UNIVERSITY OF LIVERPOOL MATHS SCHOOL

Ofsted Outstanding Provider

Think Maths: Problem Solved!

Education for 16-19 year olds

Prospectus

Contents

Headteacher's Welcome

The University of Liverpool Maths School is an Outstanding centre of excellence for 16-19 year old students with a strong interest in the mathematical sciences. Our students are interesting, talented and highly motivated and we feel privileged to work with them. Teachers at ULMaS are highly academic and push students to reason carefully, articulate their arguments well, tackle unfamiliar problems with confidence and imagination, and understand concepts properly. Students reciprocate by taking great pride in their school, expressing gratitude for the excellent teaching and pastoral care and, above all, by working hard and learning rapidly.

As a school we are united by our enjoyment of reasoning and by our strong sense of belonging to this special place.

We believe that young people with a flair for mathematical and scientific thinking are precious and should be nurtured with great care by enthusiastic, clever staff members.

Our students benefit from an ethos that blends high expectations and hard work with informal, supportive relationships and a great deal of fun.

If you share our sense of adventure around learning, aspire to be challenged to think mathematically, and are willing to put in the effort required to achieve success then we'd like to meet you.

Damian Haigh
Headteacher

Thank you for considering the University of Liverpool Mathematics School for your sixth form education.

We know how important it is to choose the right place to study. What we offer is, in our view, both excellent and unusual and as a staff we feel very fortunate indeed to have the opportunity to work with such talented and well motivated students.

Our children are in the process of inheriting from us a world which is rich in opportunity for those who love mathematics, but also filled with concerning problems such as climate change, pandemics and information wars. We see those great problems as opportunities for our students to have an impact on the world. They will become the researchers, business leaders, teachers and technologists who will help the world to overcome its great challenges.

Their capabilities in mathematics and science, in teamwork and problem solving, in coding and communicating, could be crucial not just to their futures but to the future of the world.

The students in this school are very varied, but one thing they all have in common is the sense of relief at never having to hide their enthusiasm for learning. The atmosphere in school is one of tolerance and informal, but genuine, mutual respect. Students here work hard and have a full week of lessons, lectures, tutorials, supervisions and sport. Typically they spend their free time in school playing chess, playing piano or guitar, helping each other to solve problems and arguing about philosophical or scientific problems. For our students the school is both a haven and a source of challenge; a place they look forward to coming back to every day.

At ULMaS we have been given an opportunity to provide a bespoke education and an inspirational experience for students who have the potential to succeed at the highest level in the mathematical sciences. This involves a huge range of different opportunities: lectures from academics, problem solving competitions, small group collaboration, research projects, lunchtime clubs, educational visits. For a small school we pack a huge amount in, and we expect students to complete a lot of homework as well. One of our students said recently 'They said it would be full-on, and they weren't lying... it is! That is what I wanted and why I am here!'. We are delighted with the way our students respond to the opportunities we offer them: if you think you might enjoy it as well then we want you to find out more and start an application.

Our Mission

We exist to enable children with a strong interest and high potential in the mathematical sciences to achieve global impact.

We prepare them thoroughly and comprehensively for Science, Technology, Engineering and Mathematics (STEM) degrees and significant roles both within local communities and the global community of STEM. Our students will be equipped to become tomorrow's industrial and academic researchers, innovators who will address the world's greatest challenges, teachers who will inspire the next generation, wealth creators, entrepreneurs and problem solvers.

Our mission goes beyond just our students. We aim to support and nurture students across the Liverpool City Region with our outreach programme to ensure all can succeed in the mathematical sciences. We support students, teachers and schools in the delivery of mathematics.









Why Choose Our Maths School?

1

Think Maths

The Maths School has helped me improve teamwork, how to problem solve and critical thinking.

Samuel, Class of 2023,
previously from St Margaret's Church of England Academy

By becoming an expert in the mathematical sciences you can access highly paid, stimulating careers that benefit human society. It is also great fun to learn mathematics at a high level: mathematics is full of intrigue, creativity and satisfying challenges.

2

Think Solutions

You have fantastic teachers who are always happy to help with your work, or discuss topics far beyond the reaches of A-Level. You're given everything you need to succeed, and a bunch of extra opportunities on top of that!

Zoe, Class of 2022,
previously from The Oldershaw Academy

Problem solving is not only satisfying but makes graduates highly employable. We develop the skills to find solutions and develop independent thinking and analytical skills. Developing mathematical and scientific thinking is about much more than getting high marks in exams: discussion, reflection, clarification and questioning are all crucial parts of the process.

3

Problem Solved

It is so easy to make friends as everyone has similar interests. I am loving being challenged and the fact that the school goes beyond the curriculum to prepare you for university during the Aspiring Mathematician Programme (AMP) lessons.

Hannah, Class of 2022,
previously from Archbishop Blanch School

Our students are in a place with others who share their passions. The community feeling is supportive and students are able to be themselves, try new experiences and immerse themselves fully in their subjects.

Problem solving and critical thinking skills develop rapidly to an advanced level, both individually and as a team.

4

University Feel

The casual clothing and the location right on the University of Liverpool campus help give it a very nice university feel, and this became more obvious on our recent trip to Cambridge, as the school was already doing a lot of the things that they do at university.

Dan, Class of 2024,
previously from Calday Grange Grammar School

We are on campus and have links to University of Liverpool departments and facilities. The feel of the building itself is very university like, in both the classrooms and the communal areas. The mutual respect between staff and students, all on first name terms, helps students to develop maturity and independence in their approach to study.

5

Challenging and Enriching

I'm surrounded by like minded students who are constantly trying to better their understanding of STEM subjects, which helps me improve my skills everyday.

Tabitha, Class of 2023,
previously from St Julie's Catholic High School

By getting the level of challenge right we enable students to develop quickly, make important connections between related ideas and feel fully immersed in their learning. Students work hard but enjoy their work because of their strong sense of growing mastery.

6

Immersive Curriculum With No Fee

We really have an immersive curriculum because although we're extremely focused in certain subjects, there's lots of time dedicated to beyond the curriculum topics, and to PPEP which helps us develop an understanding of the world around us.

Laura, Class of 2024,
previously from DIxons Broadgreen Academy

Our teachers have a strong sense of privilege in working with committed and talented students. As all students study the same subjects we can ensure the curriculum structure enhances their experience and brings depth to their learning. In spite of the small class sizes, bespoke specialist curriculum and personalised approach, there are no charges to study at our school.

Developing Potential

We develop mathematical and scientific potential wherever it is found, and remove the barriers that could prevent students from achieving highly. We believe in equality of access, including in our outreach work.

Sense of Belonging

We believe that a strong sense of belonging is essential. Our school is a sociable, happy place where all students establish friendships that will last a lifetime; they are accepted and valued unconditionally. Our staff are a resilient, positive team fulfilled by their work, clear in their purpose; supported, challenged and nurtured by each other.

Our Students

The Maths School is for students from Merseyside and the North West who love problem solving and analytical thinking and don't need a disciplinarian approach in order to be motivated. Our students thrive in a family environment where high expectations are implicit and both learning and wellbeing are carefully nurtured.

Wide Scope of Learning Opportunity

Our formal, examined curriculum is firmly scientific but the curriculum we deliver goes far beyond this. Our broader curriculum inspires and cultivates a love of the arts and the humanities. As young people who will grow into influential adults, we believe it important that they care about politics, understand history and take seriously their responsibility to make the world a better place.

Academic Experts

We provide a suitably challenging and enriching A-Level curriculum, structured to complement and enrich the other subjects, taught by academic experts which enables our students to access the most demanding and exclusive degree courses and careers in STEM.

Relationship with the University of Liverpool

Through our connection to the University of Liverpool we can provide a unique exposure to university life and academic expertise. We have access to University of Liverpool facilities and regularly call on academics and students to enrich the learning of our students in both their subjects and extracurricular pursuits.

Ethos

We provide an exceptional learning experience that inspires our students to become outstanding mathematical scientists with a well-developed moral purpose and an appreciation of their role in making the world a better place. The success of maths schools in the UK emphasises this.

> The PPEP program provides not only an informative change of pace from lessons but also gives us a chance to learn about things in the world that don't relate to our subjects. We also have the Student Cabinet which allows us to democratically select students to represent the needs of their form.

Tracey, Class of 2023,
previously from The Belvedere Academy

What is the U-Maths Network?

We are part of the University Maths Schools Network.

These schools immerse 16-19 year olds in the subjects they love, fostering vibrant and diverse communities of maths enthusiasts. A new generation of creative mathematicians, coders and scientists is emerging, ready to tackle society's biggest challenges.

Schools part of the U-Maths Network

- Aston University Maths School*
- Cambridge Mathematics School *Opened 2023*
- Durham Mathematics School*
- Exeter Mathematics School *Opened 2014*
- Imperial College London Mathematics School *Opened 2023*
- King's College London Mathematics School *Opened 2014*
- Lancaster University School of Mathematics *Opened 2022*
- Leeds Mathematics School *Opened 2023*
- University of Liverpool Mathematics School *Opened 2020*
- University of Nottingham Maths School*
- Surrey Mathematics School *Opened 2024*

*Opening soon.

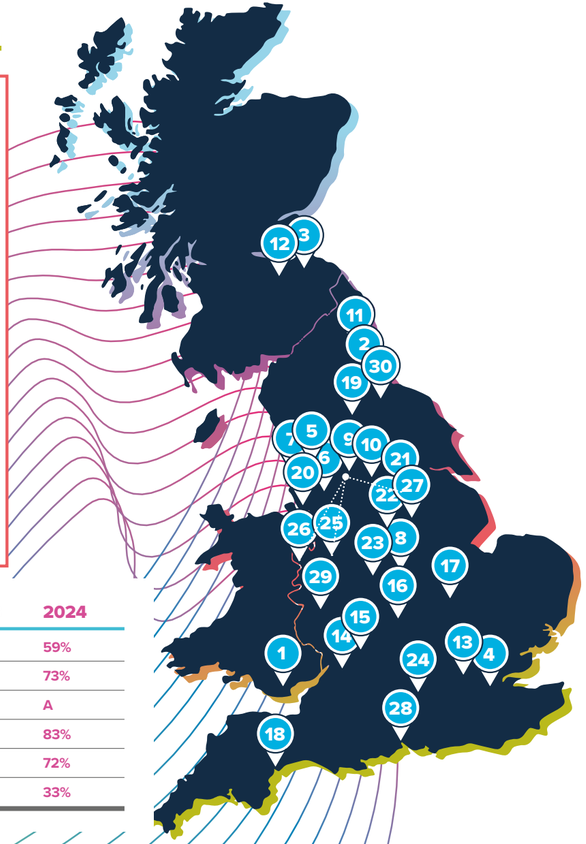
U-Maths is committed to expanding this impact. We support new maths schools during and after their launch, nurturing young minds and igniting their mathematical curiosity. By drawing on our collective expertise, we can support maths schools to become beacons of extraordinary learning and teaching which benefit the whole education system. And by strengthening collaborations with universities and industry partners, we can help to educate the STEM leaders the world so urgently needs.

{u}maths

Find out more here.

Our Student Destinations 2021-2024

1. Cardiff University
2. Durham University
3. Heriot-Watt University
4. Imperial College London
5. Lancaster University
6. Liverpool Hope University
7. Liverpool John Moores University
8. Loughborough University
9. Manchester Metropolitan University – Degree Apprenticeship CGI
10. Manchester Metropolitan University
11. Newcastle University
12. The University of Edinburgh
13. University College London (UCL)
14. University of Bath
15. University of Bristol
16. University of Buckingham
17. University of Cambridge
18. University of Exeter
19. University of Leeds
20. University of Liverpool
21. University of Manchester
22. University of Nottingham
23. University of Oxford
24. University of Reading
25. University of Salford
26. University of Salford – Degree Apprenticeship Manchester Airport
27. University of Sheffield
28. University of Southampton
29. University of Warwick
30. University of York

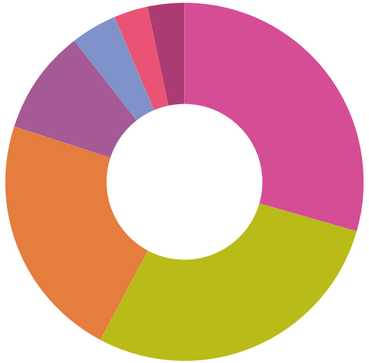


Our Results	2022	2023	2024
% of students achieving 3 A* or A grades	36%	56%	59%
% of students achieving AAB or better in facilitating subjects	56%	66%	73%
Average A-Level grade	A-	A-	A
A-Level entries achieving A*, A or B grades	87%	88%	83%
A-Level entries achieving A*, or A grades	59%	69%	72%
Percentage of A-Level entries achieving A* grades	20%	29%	33%

Our destinations

- University of Liverpool
- Durham University
- Lancaster University
- University of Manchester
- University of Leeds
- University of Sheffield
- University of Cambridge
- Liverpool John Moores University
- University of York
- University of Bristol
- Other Destinations

Which courses did they study?



- Mathematics
- Engineering
- Computer Science
- Physics
- Natural Science
- Degree Apprenticeship
- Economics/Finance

Our Ofsted Inspections

We had a new provider monitoring visit in February 2023 and a full inspection in March 2024. Inspectors saw what our staff and students know, **Ofsted overall effectiveness – Outstanding**

The quality of education – Outstanding

Teachers carefully design challenging curriculums that go beyond the A-level specifications. In mathematics, teachers include pure mathematics topics from degree programmes. Teachers in computer science discuss the impact of artificial intelligence on industry. As a result, students are prepared exceptionally well to progress on to STEM-related degree courses, apprenticeships or employment.

Teachers use highly effective assessment activities so that students become fluent in their knowledge and skills over time. They use questioning, reflection, discussion and mock assessments to check that students understand what they have been taught before moving on to the next topic. Students benefit from individual teacher support and supervision sessions to rectify gaps in knowledge and to respond to the feedback they receive from their teachers. This supports them to achieve higher grades in their examinations.

Behaviour and attitudes – Outstanding

Students are highly motivated and exceptionally keen to achieve well in their studies. They consistently demonstrate positive attitudes to their learning and attendance is very high. Students enthuse about the nurturing culture fostered by staff. They say they can be themselves and grow as an individual.

Personal development – Outstanding

Students grow significantly in confidence because of being at the school. They access an exceptional personal development curriculum that swiftly develops their communication skills. Students attend workshops at the school and external events such as the Shakespeare North Playhouse. They learn how to find their voice and how to produce writing that is compelling to read. As a result, students confidently pitch projects to panels of judges and take part in academic debates.

Leadership and management – Outstanding

Staff talk enthusiastically about a culture of compassion in the school. They feel highly valued and supported by leaders, managers and trustees.

Trustees take an active role in providing support and challenge to senior leaders and staff. They visit lessons and speak with students to ensure that leaders' actions continue to have a positive impact on the quality of education that students receive.

Education programmes for young people – Outstanding

Students benefit from high-quality impartial careers education, information advice and guidance. They receive individual support from an external careers adviser and attend a substantial number of university open days. Students are well informed about their next steps and all progress to positive destinations.

Students feel safe and know who to contact if they have any concerns. They learn about a range of topics such as domestic abuse, unhealthy relationships, online safety and the risks of radicalisation and extremism. Students speak positively about the order of when these topics are taught. For example, staff discuss sensitive topics such as healthy relationships only when students are comfortable speaking in front of their peers.

Read our full inspection reports here.

Sixth Form Life at the University of Liverpool Maths School

ONE OF THE GREAT ADVANTAGES OF BEING IN A SMALL SCHOOL IS THAT EVERY MEMBER OF STAFF CAN GET TO KNOW EVERY STUDENT WELL.

Much More than Maths

Our expert careers advice and pastoral care ensures that every student receives the support they need to reach their full potential. Individual guidance and coaching assists their personal, social and academic development, providing students with the skill set required to surpass their potential and progress beyond A-Level. All of our students have access to a range of University of Liverpool facilities, including a sports centre and cafes plus music concerts and performances.

Induction

When students join us they take part in an induction programme which ensures that students are established socially and well prepared for the forthcoming academic challenge. Students will also be encouraged to attend a number of events at school before starting in September.

These could include:

- A taster day event
- A visit to the Sir Alastair Pilkington Building
- Attendance at outreach activities
- Easter revision sessions
- Summer induction day with other offer holders.

Pastoral Support

One of the great advantages of being in a small school is that every member of staff can get to know every student well. The sense of being part of a team, a valued member of a cohesive community, is a crucial part of everyone's wellbeing and development, and we aim to ensure that for all our students. Our small classes, informal family ethos and our shared interests mean that we are a close-knit school where students feel safe and know that both the staff and their peers have their best interests at heart.

Every student has a Pastoral Tutor who supports them if they have any concerns or personal difficulties, and guides them through their courses, work experience and UCAS or job applications.

We will also have support staff who will be trained in counselling, safeguarding, special educational needs and pastoral care. Our Pastoral Lead oversees a team of Pastoral Tutors. Every student sees their Pastoral Tutor weekly, and they have a one to one meeting with them every fortnight.

Students who are experiencing difficulties are given more intensive support by their Pastoral Tutor and other staff members. Where necessary, parents/carers are contacted and we work closely with them.

Facilities

Our school building is the Sir Alastair Pilkington Building on the campus of the University of Liverpool. It is a home that we are very fond of and provides all the space that we need. We expect to move to a purpose built home on or near to the Campus in the next few years.

> All of the extra curricular lessons/activities are very helpful. Also, the teachers are very well educated and intelligent, so are skilled at explaining difficult concepts.

Pascal, Class of 2023,
previously from St Margaret's Church of England Academy

Maths School Facilities:

- Student kitchen facilities with fridges, dishwashers, microwaves, toasters and kettles
- Physics labs with a large range of practical science equipment; our students and teachers work together to design new experiments and we buy all the equipment we need to support students' research projects
- We use handheld technology like iPads and graphical calculators and can support long term loans to all students so that there's no barrier to participation
- Laptops for students to use anywhere in the building, and to take home if needed
- Teamwork and study spaces for students to support each other and work in groups or individually
- Interactive screens in every classroom
- Computer Science base with a new suite of Acer Nitro gaming computers equipped with RTX3050 graphics cards suitable for gaming projects AR, VR and artificial intelligence deep learning as well as Raspberry Pi and Arduino kits, robotics equipment and 3D printing facilities
- Poster printing facilities to support students in presenting their research projects
- Board games, chess sets and a library with a huge sci-fi collection as well as much else
- Access to online resources such as Integral Maths
- Access to University Sports Facilities.

Come and have a walk round to see how we use our space: it's unlike any school you have ever been to before.

Alumni

Chloe O'Neill, Class of 2023
Lord Derby Academy
Chartered Surveyor Degree Apprenticeship
Manchester Airport/Salford University

My experience at ULMaS helped me to grow in confidence and to believe in myself. I learned to be resilient and tackle challenges with different approaches. It's helped me in the work place to work independently - whilst also being able to ask for help - it's nice to have a go on your own first. I love my job and the opportunities it gives me on a daily basis. Working at the airport is so interesting though I do get jealous of all the people going on holiday!

Sophie Hall, Class of 2022
Range High School
Natural Science
University of Loughborough

I went to Loughborough University to study Natural Sciences (majoring in physics with a minor in mathematics). I have just completed my second year and all is going perfectly. Last year I had the chance to volunteer in Gran Canaria for 2 months- getting to experience the culture and just a time that I absolutely loved. I am currently on a placement year at the Met Office in which I am taking on the role of ocean modelling (the dream!!!) This involved the mathematical modelling of ocean currents and the global conveyor belt (thermohaline circulation). I had a very social experience in college. I made friends that I still talk to now and had a lot of fun! My time at ULMaS was amazing- the contacts made through the university, the time invested in us by the staff (whom I still email regularly now) and the forward thinking of the curriculum which is currently helping me immensely in terms of thinking of more advanced mathematics and having the skills to code the ocean models at a high level.

Joe Thompson, Class of 2022
Liverpool UTC
Physics
University of Liverpool

The push to learn high level concepts has moulded how I solve problems to this day, I'm yet to find maths difficult in university. The staff were nothing short of accommodating and from the first day we all felt at home. There are times where I miss the community, but I'm thankful for the experiences as I would not be where I am today if it wasn't for all the amazing tutors and also administration staff, who stopped at nothing to make sure that everyone was perfectly equipped for the working world.

My biggest piece of advice for students who want to go down the physics route is to take advantage of the opportunity to learn how to code: the skills for solving problems using python are transferable and provide immense capability for your future!

Caleb Pleavin, Class of 2022
Holy Family Catholic High School
Mathematics
University of Manchester

I loved my time at ULMaS. The staff were excellent and, I could tell, genuinely cared about my success. The courses were certainly challenging, but they were worth it in the long run for the skills I have gained. Unlike many sixth forms where students gain a lot more free time, the rigorous workload at ULMaS ensured we were well-prepared for exams. This constant effort meant that when the exam season arrived I was as prepared as possible to succeed. The experience ULMaS was great and I certainly do not think I would have achieved the grades I got at any other school. The A-Level combination offered at ULMaS and excellent teaching provided me with a great foundation for studying Mathematics at university.

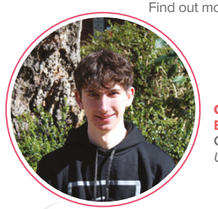
Profiles

Ezra Carlin, Class of 2022
Holy Family Catholic High School
Astrophysics
University of Manchester

My experience at ULMaS was amazing. The staff were very welcoming, and the whole experience was a good balance between school and university life. In terms of travel, the maths school was easy to reach; its location in the city meant that public transport was frequent and reliable. The fact that everybody was doing the same subjects meant that we could all help each other with anything we may have been struggling with. I would never have thought of taking Computer Science A-level, but it is almost essential in most areas of physics. Specifically, in my university lab sessions, the ability to code is a requirement, and the foundation I have from taking CompSci has been very useful. It has also meant that I have been confident enough to take more coding modules at university, and have done quite well in them.

Robert Goodwin, Class of 2023
Hawarden High School
Mathematics
University of Bath

I absolutely loved it, it was so easy to settle in and I made friends immediately who I still speak to all the time. Teachers were always accommodating to you in all circumstances while still driving you to not only get the best A-Level grades but also to develop other interests and life skills. The lectures we received while in Sixth Form helped me prepare for the kind of learning that I would receive in university. The AMP program also gave me extra things to talk about when applying for placement and an idea for what I would want to do.



Chris Rolfe, Class of 2022
Birkdale High School
Computer Science
University of York

I had a great experience at ULMaS. I took a risk by not going to a larger college with my friends, but it all worked out as I felt very welcome at ULMaS and my college experience was more personal where I felt more valued, compared to being a small fish in a big pond.

Travelling from Birkdale was an easy 30 minute train ride and the location of ULMaS was very nice, being situated within Liverpool University. The staff were lovely and I had a great time there!

Throughout my time at ULMaS, I learned to be more independent, along with developing problem solving skills and critical thinking due to always being challenged with harder questions.

Michelle Cheung, Class of 2023
Diocesan Girls' School (Hong Kong)
Mathematics
University of Cambridge

ULMaS made transitioning to a new country easier than anticipated. Almost everyone I encountered was friendly in every possible way. All the teachers are enthusiastic in their subject(s), and everyone was doing their best in making the school run. I still can't thank everyone enough for helping me with Olympiad/interview/STEP preparation, scholarship applications, as well as connecting me to university academics. I couldn't have had the great time I am having at Cambridge without your help, so thank you all so much.

Your Study Programme

All students will be enrolled onto A-Level courses in Mathematics, Further Mathematics and Physics and Computer Science, delivered by excellent teachers with strong academic pedigrees.

Although all students start on a four A-Level route, we discuss with them whether they will pursue all four courses to completion as part of the UCAS process. From the outset we will be challenging our students to reason formally, connect ideas, solve challenging problems and compose and examine mathematical proofs. As well as developing our students' formal analytical skills we will also be ensuring they develop their communication abilities through presentations, different styles of writing and a broad programme of reading.

The unique situation we are in with all students studying the same subjects gives us a wonderful opportunity to support and deepen their knowledge. We can co-ordinate the teaching, for example functions in Maths and Computer Science and also mechanics in Physics and Maths. Rather than being delivered in separate silos, the 4 A-Level courses, the Aspiring Mathematician Programme (AMP) and the Pastoral and Personal Enrichment Programme (PPEP) intertwine and support each other.

The curriculum programme will be as follows:

- 5 lessons per week for A-Level and AS subjects (this may vary across a 2 year course)
- Two AMP lessons per week
- A weekly Pastoral and Personal Enrichment Programme (PPEP) taught Personal Development lesson
- Weekly enrichment/wellbeing sessions based on interests in school and at Sport Liverpool
- Regular involvement in at least one school club / society (PPEP)
- Weekly lectures in subjects.

The following timetable gives a flavour of a typical Year 12 student's week timings and structure of the timetable are approximate and will be subject to change.

A typical timetable for a week (each week in a fortnight is slightly different)

	Monday	Tuesday	Wednesday	Thursday	Friday
9:30am	Staff Meeting	Computer Science	Maths	Maths	Physics
10:30am	Tutor Time	One to Ones with form tutors/study time	One to Ones with form tutors/study time	One to Ones with form tutors/study time	One to Ones with form tutors/study time
10:50am	Break	Break	Break	Break	Break
11:00am	Maths	Physics lecture	Maths	Computer Science Lecture	Maths Assessment
12 noon	Physics	Maths	Physics	Maths Supervision	Computer Science
1:00pm	Lunch	Lunch	Lunch	Lunch	Lunch
2:00pm	Computer Science Supervision	AMP	Maths Lecture	AMP	
3:00pm	One to Ones with form tutors/study time	Assembly	One to Ones with form tutors/study time	One to Ones with form tutors/study time	2:00-4.00pm Sports, recreation and enrichment
3:20pm	Break	Break	Break	Break	
3:30pm	Computer Science	PPEP	Computer Science	Maths	

Course Information

Mathematics and Further Mathematics (A-Level)

Awarding Body and Specification: OCR B (MEI)

Each A-Level will be assessed by examinations at the end of the course.

For A-Level Mathematics these will be:

- Component 01: Pure Mathematics and Mechanics – 100 marks;
- Component 02: Pure Mathematics and Statistics – 100 marks;
- Component 03: Pure Mathematics and Comprehension – 75 marks.

For Further Mathematics, 50% of the grade will be assessed in the paper "Core Pure". Students will also be assessed by examination on 3 option modules which add up to the remaining 50% of the grade.

All students will take modules in Statistics and Extra Pure, with the third option being selected from Mechanics or Modelling with Algorithms, depending upon whether they are specialising in Physics or Computer Science.

> Subjects being taught effectively allows us to learn things quickly, this allows a lot of time for extracurricular activities such as maths programmes and enrichment programmes. AMP goes into depth into areas we have learnt to allow us to understand why things work further than the subject curricula expect.

Lucas, Class of 2024,
previously from Wirral Grammar School for Boys

Students will also elect to study either one Major and one Minor unit or three Minor units from the table below.

Major Units (33.3%)	Minor Units (16.7%)
Mechanics	Mechanics
Statistics	Statistics
	Further Pure with Technology
	Numerical Methods
	Modelling with Algorithms
	Extra Pure

Physics (A-Level)

Awarding Body and Specification: AQA

Physics is at the heart of everything. You'll delve inside the nucleus to discover sub-atomic particles, consider the true nature of light and how its properties may be exploited, and develop a deeper understanding of the laws of physics underpinning the workings of the universe. It's a course to develop your imagination, investigative skills and mathematical ability – attributes that are recognised as an asset for a successful career in any field.

A-Level Physics comprises of the following core content:

1. Measurements and their errors
2. Particles and radiation
3. Waves
4. Mechanics and materials
5. Electricity
6. Further mechanics and thermal physics
7. Fields and their consequences
8. Nuclear physics
9. Astrophysics (other optional topics may be available)

At the end of the course, you should expect 3 exams of 2 hours of duration each, with short and long structured questions as well as multiple choice questions. The third paper will test your experimental skills (experimental questions using knowledge acquired in lessons during 12 compulsory practicals that will be performed over the 2 year course).

We will provide a high number of physics related extracurricular activities that will help prepare you for university. In particular, we support students to access placements like the Nuffield Research placements (university research projects during the Summer in Year 13) and take part in a trip to Geneva (CERN) at the end of Year 12.

Computer Science (A-Level)

Awarding Body and Specification: OCR

Computing has been fundamental to many of the exciting scientific and technological advances of the 21st century; from modern conveniences such as Apple Pay, to DNA sequencing, or number-crunching data generated by the Large Hadron Collider.

Computing lessons will focus on developing the ability to think computationally, that is, to see the abstract structure of a situation in a way that can be dealt with by an algorithm, which can then be written as a program and executed by a computer. We will use computational problems from mathematics and physics to motivate key ideas in programming, such as loops, conditionals, data structures and data types. Topics such as set theory and graph theory, which lie within decision mathematics, find important applications when understanding how to write code that is efficient and reliable. The languages we will code in will include Java, Haskell, Python, SQL, HTML, CSS, Javascript, PHP, C, C++ and R.

Our students study both declarative functional programming languages and conventional imperative languages (both procedural and object oriented) and understand the important differences between them. Because our students study mathematics to a higher level, their programming skills will develop more rapidly. Their work in programming will also support their developing understanding of mathematics and problem solving.

Future Professionals

Applying for University

The A-Levels we teach give our students many options when considering what to study at university as shown on the right. Many of our students will go on to mathematics or physics degrees but some will choose to study engineering, economics, computer science, architecture or philosophy. Many of these subjects are needed to fulfil the workforce and academic needs of the local, national and international industries. The school's small classes, close links with the University of Liverpool and unique curriculum means that our students are extremely well supported with their university applications. Our students who apply for a university degree course do so from the privileged position of already studying on the campus of a Russell Group university, supported by STEM experts and careers specialists. In addition to our unique curriculum our students benefit from advice from University Admissions Tutors, one to one careers advice and guidance, expert guidance on constructing impactful personal statements, opportunities to develop relevant and impressive research experience and academic skills as well as high level support with entrance exams, interviews and other challenges.

Put together this means that our students get the opportunity to live up to their full potential and demonstrate that potential to the universities they apply to. Students will also gain university experience during their time at ULMaS developed in collaboration with the University of Liverpool.

Career Opportunities

We study and teach the mathematical sciences because of their power and their beauty but the power and utility of these subjects also confers a financial benefit. The A-Level courses we teach are those that seem to give the highest future earnings potential. STEM (science, technology, engineering and mathematics) experts are very highly sought after by employers because of their well-developed technical and reasoning skills, their proven intelligence, their creativity and their problem solving capabilities. STEM graduates from prestigious universities are amongst the highest earning graduates and have privileged access to a very wide range of intellectually stimulating roles which are of great importance across the spectrum of industry and public service. We rely on STEM graduates to find solutions to the greatest challenges that face us in the world and to provide the innovations that support our scientific and economic development. Find out more here **mathscareers.org.uk/profiles**

Courses our leavers went on to study 2022-2024

MATHEMATICS

- Mathematics
- Mathematics and Physics
- Mathematics with International Study
- Mathematics with Finance

PHYSICS

- Physics
- Physics with Astrophysics
- Theoretical Physics
- Maths and Physics

COMPUTER SCIENCE

- Computer Science
- Computer Science and Philosophy
- Computer Science with a Year in Industry
- Computer Science with Software Development with a Year in Industry
- Computer Science/ Mathematics (Joint)
- Cyber Security
- Computer Science (Artificial Intelligence)
- Game Design

ENGINEERING

- Aeronautical Engineering
- Aerospace Engineering with Pilot Studies
- Aerospace Engineering
- Civil Engineering
- Electrical and Electronic Engineering
- Engineering Mathematics
- General Engineering
- Mechanical Engineering
- Engineering
- Mechatronic Engineering with Industrial Studies
- Electrical and Electronic Engineering with Industrial Experience
- Acoustic and Audio Engineering

ENGINEERING WITH A YEAR IN INDUSTRY

- Mechatronic and Robotic Engineering with an Industrial Placement Year
- Mechanical Engineering with a Year in Industry
- Civil Engineering with a Year in Industry

OTHER

- Degree Apprenticeship – Digital and Technology Solution (CGI)
- Degree Apprenticeship – Chartered Quantity Surveying (Manchester Airport)
- Economics and Mathematics
- Economics, Business and Law
- Natural Sciences (with placement year)
- Natural Sciences
- Mathematics, Operational Research, Statistics and Economics (MORSE)

Careers After University Study

You can stay working in research as part of an academic institution like a university, or have a career elsewhere. The skills developed in studying mathematics, physics and computer science are in huge demand and highly transferable. They lead to a wide variety of fascinating careers.

Here are some examples, there are many more. Your skillset will make you highly employable in so many sectors.

> Here, you'll be pushed to your limits, giving you a chance to grow far more than you would if limited to A-Level content. You'll have all the support and resources you need to develop at an exponential rate.

Zoe, Class of 2022,
previously from The Oldershaw Academy

Entry Requirements

In order to succeed at the Maths School, we expect that students should be predicted to get a grade 8 or 9 in GCSE Maths and at least a grade 7 in GCSE Physics, or 77 Combined Science. If you are predicted a grade 7 in Maths but feel that the Maths School is the place for you, then please get in touch to find out what additional support we can offer by emailing **E: admissions@liverpoolmathsschool.org**

BE PART OF A TALENTED, COMMITED AND ENJOYABLE COMMUNITY.

> Taking a leap to join the school will give you the opportunity to meet others like you who enjoy the same subjects you do.

Tracey, Class of 2023,
previously from The Belvedere Academy

Enrichment Opportunities

In addition to the examined A-Level Curriculum the school delivers:

- The Aspiring Mathematician Programme (AMP)
- The Pastoral and Personal Enrichment Programme which includes opportunities for physical exercise, personal learning and development (PPEP)
- A broad ranging programme of extracurricular clubs and societies, many supported by university staff and students.

> In our PPEP lessons we learn a lot about important topics such as mental health etc, and everyone is respectful of other people's opinions. In our assemblies we listen to a thought of the day and get viewpoints from different religions that really help us see other perspectives and be more open to new ways of thinking.

Lucy, Class of 2023,
previously from Bellerive FCJ Catholic College

The Pastoral and Personal Enrichment Programme (PPEP)

As a school we want to ensure that students continue their love of learning within and beyond their subjects and are safe, healthy, happy and productive. The PPEP is a bespoke programme of tutorial meetings and group activities designed to meet the pastoral and personal enrichment needs of students in a maths school. The programme will be delivered through:

- Weekly meetings of tutorial groups of students with Pastoral Tutors, featuring sessions in a planned structure supporting skill development across the year and delivered by school staff
- Weekly personal development lessons including induction, study skills, Personal, Social and Health Education (PSHE), Relationship and Sex Education (RSE) and British Values. Students will also learn about key issues for young people to be aware of, for example; discrimination, social mobility, leadership, progression information, road safety, finance, politics and economics
- Whole cohort opportunities after school and during the day including extra-curricular sports activities, healthy cooking opportunities, and cultural activities such as art gallery, theatre and concert visits. These will feature a programme of discussion and group-work activities that focus students' attention on the things they need to know as a part of the programme and foster the development of the school's intended ethos and community character
- Fortnightly one to one tutorial meetings between each individual student and their Pastoral Tutor. These will ensure that students are closely monitored and have an opportunity to discuss any concerns they have and request individual support with personal, academic or career issues. In these meetings tutors will monitor students' academic performance, personal development including their progress in reading, communication skills including presentation skills and their time-management and team working skills
- Subject lessons where the PPEP content is relevant in the subject areas, for example, ethics in Computer Science
- Form, lead and attend extracurricular lunch time clubs.

> The PPEP lessons have been helping us to find the best study methods for A-Levels and degrees. The AMP lessons are stretching me and preparing us for STEP/MAT exams that we will need to sit if we would like to go to Oxbridge.

Hannah, Class of 2022,
previously from Archbishop Blanch School

Aspiring Mathematician Programme (AMP)

The AMP is a bespoke programme of activities designed to give students greater depth in their mathematical and scientific understanding, accelerated academic maturity and careers experiences which prepare them for work in Science, Technology, Engineering and Mathematics research and industry. For example, the programme will:

- Develop a range of academic and vocational skills and knowledge beyond those required at A-Level
- Prepare students for the UCAS application process and university interviews
- Push our students' mathematical thinking to the point where challenging assessments like the university entrance exams STEP and MAT start to feel like interesting puzzles rather than impossible challenges
- Develop students' experience of solving real life problems as well as examination questions
- Give students opportunities to be inspired by and work alongside academics, current undergraduates and researchers
- Facilitate students in the completion of at least one individual significant research task, an Industry linked team research project and a team physics experimental research project. All of these have a different form of presentation at the end of the project to develop this skill
- Facilitate students in the completion of an Industry linked team research project
- Enhance students' ability to work in group related tasks and projects
- Broaden students' horizons in terms of their future career opportunities/aspirations by giving them genuinely valuable work experience and careers guidance
- Prepare students to take part in mathematics and science competitions like the UKMT Maths Challenges, the British Maths Olympiad and the British Physics Olympiad.

The AMP is delivered in two timetabled lessons each week and periods set aside for work with university researchers and the delivery of AMP content that does not fit in the mainstream curriculum.

Extracurricular Clubs and Societies

We run activities during lunchtimes. We encourage students to develop further recreational clubs and societies and will support such activities through resources and staffing where needed. For example we have run the following;

- Chess and other strategy/board games club
- Music appreciation, including attending the Wednesday lunchtime concerts at the Tung Auditorium and evening concerts at the Philharmonic
- Art club (art gallery visits, sketching, projects)
- Book club
- Debating & philosophical society
- Performing arts club
- Hacking club
- Anime club.

University of Liverpool students and staff can be invited to help run some of these activities, arranged in line with the school's strict safeguarding arrangements.

Application Process

1 Come Along to an Event

Our events include everything from Open Evenings, Taster Days, STEM Saturdays and Online Evening Classes. These are chances to find out what our school has to offer, meet like minded students and our staff, do some maths, physics and computer science and decide if our school is the right place for you. To get the most up to date information about event dates and to sign up, please visit our website and follow us on social media which we update regularly.

2 Engage with Online Lessons

We offer a range of enrichment to support students. You can see what is available on the link below as we offer specific support for GCSE students aiming for grades 7 and above **liverpoolmathsschool.org/events**

3 Complete Our Application Form

All you have to do for now is complete an application form via our website. **liverpoolmathsschool.org/apply**

If you need any help completing our application form please contact us.

Once we have processed your application, we will send you details about the arrangements for the aptitude test.

4 Take Our Aptitude Test

The aptitude test is designed to help us see how you approach different types of problems and think about maths. You will be very familiar with the maths included in the test and it won't include topics from higher tier GCSE. After you apply you will receive information about how you can prepare in advance for the test. **Please apply early so we can support you with this.**

5 Come and Talk to us About Your Ambitions for the Future

You will then be invited to come in for our interview, basically to do some maths with us, discuss why you want to study at the Maths School and find out whether we are the right sixth form for you. Meetings will take place within a month of you taking the aptitude test if you follow the usual application timeline.

6 Review Your Conditional Offer

Conditional offers will be issued shortly after you have completed the interview and aptitude test. These offers will set out the grades you need to achieve in your GCSEs in order to be accepted at the Maths School. If you are happy to accept your conditional offer, all you (or your parent/carer) need to do is login to your online Admissions + account and click 'accept'.

7 Keep in Touch

Ahead of receiving your GCSE results we will be in touch with regular updates and tips on how best to prepare for life at the Maths School. You are also welcome to contact us anytime with any queries that you may have. We also plan to run pre-enrolment events, including a summer induction day to help develop a community feel.

8 GCSE Results Day

If you get the GCSEs you need to meet your conditional offer, you should contact us to confirm that you want to take up your place at the Maths School. Don't panic if you don't get your predicted grades – please contact us as soon as you can to discuss your options.

> I knew from when I went to the outreach sessions last October that this was where I wanted to study my A-Levels. I received an overwhelming amount of support with my GCSEs and I knew it was the kind of place I wanted to be in.

Sophie, Year 13
previously from Range High School

9 Starting Sixth form

If you accept your place at the Maths School, we will send you all the information you need to help you get ready for the start of term in September.

Where Our Students Come From

Our students come from across the North West and beyond. Transport links are excellent to the city centre. Students find a range of ways to either work, relax, socialise or switch off on their journeys to and from school.

Here are some Q&A's from one of our travelling students...

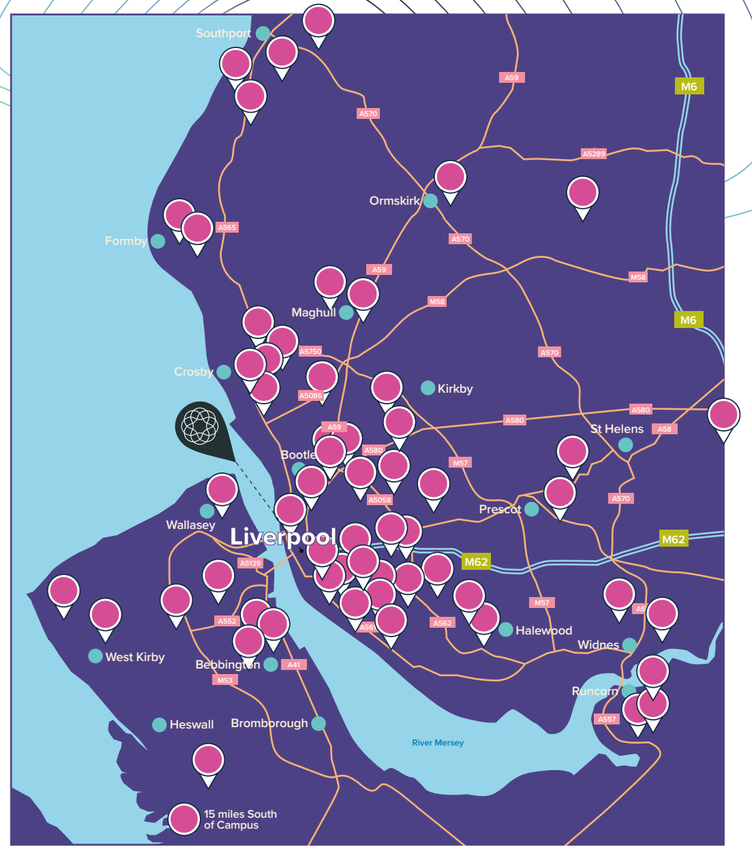
Alan, Class of 2025, *previously from St Thomas More Catholic High School, Crewe*

How do you get here?
Walk, then train, then walk.

How long does it take?
1.5 hours.

What do you do on this journey to make it useful/relaxing etc?
Listen to music or study on the train.

Is it worth the journey to come to our school?
Yes, for a while I was debating whether this school was a better choice than one of the more locally placed ones, but especially after this year, I have no regrets. ULMaS can be anything you want it to be for you.



Location and Travel

Sir Alastair Pilkington Building, Mulberry Street, Liverpool, L69 7SH

The school is on the University of Liverpool campus, within walking distance to the city centre and close to transport links and eateries. This means our students come from across the North West to get this unique and inspiring education.

Bus

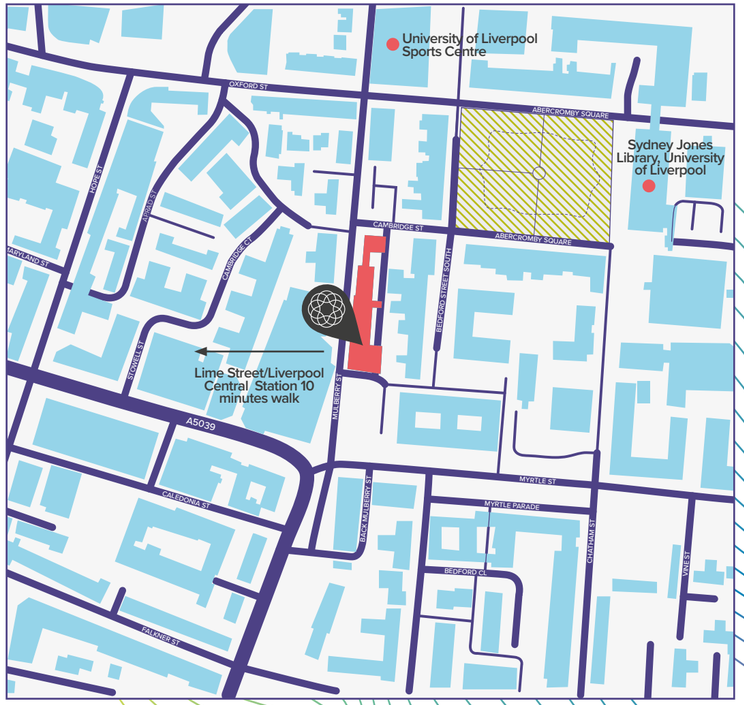
The Maths School can be easily reached by multiple bus routes from right across the Liverpool City Region.

We are immediately adjacent to the 75, 80 and 86 bus routes on Catharine Street, but also the city centre Bus Stations are only a 15 minute walk.

Liverpool Area Network Bus Map

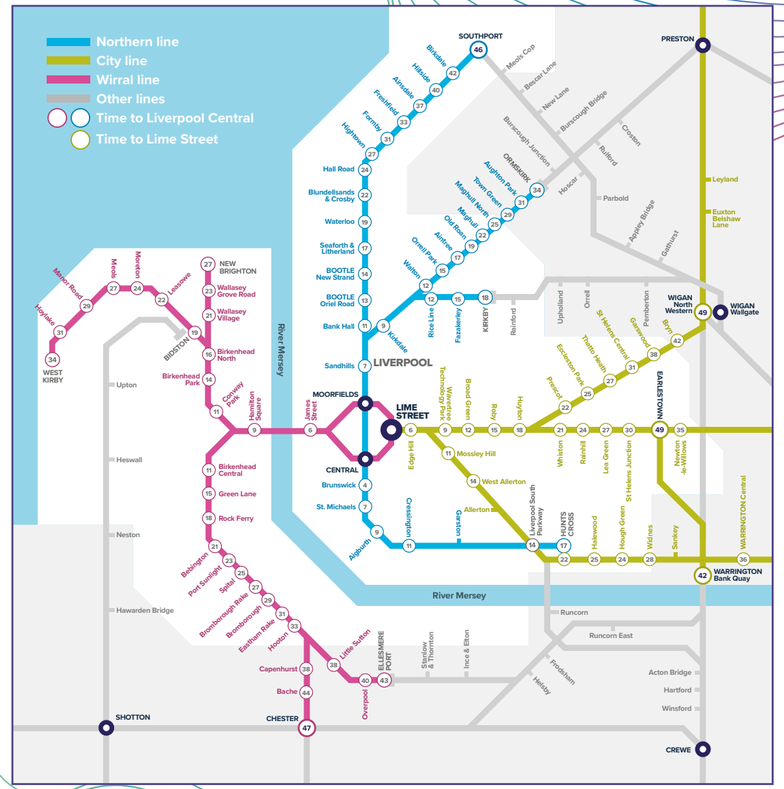
All students are able to find common interests, there is not a single person you will meet that you won't have anything in common with. Being in a school full of people passionate about the same things is really beneficial.

Alex, Class of 2025, *previously from previously Maricourt High School*



Rail

We are a 15 minute walk from Liverpool Lime Street and Liverpool Central which help students from across the North West have easy access to the school.



University of Liverpool
Maths School
Prospectus

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Mulberry Street,
Liverpool,
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T: 0151 640 0397

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Contact Us

If you have any questions about the school, or you're interested in hearing more about upcoming events, please get in touch by emailing
E: admissions@liverpoolmathsschool.org

Join Our Mailing List

liverpoolmathsschool.org