



THE NATIONAL MATHEMATICS AND SCIENCE COLLEGE

Curriculum Policy

Background:

The National Mathematics and Science College is an academically selective sixth form college for talented young people who aim to become the future leaders in research, design and practice in STEM fields. Students have the opportunity to gain excellent A Level results and a pathway to the best universities in the world. The National Mathematics and Science College is different, both in what it does and how it does it. It is the first UK College to be dedicated exclusively to STEM subjects.

Because it is a specialist College, it can bring huge resources and strength to allow it to achieve its aim. Nowhere is this better seen than in the outstanding staff attracted to teach here, teachers whose qualifications and passion for their subject create the hallmark for success. We specialise in teaching STEM subjects: Mathematics, Physics, Chemistry, Biology, Computer Science and Economics. We prepare students to achieve the highest grades giving them access to the world's leading universities. Research shows that teaching academically gifted students together raises the bar of academic success.

The students who comes to us will not only have the academic qualifications to reach for the stars, but the command of colloquial and academic English and the cultural confidence to blend in superbly to any of the world's leading universities. Their understanding of core knowledge allied to their creativity and independence, their mastery of English, their broad co-curricular experience and the specialist, tailor-made and customised programme they follow makes our students winners, and future world leaders.

Purpose of this policy:

This policy aims to provide a framework for development and a statement of our basic principles for developing the teaching and learning of our students. This policy does not aspire to present a detailed plan outlining the courses to be provided whom for, by whom or when.

The ethos of the college:

The ethos of the college is to empower students to develop as autonomous, educated persons and it is intended that the Curriculum Policy will promote this ethos.

- NatMatSci aims to achieve the highest level of A level success in Science Education. As a pathway provider to World-Class universities – Cambridge, Oxford, Ivy League, Russell Group - NatMatSci equips and nurtures its young students for a smooth and successful transition to university at the very highest level.
- NatMatSci has established a network of links with World-Class universities in the UK and North America, links which include colleagues from universities teaching our students and also strong relationships with admissions tutors and academic departments.
- NatMatSci provides a personalised programme of English language development. A programme designed by specialists and taught by specialists to enable all our students to achieve and indeed exceed the level of English proficiency essential for success at degree level.
- NatMatSci believes that strong pastoral care is at the heart of a successful educational experience. We regard the care and welfare of each student, including the development of the whole young person, as our fundamental responsibility. Our pastoral system is a fully integrated and vital part of College life. We are proud of the partnerships we have forged in offering this very high-end co-curricular programme.
- NatMatSci offers a full immersion in British culture and language to our international students.

Values

We subscribe to the following values:

- All students should have the opportunity to develop their literacy & numeracy skills.
- That students' learning develops at differing speeds and that curriculum design must recognise this.
- That the needs of gifted and talented students must be recognised and suitable programmes of study developed.
- That all students need the opportunity to develop the skills and knowledge essential to become active social, economic and valued citizens.
- Part of the function of schooling is to induct students into a common culture.
- A clear moral and ethical framework based on personal responsibility, citizenship, equality and tolerance will inform all our practices.
- High quality teaching is an important aspect of student motivation, the basis of high-quality learning.

Essential Skills

NatMatSci's three spheres of excellence (academic, pastoral and enrichment) respond directly to these demands by preparing students to A and A* A level standard, delivering an EAL (IELTS, IGCSE, FCE etc) programme that meets and often exceeds university requirements; and teaching the skills of research and independent inquiry through the Extended Project Qualification, highly prized by the world's leading universities. We promote new habits of learning: co-operation, debate, new ideas and concepts that challenge and question existing orthodoxies. Our educational technology promotes a digital learning ecosystem both inside and outside the classroom. Areas covered within our curriculum and wider activities are outlined below.

Linguistic: This area is concerned with developing students' communication skills and increasing their command of language through listening, speaking, reading and writing.

Mathematical: This area helps students to make calculations, to understand and appreciate relationships and patterns in number and space and to develop their capacity to think logically and express themselves clearly. Their knowledge and understanding of mathematics should be developed in a variety of ways, including practical activity, exploration and discussion.

Scientific: This area is concerned with increasing students' knowledge and understanding of nature, materials and forces and with developing the skills associated with science as a process of enquiry: for example, observing, forming hypotheses, conducting experiments and recording their findings.

Technological: Technological skills include the use of information and communication technology (ICT); developing, planning and communicating ideas; working with tools, equipment, materials and components to produce good quality products; and evaluating processes and products.

Human and Social: This area is concerned with people and their environment, and how human action, now and in the past, has influenced events and conditions

Physical: This area aims to develop the students' physical control and co-ordination as well as their tactical skills and imaginative responses and to help them to evaluate and improve their performance. Students should also acquire knowledge and understanding of the basic principles of fitness and health. Students have access to football, netball, tennis, cricket, rugby, badminton, volleyball, swimming, gym, and exercise classes at the Xcel Centre adjacent to the College.

Aesthetic and Creative: This area is concerned with the processes of making, composing and inventing. There are aesthetic and creative aspects of all subjects, but some make a particularly strong contribution, including art, music, dance, drama and the study of literature, because they call for personal, imaginative, and often practical, responses. Creativity is also inherent in the sciences. Students are encouraged to express themselves through visual arts, music, writing and theatre. A Steinway grand piano is located in the main reception area. Instrumental teachers (part of Coventry Music provision) visit the College to deliver individual instrumental lessons each week. In addition, the College has its own choir. The choir performs twice a year for teachers, parents and friends of NatMatSci. As part of the House system, Art competitions are organised each year.

Society and Citizenship: The college ensures students learn about how to become a global citizen, including respect for the British Values in the UK including: the rule of law, democracy, tolerance and respect and that some people may have extreme views with regard to life philosophies and religious belief. We welcome students regardless of race, gender, religious beliefs and teach students the value of diversity within society.

Excellence in Science:

Our teachers and students are truly passionate about science and mathematics. At the National Mathematics and Science College we focus on and specialise in teaching Mathematics, Physics, Chemistry, Biology and Computer

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Science. Our aim is that all our students achieve the highest grades and then progress to degrees in these subjects, or for example degrees in Medicine and Engineering. Our objective is to prepare them for the intellectual challenges of studying alongside the world's future business and political leaders and future university researchers. We believe we can do this because the College:

- Recruits only the best science teachers with proven track records at A level
- Has small class sizes
- Allocates a Tutor to every student on an individual basis
- Delivers generous teaching hours
- Exercises a close tracking, monitoring and intervention and support system
- Reports one or twice a term to parents on their child's progress
- Provides additional academic input and support by university academics and industry professionals.
- Supports the language needs of each student through its integrated EAL programme, improving A level performance
- Encourages independent learning through the EPQ, a national qualification highly regarded by leading universities as well as through the wide range of Olympiad and international competitions
- Has invested in new state of the art laboratories and classrooms fitted with the latest IT learning support hardware and software.

Expectations of teachers and students:

The most important resources our students have: their teachers. NatMatSci provides teachers of distinction with detailed knowledge of the world's leading universities and their entrance requirements; small class sizes; one-to-one, time provision of academic guidance and pastoral care; modern first-class facilities; access to subject specialist journals and study space. The vast majority of teaching staff have 1st class or 2.1 degrees from Oxbridge and top Russell Group universities.

All our teachers have proven track records. As experts in their subject we expect them to:

- be passionate about teaching their subject to young people;
- take a genuine interest in each student, providing detailed and clear feedback to each student about how they can improve their work and achieve grades A and A*;
and
- be the most important resources our students have.

All our students have been carefully selected for their academic potential. We expect them to:

1. Recognise the investment their parents are making and to respond to that with hard work and dedication to their course of study.
2. Complete their assignments and dedicate the specified hours of personal study time to each of their chosen A Level. This will allow them to take full advantage of the high-quality teaching they receive in the classroom and in the laboratory.
3. Engage positively in the EPQ and EAL programmes in preparation for their studies at university.
Participate fully in the Enrichment Programme to develop themselves as well rounded young people.

The Tutor:

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Each student is allocated to a Tutor group of with around 8-10 students. Registration takes place each morning with the Tutor. The Tutor is responsible for contributing to the Pastoral programme and each week, there is a tutorial focus covering elements of SMSC and 'fundamental British Values'. Tutors take responsibility for tracking pastoral and academic progress of all students in their group and report on student concerns (and successes) at student review meetings.

Extended Project Qualification:

The EPQ will set the student apart from other candidates and allow the student to independently explore any topic they desire. All that matters is that they are passionate about it. The Extended Project Qualification (EPQ) is of particular interest to world class higher education institutions as it has been designed to provide students with the skills needed to succeed at university. It is a qualification highly prized by world leading universities. NatMatSci students are encouraged to take EPQ, usually in their second year. It provides students with the opportunity to focus on a specific theme or area of personal interest and conduct their own enquiry. Students will be supported by a project supervisor and will develop the skills needed for independent study and work that are essential for university success. Students may choose one of the following areas of study:

1. An existing area of study linked to an A Level subject, or
2. An area of personal interest or an activity outside the main programme of study, possibly linked to careers, community work or enterprise.

This national qualification carries the same weight as an AS level and, more importantly, it is highly regarded by university admissions tutors. The extended Project Qualification - EPQ is provided by the AQA examinations board. The EPQ allows each student to embark on a largely self-directed and self-motivated project. Students must choose a topic, plan, research and develop their ideas and decide on their finished product. Each student who undertakes the EPQ research project has an EPQ mentor assigned to them who supports them through the project.

The Project encourages creativity and curiosity. A project topic may be directly related to a student's main study programme, but should look beyond the specification. A finished product may take the form of a research based written report a production (e.g. charity event, fashion show or sports event etc.) or an artefact (e.g. piece of art, a computer game or realised design). Students must also record their project process in their Production Log. The process of recording and completing a project is as important as the finished project. Both the Production Log and Product will be assessed. During the EPQ students will learn to:

Manage - Identify, design, plan, and complete a project (or task within a group project), applying organisational skills to meet their stated objectives

Use resources/research - obtain and select information from a range of sources, analyse data, apply it relevantly, and demonstrate understanding of any appropriate connections and complexities of their topic.

Develop and realise - use a range of skills, including using new technologies, to solve problems, to take decisions critically, creatively and flexibly, and to achieve their aims.

Review - evaluate the outcome, including their learning and performance.

Digital Learning:

Teaching and learning at the College will utilise the most current education technology to promote a truly effective digital learning ecosystem both inside and outside the classroom. Teaching will use the latest student interactive, feedback and collaborative technologies to maximise the classroom learning experience. Outside the classroom, students will be supported through a cloud-based learning system. Students can:

- access their lesson timetable and College announcements,
- make and revisit academic notes,
- submit homework,
- communicate with teachers

Our teachers are constantly exploring new ways of using technology to enhance learning. There is a strong interest in scientific computing within the faculty and students can expect to see how computers are used in industry and academia. Research shows that when students are engaged, motivated and interacting with their peers as well as their teachers, their learning is maximised and their academic attainment is significantly improved. By transforming a vision of a digital learning ecosystem into reality, The National Mathematics and Science College will enable students to reach higher and achieve more.

The college has WiFi in all rooms and students are able to access this from their own mobile devices. Students are expected to have access to their own computing device, which should be an inkable device (such as an iPad).

The Quiet Study room will contain a number of desk top devices for use as required. Access to the internet will be essential if our students are to develop as independent learners as outlined above. Teachers will require the majority of work for assessment to be word processed.

During any period when remote rather than person-to-person teaching and learning is in place, the College will do its utmost to ensure that students achieve most effectively.

Personal Development:

In our College we plan and provide effectively in order to develop students' spiritual, moral, social and cultural awareness. Students of all faiths and belief systems are encouraged to strive for academic excellence and a spirit of open and shared enquiry, whilst developing their individual potential and qualities of character so they can make a positive contribution to the world. We also place an extremely important emphasis upon good mental health and well-being.

SMSC and therefore personal development is integral to all aspects of our curriculum. Students are led towards distinguishing right from wrong, to respect the law and towards acting consistently with their beliefs and with a view to the consequences of their own and others' actions. The National Mathematics and Science College builds resilience to radicalisation of its students by promoting fundamental British values. We provide a safe space in which our students can discuss and understand the risks associated with terrorism and develop the knowledge and skills to be able to challenge extremist arguments or views.

Any discriminatory or extremist opinions or behaviours are challenged as a matter of routine. For more details on how our College promotes SMSC and prevent extremism, please see our: *'SMSC' and 'Preventing Extremism and Radicalisation'* Policies. We actively promote fundamental British Values of democracy, the rule of law, individual liberty and mutual respect and tolerance of those with different faiths and beliefs through both the curriculum and the Tutorial system (Tutorial termly plans with a specific Tutorial Weekly Focus on diverse areas of SMSC.) In addition, our college:

- leads students towards becoming confident and positive contributors to their community and effective users of its services and facilities according to their maturity;
- enables students to gain insights into the origins and practices of their own cultures and into those of the wider community;
- takes steps to ensure that the students appreciate racial and cultural diversity and avoid and resist racism;
- ensures that students are able to understand and respond to risk, for example risks associated with extremism, new technology, substance misuse, knives and gangs, personal relationships and personal safety;
- enables students to develop their self-knowledge, self-esteem and self-confidence;
- encourages students to accept responsibility for their behaviour, show initiative and understand how they can contribute to community life;
- provides students with a broad general knowledge of public institutions and services in England;
- assists students to acquire an appreciation of and respect for their own and other cultures in a way that promotes tolerance and harmony between different cultural traditions;
- encourages students to respect the fundamental British values of democracy, the rule of law, individual liberty and mutual respect and tolerance of those with different faiths and beliefs; and
- precludes the promotion of partisan political views in the teaching of any subject in the school.
- Therefore, the understanding and knowledge expected of the students in the National Mathematics and Science College as an outcome of our positive approach to SMSC includes:
 - an understanding of how citizens can influence decision-making through the democratic process;
 - an appreciation that living under the rule of law protects individual citizens and is essential for their well-being and safety;
 - an understanding that there is a separation of power between the executive and the judiciary, and that while some public bodies such as the police and the army can be held to account through Parliament, others such as the courts maintain independence;
 - an understanding that the freedom to hold other faiths and beliefs is protected in law;
 - an acceptance that people having different faiths or beliefs to oneself (or having none) should be accepted and tolerated, and should not be the cause of prejudicial or discriminatory behaviour; and
 - an understanding of the importance of identifying and combatting discrimination.

Personal Social, Health and Economic Education (PSHEE) and Citizenship:

Each student's PSHEE informs all aspects of the College day. We aim for our students to understand and appreciate the range of different cultures and faiths in modern democratic Britain that is appropriate to their age and needs. We use our schemes of work and other plans which enable students to develop an understanding of public services and

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institutions and to take their place in the modern democratic society. We explore ways to promote an awareness of the emotions of others and how our behaviour affects others. Our structured activity sessions are specifically tailored to the needs of the various groups, from working with a child who is developing coping strategies to facilitating turn taking and initiation.

We provide positive experiences through planned and coherent opportunities in the curriculum, extra-curricular activities and through interactions with teachers and other adults for our students. Our range of artistic, sporting and other cultural opportunities is available to students through the curricular and extra-curricular programme, and their participation in these opportunities. We also provide a range of quality opportunities for students to take on responsibility in College and make a positive contribution to the College, local and wider communities.

Students are supported in their preparation for formal examinations at various stages of their education. They receive specific support that includes guidance on revision technique, making notes, examination technique and management of stress. Students are encouraged to learn about their own academic strengths and weaknesses and effective ways of approaching learning, so that they themselves become able to identify and deploy suitable methods across different tasks.

Careers Education and Guidance:

Objective and independent careers advice for all students is essential if students are to successfully navigate their way through the increasing range of opportunities available to them after completion of their subjects. From January 2015, specific requirements are included in the regulations for the first time. These require impartiality, provision which enables students to make informed choices about a range of careers options, and advice which generally helps to encourage students to fulfil their potential. Students receive a guided careers programme as part of their PSHEE lessons. In addition, our teachers have an integral part to play in advising on the relationship between subject selection and careers, looking ahead to universities.

The guidance encourages students to fulfil their potential. To this end, good careers education enables students to 'know themselves' and how their strengths, weaknesses and interests relate to the world of work; learn about different careers and opportunities; obtain individual guidance; have some work experience; and gain information about training, education and occupations beyond NatMatSci. The National Mathematics and Science College consciously works to prevent all forms of stereotyping in the advice and guidance provided to ensure that girls and boys from all backgrounds and diversity groups consider the widest possible range of careers, including those which are often portrayed as primarily for one or other of the sexes.

Higher Education: World Class Universities:

Students at the National Mathematics and Science College are aiming for the highest A level grades which will allow them to successfully apply to world class universities. Our aspirations at the National Mathematics and Science College are to encourage our students to apply to these universities and the College will help students to ensure that they are successful in their applications. Students wishing to study Medicine, Dentistry or Veterinary Science also have a designated mentor to support them in the application process. MedSoc is specifically in place to support these students who are encouraged to maintain a portfolio of research and experiences to help them prepare for university interviews. BMAT/UCAT training and practice forms part of the programme.

Work Experience:

The National Mathematics will help to arrange and support students in securing work-based placements for experience in a desired profession. Students are expected to attend their placement as allocated, conduct themselves appropriately, comply with work experience procedures and ensure that every effort is made to make it a successful placement. This allows students to make informed choices about their future and make vital contacts in their desired field.

Enrichment Programme:

Creativity is inherent in the sciences, and the greatest scientific minds in history have found inspiration and pleasure in the arts. We allow students the freedom to express themselves through visual arts, music, writing, theatre, and much more. The National Mathematics and Science College provides a fully rounded education for its students. The College has developed close relationships with local art organisations such as the Belgrade Theatre. The College will also arrange for students to visit for example London, Oxford, Stratford-upon-Avon, and Cambridge amongst other local cities. The aim of the programme is for students to both appreciate artistic experience but also to become involved and participate in artistic production.

Theatre:

Theatre workshops are run by the Belgrade Theatre Company in Coventry city centre. The Belgrade Theatre Company has pioneered the educational workshop programme for the last 50 years, delivering to young adults' life-long theatre skills that are transferrable to real-life contexts, and helping to build confident and articulate young citizens. Through a bespoke programme, designed exclusively for the college, our students master important skills in self-presentation and learn confidence-building techniques needed for all aspects of adult life (for example entering a room full of strangers, handling interviews, dealing with a group of people with different expectations).

Sport and Fitness:

Engaging in sport and fitness is a great way to stay healthy and take a break from studying. All students have access to first class sports facilities 7 days a week. Students have access to Xcel, a state-of-the-art sports centre located just a few metres from the teaching block, which offers vast array of sporting facilities outside and inside including:

- 2 5-a-side all weather pitches, 4 netball courts, 6 tennis courts, cricket pitch, 2 grass football pitches, rugby pitch,
- 4 court indoor sports hall for badminton, volleyball and netball, 25m, 6 lane swimming pool, lifestyles fitness suite and
- group exercise class studio.

Team and individual physical activities are available to students one evening each week and over the weekend. The college weekend programme, provided on calendared Saturday afternoons and on Sundays will offer opportunities for further physical activities. Weekends will also be utilised for the outdoor pursuit activities.

Societies Programme:

The College runs 2 Society 'slots' per week where students can take part in a variety of Enrichment activities: ClimbSoc (at University of Warwick Climbing Wall), MUN (Model United Nations), CryptoSoc, PythonSoc are just some of the societies on offer.

Special Educational Needs and Disabilities:

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Consideration of the specific Special Educational Needs of individual students is highly important even in a college focused on highly able academic young people. SEN can be physical or emotional as well as educational. We have therefore developed a SEN policy in line with current legislation and provided our colleagues professional development and training in the identification and alleviation of any students' special educational needs.

Our students at the National Mathematics and Science College are highly academically able young people. They have been assessed as capable of achieving grade A or A* at A level. However, we must recognise that being highly academically able does not exclude our young people from have other needs which could impact upon their learning.

All colleagues must be alert to identify and respond to conditions such as:

- Attention Deficit Hyperactivity Disorder (ADHD),
- Obsessive Compulsive Disorder (OCD),
- Autism,
- Dyslexia,
- Asperger's Disorder and
- Eating Disorders.

NatMatSci has a nominated Special Educational Needs Coordinator (SENCO), who will advise and liaise with a teaching colleague in the college who will be responsible for identified special educational needs and who will coordinate the colleges 'Special Needs Register'.

Students with an Education Health and Care (EHC) Plan

Should a student be in receipt of an EHC plan, we will endeavour to provide them an education that meets their needs as specified by their statement. However, it may not be possible that some students in possession of an EHC plan cannot be accommodated at the National Mathematics and Science College due to the College being unable to effectively meet their need, or as they require greater adjustments than is reasonable.

Where possible, this will form part of discussions during the admissions process. For further details regarding EHC Plans, please refer to our policy for students with special educational needs and disabilities.

Sex and Relationships Education (SRE):

The College provides Sex and Relationships Education (SRE) in the PSHEE curriculum in which students are encouraged and guided by moral principles and taught to recognise the value of family life. The syllabus for SRE is available to parents.

It forms a key part of the Personal, Social and Health and Economic Education (PSHEE) course and has regard for the latest government guidance. In accordance with the law the biological aspects of human reproduction remain compulsory for all students, but parents may withdraw their student from any other part of the sex education provided without giving reasons.

Political education:

The promotion of partisan political views in the teaching of any subject in the College is forbidden by law. Political issues are introduced in a number of courses and are presented in a balanced manner.

English as an additional language (EAL) – International English Language Testing System (IELTS) Programme:

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The importance of English language proficiency is highlighted by the IELTS scores required by top British Universities. All overseas students who are not native English speakers are required to enrol on the College's EAL programme unless they have already gained suitable qualifications for university entrance.

The College programme for teaching English as an Additional Language is focussed on the IELTS Academic Scheme. IELTS is the International English Language Testing Scheme. The scheme assesses student's achievement in the productive skills of writing and speaking and the receptive skills of listening and reading.

There is no pass or fail in IELTS as student's achievement in each of the 4 components is judged against a 9 level scale of competency, an overall level is also given. Entry to the college A level programme will require a minimum overall level 5.5.

The Pre-A Level Programme is designed for students who do not currently meet the level 5.5 grade but who can achieve level 4.5. The aim is to help students to at least level 7 by the end of the A level programme. The superior IELTS scores produced by NatMatSci's IELTS programme ensures that students succeed at every stage of their academic career: A level examinations, EPQ, University application, University degree completion

The NMSC IELTS programme is exclusively designed in-house and is delivered by British Council accredited experienced teachers.

Beyond IELTS:

A founding principle at NatMatSci is that education is for life: English is no exception. As part of the school day, our students are fully immersed in the English language. At weekends, NatMatSci offers a variety of fun and exciting activities to encourage use of the English language in a social setting which helps build confidence and command of the language well beyond the IELTS syllabus.

Our English development programme has been designed to guarantee a real opportunity of success in the IELTS Academic exams. It is delivered as a two-part programme:

NatMatSci's Integral IELTS programme - for students with IELTS overall score of 5.5 and above:

The purpose of the integral course is to ensure that you have the language skills and confidence required to meet university IELTS requirements when you submit your university application. This course is delivered as an integral part of the college timetable with a minimum 5 teaching sessions a week, including:

- Pronunciation, vocabulary tests, writing practice, reading practice, grammar exercises,
- listening comprehension, written comprehension exercises, using and explaining scientific data and
- assignments to be completed independently.

Topics cover key IELTS examination areas including description and analysis of graphs and charts, scientific description and evaluation as well as current affairs, letter writing and cultural awareness.

Exam practice:

This is a key part of our preparation programme with timed tests under exam conditions being performed periodically through the year. Interview practice is provided and guidance is given to improve performance. These interviews are conducted both in house and using external practising professional experts from different disciplines (e.g. professors of Engineering and Maths, Practising NHS consultants etc)

Small class sizes:

Class sizes of around 8-10 students ensure the highest quality of teaching. We can offer one to one additional support for those students who need the extra tuition (supplemental fees apply).

Resources

- All of our EAL teachers are native speakers and have professional English language teaching qualifications recognised by the British Council.
- All course books including grammar and exercise books are included in the fee.
- A library furnished with English newspapers and magazines is at their disposal
- Classrooms are supplied with digital and audio-visual equipment for class and individual use

Ongoing assessment:

All our students are assessed throughout the year through:

- Essays, timed in class tests, Mock exams
- Presentations and Individual Research project

By working closely with their teacher, each student receives individual regular feedback and support. In this way, the progress of each student is carefully monitored and actively managed, ensure the student is both happy and motivated.

IELTS University requirements:

All non-native English-speaking Oxbridge and Russell Group applicants must achieve a required minimum IELTS score to show that their language skills are strong enough to undertake and complete a degree course that is taught and examined in English. The degree courses are challenging and intensive and this is reflected in the minimum requirements set out by our universities. The minimum standard varies from university to university and in some cases from degree to degree:

- Cambridge University: IELTS overall score of 7.5, usually with 7.0 or above in each element (A reasonable standard in spoken English is also required at the time of interview. For example, an overall IELTS score of 6.0 for sciences or 6.5 for arts and social sciences would be regarded as a reasonable score at the point of application).
- Oxford University: IELTS: overall score of 7.0 (with at least 7.0 in each of the four components)
- Warwick University: Overall IELTS score of 6.5/7
- University of Manchester: 6, with not less than 5.5 in any component and not less than 6 in Writing

Whole Group Learning:

Our students are able and enthusiastic. They will soak-up information and they will learn that information. The most important mechanism to be employed by the class teacher will be class teaching led by the class teacher from the front using the white board.

Such teaching is a 'Design Classic'. It has been developed over millennia (perhaps not using a white board) and is highly efficient, but it only goes so far. By itself it can produce knowledgeable students, but students who lack independence and the ability to "think for oneself".

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The key element in whole group teaching is the ability of the teacher to develop a student's understanding through questioning. Not just direct, closed questioning with one answer but questions which are followed up with deeper, more probing questions designed to stretch the thinking pattern of the learner.

Practical Group Learning:

At NatMatSci we provide practical teaching across all our STEM curriculum. Moreover, with the proximity to local institutions of H.E. we can engage our students in "real world research" topics.

Research Based Learning:

The lesson is the main conduit of information giving/exploring/discovery but "homework" can be more adventurous and focussed on research. Tasks can be set using books other than textbooks, academic texts and articles (on the internet or in the library). Written work can be more profitably completed away from the classroom. So, as well as a "learning the facts", homework work set outside the classroom can focus on work in which the student has to "dig deeper" explore in depth and research on a regular basis.

Independent Learning/Flipped Learning:

Our priority is to encourage our students to gain greater independence in their learning, to build on their high level of ability and instil a freedom to explore knowledge unaided by their teacher. Part of this process can be the technique of "Flipped Learning" whereby students are not given homework based on the content of the lesson they have just experienced but are given work to research and prepare for a future lesson. We also expect them to prepare or make a presentation in a future lesson based on their independent "home" work.

Peer Observation – Continuing Professional Development:

The focus of the colleagues CPD will be to develop outstanding teaching for all our colleagues. A major part of this drive will be a programme of peer observation in which pairs or groups of teachers work together to observe each other teach and follow up with a pedagogical dialogue.

Learning outside the classroom and educational visits:

The curriculum offers a series of educational visits that deepen the students' understanding of the world around them. Our experience is that students forge strong bonds of friendship during the trips, and their respect for one another grows as a result of sharing the experiences. These visits link with our curriculum. When we plan to take students out of College, we follow a strict set of procedures to ensure safety: the venue is visited, risk assessments are completed, and various permissions are obtained. Some examples of visits are: Bletchley Park, Inspirations Maths Lectures, science university workshops etc

Effective Teaching:

When we are teaching, we focus on motivating all students, and building on their skills, knowledge and understanding of the curriculum, so that they reach the highest level of personal achievement. We use our schemes of work to guide our teaching. We value each child as a unique individual, and teachers are familiar with the relevant equal opportunities legislation, covering race, gender and disability. We will strive to meet the needs of all our students, and to ensure that we meet all statutory requirements related to matters of inclusion.

At the National Mathematics and Science College the most important role of teaching is to promote learning in order to raise students' achievements. For us, teaching includes lesson planning, the implementation of plans, as well as marking, assessment and feedback. It also includes support and intervention strategies. In assessing the quality of the teaching in our College we take account of the evidence of students' learning, achievements and progress over time. When evaluating the quality of teaching in our college, we consider how successful the teaching is in promoting the learning, progress and personal development for every student by:

- extending the previous knowledge, skills and understanding of all students in a range of lessons and activities over time;
- enabling students to develop skills in reading, writing, communication and mathematics;
- enthusing, engaging and motivating students to learn;
- using assessment and feedback to support learning and to help students know how to improve their work;
- differentiating teaching, by setting suitably challenging activities and providing support for students of different abilities, including the most-able and disabled students and those who have special educational needs, so that they can all learn well and make progress;
- enabling students to apply intellectual, physical or creative efforts and develop the skills to learn for themselves and setting high expectations;
- setting appropriate homework;
- using well-judged and effective teaching methods, deploying appropriate resources, managing class time and drawing on good subject knowledge and expertise to encourage students to make good progress and
- managing instances of poor or disruptive behaviour.

In our lessons, we ensure that the learning objectives are shared with and understood by the student, and, to that end, are expressed in appropriate, student-friendly language. We also ensure that student understand the 'success criteria' for the lesson – i.e. what they need to ensure they do or pay attention to in order to succeed and achieve. Often, these success criteria will be decided jointly with the student, to ensure that they have full understanding of them. Learning objectives and success criteria will normally be displayed in lessons. The purpose of the teaching:

- enables students to acquire new knowledge and make progress according to their ability so that they increase their understanding and develop their skills in the subjects taught;
- fosters in students the application of intellectual, physical or creative effort, interest in their work, and the ability to think and learn for themselves;
- involves well planned lessons and effective teaching methods, activities and management of class time;
- shows good understanding of the aptitudes, needs and prior attainments of the students, and ensures that these are taken into account in the planning of lessons;
- demonstrates appropriate knowledge and understanding of the subject-matter being taught;
- utilises effectively classroom resources of an adequate quality, quantity and range;
- demonstrates that a framework is in place to assess students' work regularly and thoroughly and use information from that assessment to plan teaching so that students can progress and
- utilises effective strategies for managing behaviour and encouraging students to act responsibly.

Effective learning:

We acknowledge people learn in many different ways, and respond best to different types of input and resources; we must therefore deliver teaching in different ways to address the needs of all our learners. We ensure the best possible environment for learning by developing a positive atmosphere in which students feel safe and feel they belong, they can access appropriate resources, but in which they enjoy learning knowing they will succeed (because they know the challenge will have been set at the right level). All teaching is structured to maximise learning opportunities, and lessons are planned in accordance with the following principles:

- the teaching should build on previous learning;
- it should give students the 'big picture' of the lesson;
- the teacher should explain the learning objectives, and share the learning journey;
- the lesson should use a range of appropriate resources so that all students can access the learning;
- it should allow opportunities for the students to build up their own understanding through various activities;
- it should allow opportunities for the students to review what has been learnt;
- it should have built-in opportunities for feedback to the students, celebrating success and reviewing learning strategies;
- the teaching should indicate what the next step in the learning will be.

We offer opportunities for students to learn in different ways. These include: Investigation and problem solving; research and finding out; group work; pair work; independent work; whole-class work; asking and answering questions; use of ICT; use of the VLE; fieldwork and visits to places of educational interest; watching television and responding to musical or tape-recorded material; debates, role-plays and oral presentations.

We encourage students to take responsibility for their own learning, to be involved as far as possible in reviewing the way they learn, and to reflect on how they learn – what helps them learn and what makes it difficult for them to learn. Assessment and marking are an integral part of the teaching and learning process, as outlined in the Assessment and Marking Policy. This includes both formative and summative assessments. We are concerned with learning outcomes and continuous assessment is integral to this process, which comprises of:

- well-understood learning objectives which are shared with the student;
- sharing or creating learning outcomes with the students to make them partners in their learning;
- plenaries being used as assessment opportunities;
- effective teacher questioning; observations of learning; analysing and interpreting evidence of learning to inform future planning;
- sensitive and positive feedback to students; individual target setting: SMART (specific, measurable, assessable, realistic and given in time);
- students understanding how well they are doing against the Success Criteria and how they can improve.

Effective Planning:

When teaching we focus on motivating the students and building on their skills, knowledge and understanding of the curriculum, so that they reach the highest level of personal achievement. We base our planning on our knowledge of the students' level of attainment and any SEND plan. Teachers make on-going assessments of each student's

progress, and they use this information when planning their 'differentiated' lessons. It enables them to consider the abilities of all their students. Our prime focus is to develop further the knowledge and skills of the students. We strive to ensure that all tasks set are appropriate to each student's level of ability.

The procedure allows for whole College consistency and coherence, in order to support students in understanding how to improve their work. The procedures for marking and feedback are shared with students in their lessons. All procedures should be followed by teachers in accordance with the Assessment policy and their department guidelines for marking, assessment and feedback.

Teachers differentiate teaching and learning as appropriate for students with additional learning needs. We value each child as a unique individual, and teachers are familiar with the relevant equal opportunities legislation covering race, gender and disability. We strive to meet the needs of all our students, and to ensure that we meet all statutory requirements related to matters of inclusion. We have high expectations of our students, and we believe that their work here at NatMatSci is of the highest possible standard. Planning appraisals are carried out by academic members of the Leadership Team who check that planning is up to date and evaluated.

We set academic targets for the students in each academic year and we share these targets with students. We review the progress of each student formatively on an ongoing basis and summatively at the end of term. Our lessons have clear learning objectives and our lesson plans contain information about the tasks to be set, the resources needed, and the success criteria the student should work towards. Student frequently complete self-assessments as part of their plenary and an open dialogue is fostered between class teacher and student with regards to success criteria not met.

Teachers reflect weekly on their overall planning and teaching in their timetabled departmental meetings, which forms the basis for strong planning and continuous monitoring of practice.

Schemes of work and programmes of study are developed in subject areas/departments and reviewed by Senior Leadership with Heads of Department.

The Library:

In addition to book resources, there is a rich variety of subject specialist journals and internet access to specialist academic resources. Our aim is to develop a greater learning independence in our students and subject teachers should set work which requires students to research; question; think; evaluate; compare as opposed to merely know that.

Principal

Date Reviewed: January 2021

Date of Next Review: September 2022



Our Approach to assessment

The National Mathematics and Science College adopts a common approach to assessment, recording and reporting ensuring clarity to students, parents and teachers. Assessment is integral to high quality teaching and learning. It is directly linked to the curriculum and helps us to ensure that our teaching is appropriate and that students are making at least expected progress.

Marking and assessment has two purposes:

- 1) students act on feedback to make progress over time
- 2) it informs future planning and teaching.

We use the outcomes of assessment to check and support our teaching standards and help us to improve.

Our methods of assessment

We assess students against assessment criteria, which are short, discrete, qualitative and concrete descriptions of what a student is expected to know and be able to do

Assessment criteria are derived from assessment objectives described within GCSE, iGCSE, FCE, PET, IELTS and GCE specifications

The academic attainment of students is reported home regularly throughout the academic year and progress is monitored on a half-termly basis. In addition to day-to-day formative assessment such as classwork, homework, participation in class, observations and quizzes, subjects set summative commonly assessed tasks.

Through assessment we aim to:

- Support and monitor student progress to raise standards of attainment
- Provide appropriate stretch and challenge to engage and motivate students
- Promote intrinsic motivation through guidance and supported feedback
- Inform parents of their child's progress
- Celebrate achievement

Target setting

Teacher Targets are set during the first half term of the academic year by teachers. These targets project what students could achieve when presented with stretch and challenge that promotes progression and assumes the highest level of effort from students. All targets are reviewed following each assessment period.

The National Mathematics and Science College is committed to safeguarding and promoting the welfare of children and young people and expects all staff and volunteers to share this commitment. It is our aim that all students fulfil their potential

They take into account evidence (as set out below) to arrive at a judgment of 'most likely grade' Student progress is then measured by whether students are 'on', 'below' or 'above' target. Grades and progress to target is then discussed with the student and appropriate intervention strategies are put in place which are monitored by the Tutor.

Teachers recognise opportunities to support learning through methods including:

- Formal written marking
- Self-reflection
- Peer review
- Learning conversations

Students are encouraged to be self-reflective in their work and develop an understanding of the importance of becoming reflective learners.

Our use of assessment:

Assessment is about supporting students to make progress. To ensure teachers are providing reliable judgements, a body of evidence created using observations, records of work, marking and testing needs to be readily available always.

Teachers use the outcomes of assessments to summarise and analyse attainment and progress for their students and classes. This enables us to ensure that teaching is appropriate and that learners are making expected progress. Where it is considered necessary, specific intervention will be put in place for students and reviewed to monitor impact.

Teachers use data to plan learning for every student to ensure they meet or exceed expectations. Teachers, the Senior Team and the Principal analyse the data across the college to ensure that students are making appropriate progress and that all students are stretched and challenged.

Information from assessment is communicated promptly to parents and students at six points in the academic year and as part of the Tutor programme students review their progress and set appropriate targets for the next stages of their learning.

Within department teams, assessment tasks are analysed to ensure that they reflect the learning we aim to promote in students.

Principal

Date Reviewed: January 2021

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