Write the relationship in the form that exposes what stays constant:

$$T\sqrt{P} = \text{constant}.$$

$$20\sqrt{9} = 20 \cdot 3 = 60.$$

$$12\sqrt{P} = 60 \implies \sqrt{P} = 5 \implies \boxed{P = 25 \text{ W}}.$$

Correct: use $T\sqrt{P}$ as the invariant. It avoids carrying an extra constant.

Trap: treating T as inversely proportional to P gives 15 W. The square root is the whole test.

This is ESAT Mathematics 1 content with ESAT pressure: accessible algebra, immediate translation and clean execution. TMUA may start with equally familiar algebra and use its extra time to ask what follows for every possible value, or which argument is sufficient.

If your choices require both

Do not split the week 50:50 by habit. Start with shared foundations, then weight the test with the earlier sitting or larger weakness.

- **Shared:** algebraic manipulation, ratios, graphs, proof habits and no-calculator arithmetic.
- **ESAT emphasis:** required sciences, 27-in-40 pacing, approximation, elimination and module traps.
- **TMUA emphasis:** Paper 2 logic, longer chains, necessary versus sufficient conditions and two-paper endurance.

Book from the official requirement, not from the test you would rather sit. A beautiful TMUA score cannot replace an ESAT requirement, and vice versa.