Object: Lagoon Nebula (M8) • Data acquisition by Rion You • Image processing by Qin Jue Hang • Supervisor by Mr. Yuen Xiang Hao • NUS High School Observatory
THE School logo shows the emphasis of Mathematics and Science in this specialised school with the test tube representing the sciences and the symbol \(\pi\) representing mathematics. The third element in the school logo is the sparkle, which represents the dynamism, energy and innovation when the two disciplines are brought together. The green logo symbolises the School providing a nurturing environment for students’ growth and development, whilst the grey wordings symbolise the solid base upon which the institution is built.
Our Programme

NUS High School of Mathematics and Science (NUS High School), affiliated to the National University of Singapore (NUS), is an independent, specialised, co-educational school for students who have high aptitude and deep passion for mathematics and the sciences. Offering its own six-year diploma programme, the school was set up in 2005 by the Ministry of Education (MOE) and NUS. At the end of Year 6, students will be awarded the NUS High School Diploma, which is recognised by universities both locally and around the world, including top universities in United Kingdom and USA.

Students are admitted to the school in Year 1 (13 years old) or Year 3 (15 years old) after a rigorous selection process comprising tests and group activities in which they are assessed based on their understanding and passion in mathematics and the sciences. The six-year high school programme attracts the top 10% of Singapore’s national cohort of primary school students. Annually, it receives about 2000 applications from both local and international students for its Year 1 admissions. The School can take up to 170 students in Year 1 and 70 students in Year 3 annually.

The School aims to nurture well-rounded and world-ready scientific minds to make distinguished contributions as Pioneers, Achievers, Thinkers & Humanitarians. Students enjoy a well-rounded education including the languages and humanities. The curriculum has a special emphasis in mathematics, sciences and research to sustain and enhance students’ passion in these areas. The School also provides platforms and opportunities for students to develop their character and leadership skills. All students will have at least one opportunity to travel overseas. This allows them to develop a global outlook and learn to operate within multi-national setting in the future.
Curriculum Structure

The curriculum is organised around a 2 – 2 – 2 structure which allows students flexibility in meeting the requirements to move up to the next phase. This is different from the yearly promotion system that is practised widely in the mainstream schools:

Foundation Years

Years 1 & 2
Students will be taught the fundamentals of the subjects

Advancement Years

Years 3 & 4
Students will enhance their knowledge and have the opportunity to apply their knowledge

Specialisation Years

Years 5 & 6
Students will be engaged in doing advanced courses in the areas of their specialisation.

Our Programme adopts an integrated approach to teaching and learning to ensure that our students are provided with a well-rounded education in the following areas:

<table>
<thead>
<tr>
<th>Foundation Years</th>
<th>Advancement Years</th>
<th>Specialisation Years</th>
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</thead>
<tbody>
<tr>
<td>Mathematics &amp; Sciences</td>
<td>3 Majors - Mathematics* &amp; 2 Sciences*</td>
<td>4th Major (Optional)</td>
</tr>
<tr>
<td>Mathematics, Biology, Chemistry &amp; Physics</td>
<td>- Any other subject from Sciences*, Humanities, Art &amp; Music</td>
<td></td>
</tr>
<tr>
<td>Computing Studies, Astronomy &amp; Robotics</td>
<td>Art, Music, Economics, Geography, History or English Literature</td>
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<tr>
<th>Humanities, Art &amp; Music</th>
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<tbody>
<tr>
<td>Integrated Humanities Art or Music</td>
</tr>
<tr>
<td>Art, Music, Economics, Geography, History or English Literature</td>
</tr>
<tr>
<td>3 Majors - Mathematics* &amp; 2 Sciences*</td>
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<tr>
<th>Languages</th>
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<tr>
<td>English Language &amp; Mother Tongue**</td>
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<tr>
<td>French Language, Japanese Language</td>
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<tr>
<td>Chinese Special Programme &amp; Malay Special Programme</td>
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<td>English Language</td>
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<tr>
<th>Research, Innovation &amp; Enterprise</th>
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<tr>
<td>Da Vinci Foundation, Design &amp; Engineering, Creative Problem Solving, Science Presentation &amp; Research Methodology</td>
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<tr>
<td>Da Vinci Seminar Series, Introduction to Systems Thinking and Modelling &amp; Independent Research Project</td>
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<td>Advanced Research Project</td>
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<tr>
<th>Affective and Character Education</th>
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<tbody>
<tr>
<td>Value-in-Action, Student Leadership, Discipline, National Education, Pastoral Counselling, College Counselling &amp; Boarding Programme (Year 5 only)</td>
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<tr>
<th>Physical Education</th>
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<td>Co-curricular Activities</td>
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</table>

Note: Subjects in green are optional subjects.
*For Mathematics and the Sciences, students can read the subject at Major or Major with Honours level. **Fulfill MOE Mother Tongue requirements
Subject Major and Major with Honours

The following academic tracks are offered by the respective subjects:

<table>
<thead>
<tr>
<th>Subject Major (offered by Mathematics, Biology, Chemistry, Physics, Computing Studies, Geography, Economics, History, English Literature, Art and Music)</th>
<th>Broadly defined as a curriculum leading to academic competency equivalent to ‘A’ Level or AP Examination. It is also the minimum level of subject requirement for award of the NUS High School Diploma.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Major with Honours (offered by Mathematics, Biology, Chemistry and Physics)</td>
<td>Direct students to higher level of learning and competency, preparing students for university-level courses. To qualify for reading a Subject Major with Honours, students have to maintain consistently a high achievement in core modules.</td>
</tr>
</tbody>
</table>

Exemption & Acceleration of Modules

Students who are granted exemption of a module may proceed to read another module at a higher academic level in lieu as acceleration. For example, MA1110 (a prerequisite for MA2112) is normally read by a Year 1 student. A student granted exemption of MA1110 may accelerate to read MA2112 in his/her Year 1 of study.

National University of Singapore Modules

Acceleration can be extended to reading NUS modules at the undergraduate level. Students who are highly gifted in certain academic areas may take selected NUS modules after approval has been given by the relevant department of NUS High School and NUS.

Advanced Research Project

Students must successfully complete a graded Advanced Research Project as a graduation requirement. Completion status of the project is documented in the student’s transcript and details described in the student’s portfolio. Apart from the benefits of individual growth and development gained through this experience, college/university admission tutors have indicated that annotation of a successfully completed Research Project in the student transcript can have a strong positive effect on the college admissions process. While grades will be awarded towards the completion of the Research project, they will not be used in the computation of the Cumulative Average Point (CAP).

Graduation Requirements

For students to graduate with the NUS High School Diploma, they must fulfill ALL of the following requirements:

- Minimum graduation CAP of 2.5
- Pass in English Language
- Complete respective Mother Tongue Modules as required
- Pass all Mathematics Core Modules
- Pass all Core Modules in TWO Science Majors
- At least a satisfactory grade for the Advanced Research Project
Mathematics, Statistics & Computing

The Mathematics curriculum at NUS High School is built upon important mathematical concepts such as number and algebra, geometry and measurement, function and graph, as well as probability and statistics.

Students will be able to apply these concepts in multiple ways using numbers, graphs, symbols, diagrams, and words. The learning process emphasises concept attainment through problem solving and reasoning, mathematical skills and tools, mathematical computation and modelling, and putting mathematics to work.

In the Foundation Years, students are given a broad-based mathematical study of algebra, geometry, statistics and trigonometry. These topics serve as a foundation for many modules offered in the later years.

Pre-calculus topics such as functions, trigonometry, sequences and series will be taught in the Advancement Years. Students must be familiar with the properties of functions, the algebra of functions, the graphs of functions, the language of functions, and the values of trigonometric functions. Vectors, numerical methods and mathematical proofs will also be touched upon. Simple concepts of calculus are introduced too.

Students in the Specialisation Years are required to read calculus at an extensive level that is comparable to calculus courses in colleges and universities. They will also further their knowledge in pure mathematics and statistics. In addition, they have a range of electives to choose from to deepen their knowledge and widen their exposure.

Biology

The Biology curriculum is uniquely designed to cover both breadth and depth of the subject. Modules adopt a spiral and thematic approach. For example, Foundations in Ecology and Microbiology, Diversity of Life in the Micro-Kingdoms, Evolutionary Biology, and Diversity of Invertebrates and Vertebrates contribute towards the learning of Ecology, Diversity and Evolutionary Biology. Basic Cell Biology, Advanced Cell Biology I and II, Introductory and Advanced Biochemistry, and Basic and Advanced Molecular Genetics contribute towards the learning and applications in Cell Biology and Biochemistry, as well as Classical and Molecular Genetics.

The first and second years are Foundation Years which aim to provide students with a solid foundation in Biology. They develop observation and inquiry skills. They will also pick up good habits of the mind, and effective scientific skills through experiential and hands-on learning.

The third and fourth years are Advancement Years which allow students to read modules that take them beyond the basics. They investigate biological phenomena and engage in more in-depth investigations. There is more exposure to critical thinking and analytical skills in the more demanding modules.
The fifth and sixth years are Specialization Years whereby students, who are deeply interested in pursuing Biology-related disciplines in universities, will continue to read offered modules that adopt a more applicative and in-depth approach. These modules allow more knowledge application in broader and concept-orientated perspectives. Students will also become more independent in their learning approaches.

**Chemistry**

The Chemistry curriculum in NUS High School of Mathematics and Science is a six-year course which aims to deliver a meaningful learning experience for every student, and seeks to nurture the student as an inquirer. It is designed to ultimately install depth in the understanding of fundamentals, and high competency in solving chemical problems. Our exciting curriculum takes on the spiraling approach and is divided into three key stages - Foundation, Advancement and Specialisation.

The objectives of the Foundation Years are to build a strong understanding in basic and essential concepts in Chemistry and to develop a sense of appreciation for the subject and how closely it relates to our surroundings. The topics introduced will cover a wide breadth, using a conceptual approach, with an emphasis on understanding the behaviour of our physical world from the perspective of atoms and molecules. In addition, students will be frequently engaged in laboratory activities and during the course of which, learn the process of scientific investigations.

In the Advancement Years, students will be introduced to more advanced concepts like chemical equilibria and thermodynamics. Many of these concepts build on what the students already understand from the Foundation Years and the topics are treated in a more in-depth manner. There is also a continual emphasis on the practical component of Chemistry to enhance the students’ theoretical and laboratory skills through relevant and carefully planned practical sessions.

Specialisation years provide students with a platform to delve deeper into certain topics. Modules incorporate more higher order questions to stimulate the analytical minds of the students. At the same time, laboratory work is more intensive as students are now more ready to take on independent research to complement the theory covered in class.

**Physics & Engineering**

Physics curriculum in NUS High School spans six years and is divided into three key stages - the Foundation, Advancement and Specialisation Years.

The Foundation Years modules are designed with a broad conceptual approach to ensure that students receive strong foundational grounding in the fundamental concepts and principles such as motion, conservation of energy and electricity. A wider scope is adopted with less emphasis on math-based problems so that it allows greater mastery of these concepts.

In Advancement Years modules, the topics covered in the foundational modules are revisited with greater rigour using a mathematical approach involving the use of tools such as algebra and trigonometry. Greater emphasis is placed in these modules on problem-solving techniques and analytical approaches to physical situations.

The Specialisation Years modules build on those in the earlier years, extending study in mechanics and electromagnetism through the use of calculus. The focus is on deepening students’ understanding and extending their learning through greater analytical and mathematical sophistication, as well as raising the standard of their problem-solving abilities through calculus applications. Students can also opt for engineering-based modules that will provide scaffolding for NUS engineering modules.

Besides the core modules, the department offers a wide range of Elective & Enrichment modules which are intended to bring students to the next level of interest and passion in Physics. These modules will allow students to pursue their passion and interest in areas such as Robotics, Computational Physics and Astronomy.
The English Language programme aims to nurture students who are able to communicate effectively in varied contexts as a result of their development in listening, reading, speaking and writing. More importantly, it seeks to develop in students a broad and mature understanding of a range of subject matter pertaining to the world affairs as well as the ability to analyse and evaluate them critically and creatively. In addition, the programme hopes to cultivate students’ lifelong interest in the language, love for and appreciation of texts of varied genres.

The curriculum adopts a constructivism approach, which engages the learner in making meaning from authentic texts and using language in real-world contexts. For every module, an integrated and holistic strategy is used, to ensure acquisition of key language skills in listening, reading, speaking and writing. Class time will be devoted to thinking, decision-making, learning-focused interaction and problem-solving in authentic contexts.

The curriculum in Years 1 and 2 focuses on the appreciation and creation of literary works and functional texts. Through text types such personal recounts, narratives, descriptive works, poetries, and plays, the modules aim to develop students’ language and literary skills. The study of Literature and skills of literary analysis will be incorporated in the English Language modules. In addition, students will be introduced to a wide range of functional texts like factual recounts, information reports and formal letters. They will apply knowledge of textual and linguistic features to communicate effectively for real world purposes.

In Years 3 and 4, students will be introduced to expository texts. Through exposure to a broad range of expositions and other text types covering various social issues and concepts, students will learn to understand, appreciate and analyse arguments and persuasive elements in these texts. They will acquire techniques in responding to arguments and writing expository essays. In addition, students will apply these skills to complete authentic tasks such as the creation of advertisements and collaterals; writing and presenting advocacy speeches, campaigns, reports and proposals.

In Years 5 and 6, students acquire knowledge and understanding of diverse topic areas through extensive reading, group discussions and independent research. These topic areas include the study of culture, society and social institutions, nation and policies, politics and global forces/events shaping the world. They will develop skills in analysing and evaluating varied world issues across disciplines, and understand their significance and implications for the individual, nation and the global community. They will continue to hone their skills in critical reading and formulating cogent arguments.

Students must pass all English Language modules to fulfil the requirements for graduation with the NUS High School Diploma. As English Language is a process skills subject, the department does not allow for exemption or acceleration of modules. Class attendance and participation are imperative for skill-development, hence they are not optional.
English Literature

Through a broad selection of literary texts which include representative works from various genres and periods, the Literature programme aims to:

• nurture students to be Readers for Life who can appreciate different genres of Literature and its contribution to the human civilisation
• groom students to be proficient in understanding various literary forms and its features in achieving specific desired ends
• facilitate students to form perceptive thought and original ideas towards what they read
• guide students towards an objective, conscious and critical discussion reflective of both emotional and intellectual awareness of themes, characters, settings and contexts
• develop students to be able communicate and present effectively and convincingly with proper analysis and evaluation in both the written and spoken mode

The foundation Literature module is incorporated into the English Language modules of Years 1 and 2-EL1105 and EL1106. These foundation modules are pre-requisites for all higher level modules offered in the subject.

Years 3 and 4 will form the introductory and developing stage of exposure to the 3 main genres of Literature - Prose, Poetry and Play. For Prose, students will actively engage in the study of Fiction in both the form a Novel and Short Fiction. For Poetry, students will experience a broad selection of poetry from different cultures. Students will also explore both local and international theatre in their study of Play.

Years 5 and 6 will progress students from developed students of Literature to being advanced students with a richer and more diverse experience of Literature whilst simultaneously rooting them deeper into the study of specific ideas of critical reading and thinking. Students will have to read extensively and intensively representative works of recognised literary merit spanning across different eras, movements and genres. The modules will be categorised according to periods and topics. Their study will culminate in an independent research programme which will take the form of an extended essay. The extended essay will be an investigation into the transformation of literary works either across genres/periods.

Mother Tongue And Foreign Languages

An Overview

The Mother Tongue & Foreign Languages Department of NUS High School of Math & Science offers core, elective and enrichment language modules to our students. These modules serve to cater to the varying learning needs of our students from different cultural backgrounds. The department aims to provide our students with the language foundation required for tertiary education, and to develop the aptitude for language learning.
Mother Tongue Modules
(Chinese/ Malay/ Tamil)

Mother Tongue refers to the three official Mother Tongue languages, namely Chinese, Malay and Tamil. It is compulsory for students to take up Mother Tongue Language (MTL) modules, with the exception of students who have been exempted from Mother Tongue. Mother Tongue Language modules are offered to students as Core Modules. These core modules are parked under Higher Mother Tongue Language (HMTL) course and Mother Tongue Language (MTL) course, which is a four-year and five-year course respectively. Students will opt for either the Higher Mother Tongue or the Mother Tongue course, based on their eligibility and suitability. Both courses progressively equip students with Mother Tongue proficiency in four main aspects, namely listening, speaking, reading and writing. Upon completion of the four-year Higher Mother Tongue course or the five-year Mother Tongue course, students would have acquired oral presentation skills, listening skills, reading and comprehension skills, as well as essay and summary writing skills at the intermediate level. Upon completion of either courses, students are required to sit for the GCE ‘O’ Level HMTL Exam at end of Year 4 or GCE ‘A’ Level H1 MTL Exam at end of Year 5.

For students who find difficulties coping with MTL modules, they can drop MTL modules and opt to take up MTL Syllabus ‘B’ modules instead. However, approval must be sought from the school before opting for MTL Syllabus ‘B’ modules and the opting can only be carried out at appropriate stages (i.e. at either end of Year 2, 3 or 5). MTL Syllabus ‘B’ modules are offered to students as Enrichment Modules. Upon taking up the MTL Syllabus ‘B’ course, students are to complete this course and pass GCE ‘A’ Level MTL ‘B’ Exam at end of Year 5.

In order to further develop in students the capacity and interest for Mother Tongue languages, the school also offers elective modules to students taking MTL or HMTL course. Elective modules such as Basic Translation Skills, The Math and Science Achievements of Ancient China, Learning Math and Science in Chinese, Appreciation of Chinese Language and Culture and The Culture behind Chinese Philology aim to strengthen the language acquisition of students and develop in them the ability to apprehend the culture associated with the language.

Foreign/ Third Language Modules
(French/ Japanese/ Chinese as 3rd Lang/ Malay as 3rd Lang)

The school offers French, Japanese, Chinese as 3rd Lang and Malay as 3rd Lang as Elective Modules. These modules are offered to the following categories of students:

(1) Having the interest to do a Third Lang on top of their Mother Tongue
(2) Opting to do French or Japanese as MTL-in-lieu (with approval from MOE)
(3) Having the interest to do one of these languages purely for interest, even if they are exempted from MTL (this applies to some of the foreign students)

The four-year French and Japanese courses prepare students for DELF (Diploma in French Studies) & JLPT (Japanese Language Proficiency Test) respectively. The four-year Chinese as 3rd Lang and Malay as 3rd Lang courses equip students with language competencies required for sitting for GCE ‘O’ Level Chinese/Malay as 3rd Lang Exams, even though some of them may not be eligible to sit for these exams.

Upon completion of any of the 4 third language courses, students are expected to achieve communicative competence in simple everyday situations. Having attained this level of learning would indicate that students have acquired the language foundation necessary for advancement to the next level of learning.
Humanities

The Humanities curriculum at NUS High School aims to nurture our students into world-ready learners with humanitarian values. Students will have an appreciation and sustained interest in the world around them. They will also be adept at thinking critically and inventively, inspiring multiple and varied possibilities for the betterment of our community and society.

The department offers a choice of three subject disciplines - History, Geography and Economics. Students will gain an introduction to the three independent disciplines during the Foundation Years by means of an Integrated Humanities course of study. They will then have the option of pursuing History, Geography or Economics during the Advancement and Specialisation Years.

Integrated Humanities

The Integrated Humanities curriculum serves to lay the foundation for the three Humanities disciplines taught by the Department. Concepts and skills fundamental to the respective disciplines are imparted to prepare students holistically to manage the subjects at higher levels.

Students will examine the development of different cultures, and the contributions of the various communities in fostering our cultural identities. They also study Singapore’s road to independence, and are introduced to the different systems of governance in the world. The Singapore Story of nation building - the trials and triumphs, and her arduous journey of economic, industrial and urban development, demographic transition and evolving challenges will also be discussed.

History

The History curriculum at NUS High School aims to provide students with a broader worldview and a better understanding of present global trends and international relations through a contemporary study of regional and international developments in the twentieth century. It highlights the importance of understanding and interpreting history in all its complexity - its people, events, developments and issues are explored in a historical context and examined from a range of perspectives. It enables students to better understand how the world they live in is shaped by the historical forces of the recent past.

The curriculum adopts a multi-faceted approach, and is designed around knowledge that is enduring and are organised around key themes and concepts or the “Big Ideas” that will guide students’ thinking and the learning outcomes. Constructivist teaching is emphasised which focuses on developing students to be active learners, as they engage in the learning to construct their own meanings.

Geography

The Geography curriculum is designed to manifest the dynamism of the subject as students study the interactions
between man and the environment over time and space at the local, regional and global scales. It integrates both physical and human geography, and provides for the acquisition of scientific and socio-economic methodologies.

The curriculum focuses on the study and investigation of cause-effect relationships between man and the environment through the identification of trends and patterns, and the processes behind them. This is followed by the subsequent investigation into the adaptations, measures and management strategies meant to cope and deal with these interactions. Through the use of relevant named examples and case studies, the curriculum ensures that the consideration of varied perspectives, ideas and views are inherent in the curriculum. The Geography curriculum thus aims to develop in our students, the values and attitudes of responsible citizens of an increasingly interconnected world. It will also strive to motivate them to reach a level of personal commitment to resolve the issues at different scales.

Economics

The study of Economics aims to provide students a broad understanding of national and international economic issues and challenges them to think critically through experiential learning and research. It aims to challenge students to investigate the economic issues on strategies of firms, efficiency, market failure and macroeconomic developments in the regional and international economies. Students will examine real world case studies; provide economic insights and conduct research and explore alternatives to achieve key economic goals.

Economics as a social science will broaden students’ thinking as they examine human behaviour in response to changes and the way decisions are being made. Economics has a vital role to play in promoting international cooperation and mutual understanding because of its focus on global issues. To achieve this understanding, students will need to learn to consider economic theories, ideas, and events from the points of view of different stakeholders in the world economy.

Art

The Art programme in NUS High School aims to stir the interest and curiosity in all fields of art study. Students can put into practice what they have learnt in the art classroom to enhance skills required in Math and Science modules: geometry in perspective drawing, chemistry in ceramics, physics in sculpture, biology in figure drawing and environmental sculptures, psychology in interactive art and computer technology in new media arts. Art can also be used as a neutral ground when talking about social or controversial subjects. The programme will enhance students’ learning through:

- **Aesthetic Perception**
  Students will learn to perceive the aesthetic value in nature and in their immediate surroundings. They will be able to articulate with a language specific to the visual arts.

- **Artistic Expression**
  Through the process of art making, students will learn to express themselves and learn the art of visual communication through various forms.

  **Historical and Cultural Context**
  Students will understand historic contributions and cultural context in the visual arts. They will analyse the role of visual art in the development of human cultures all around the world.

- **Critical Analysis**
  Students will learn to analyse aesthetic principles and verbalise their understanding of the issues through constructive criticism of other students’ work.

- **Practical Applications**
  Students will apply creative skills in problem solving, communication and organisation of resources and time. They will also learn aesthetic appreciation, expression through visual language and will experience first hand the process of cross-disciplinary interaction. These abilities will help students understand how the arts are applied in everyday life and what careers are related to the visual arts.
Four Aspects Of Visual Arts Education

2 Dimensional (2D) studies - Drawing, Painting, Printmaking, Photography, Textiles, Collage and Illustration

3 Dimensional (3D) studies - Sculpture, Ceramics, Metalwork, Woodwork, Multi-media work and Installation Art.


Art History - Infused into the 2D, 3D and Design modules. It aims to cultivate the understanding and knowledge of architecture, sculpture, painting, and other art forms within diverse historical and cultural contexts.

Music

Music education in the NUS High School aims to refine the aesthetic sensitivities of all humanities. Although music is not a mandatory subject, it is still our mission to provide a quality music programme that is an integral part of the entire education as well as a reflection of a well-balanced education experience. School and community resources are used to facilitate the exploration of music in a manner both meaningful and relevant to students. Students majoring in music - upon recommendation - will also enjoy collaboration opportunities with the NUS Yong Siew Toh Conservatory of Music. The music programme will enhance students’ learning through the acquisition of

- Music Knowledge
- Music Reading, Listening and Analysis
- Performing and Creating of music

The music programme helps students develop and achieve basic competencies and to strive for excellence within the limits of their individual capabilities; as well as to develop music leadership skills, musical understandings, and positive attitudes that enable students to enjoy a meaningful musical journey, not only for the present but also in later life.

Expected Requirements

Applied Instrument - Students majoring in Music must try to attain a standard of the Associated Board of Royal School of Music (ABRSM) Grade 8 or beyond, for the first musical instrument and a standard of ABRSM Grade 5 for the second instrument by Year 6. Majoring students will study or continue to learn the applied instruments with their external music teachers who will prepare them for one of the examination boards such as the Associated Board Royal School of Music (ABRSM) and Trinity College London (TCL). Each level grows from those experiences previously presented.

Performing Opportunities: Chamber Music, Senior Recital and CCA Performing Arts - Aside from fulfilling the 2 musical instruments requirement, majoring students must also

- complete a Chamber Recital
- complete a solo Senior Recital on the final year before graduation
- participate in one of the CCA Performing Arts groups: School Orchestra, Chinese Orchestra or Choir
All year 5 students will go through a full year boarding programme at NUS High School. The objectives of the programme are to acquire life skill, cultivate friendships, develop leadership capacity and grow intellectual curiosity. Through interacting with peers and teaching staff living at the boarding school, students get to benefit from group learning. They are also given leadership opportunities and training to hone their leadership skills, such as helping to organise our yearly concert. Social ties formed will last a lifetime, just as many friendships are made. Life skills, such as self discipline, being considerate and responsible are learnt while living in a boarding community. The close proximity to the laboratories within the school compound and National University of Singapore provides convenience and allows boarders to have extended time for research.
Boarding Programme
The school aims to develop students with world-ready scientific minds. This is achieved via the rigorous Math and Science curriculum together with the six-year Da Vinci Programme. The programme develops values, habits of mind and competencies for research, innovation and enterprise.

Students have to complete an Advanced Research Project in any Mathematics, Science or Engineering domain, which is one of the graduation requirements. Students are given extended space and time in Year 5 through boarding to complete their projects. Training, preparation and some part of the research are done in our Specialised Research Labs.

Besides setting aside every Wednesday afternoon for Da Vinci programme and research, the School also makes special arrangement for some students to have 8-week full-time research attachment from May to July so that both students and scientist mentors will have a fruitful, meaningful and productive research attachment experience.

The School provides a wide range of research projects with the support of research institutes and universities. Some teachers also offer internal projects since many have PhDs or are working towards one. All projects by external mentors are co-supervised by our teachers. The co-supervision is to ensure that our staff play an active role and stay relevant in their respective field.

Students’ values, habits of minds and competencies are slowly nurtured and developed via structured programmes such as the Da Vinci Foundation, Science Presentation, Seminar Series, Research Methodology and Design & Engineering etc.

All research projects will be presented at the annual NUS High School Research Congress. Research has provided our students with various local and overseas opportunities to share their work. Many students present their projects at local or international fairs or conferences. Most students will participate in the Singapore Science & Engineering Fair (SSEF). In 2012, NUS High School obtained one-third of the overall medal haul.
Rationale
NUS High School is a school that specialises in Math and Science. Among the rather homogeneous group of students, there is still a range of students of various abilities. There is a need to further develop students who are exceptionally intelligent to help them realise their fullest potential. This is in line with the philosophy of the school in empowering, inspiring and nurturing talents.

Objectives
The Talent Development Programme - EINSTEIN+ aims to develop and spur the best students in our school to achieve greater success, particularly in becoming Pioneers, Achievers, Thinkers and Humanitarians. They are to become good role models for other students to emulate.

Process
The Programme adopts a 5-step process in our talent development. The 5 processes are:

Identification  The Programme will identify highly gifted students in math and science through various criteria.

Development  The Programme will develop students’ strengths and talents in the Math & Science domains. Some of the activities will be as follows:

- Module Acceleration
- Olympiad Programme
- NUS Modules
- Independent Study Mode
- Independent Study Elective
- Academic Mentoring
- Mentoring by NUS Professors

Exposure  The programme provides opportunities for students to learn beyond classroom teaching. Some of the activities will be as follows:

- NUS High School Overseas Student Academic Programme (NUSHS OSAP)
  Students selected can choose to do a two-week academic programme in countries such as Germany, United Kingdom, Australia, Switzerland and USA. Students will get an excellent opportunity to interact with Nobel Laureates, distinguished scientists and work with talented students from different cultural background in experiment work and scientific learning.
- Interaction with local distinguished scientists
- Talks by distinguished Fields Medalists and Nobel Laureates in our NUSHS Seminar Series

Achievement  Students will be given various opportunities to showcase their learning via competitions, fairs, conferences etc. These will help to encourage knowledge sharing and attain a benchmark with the best at national and international levels.

Service  As potential leaders, these students will also be given a greater responsibility to contribute back to the community.
EINSTEIN+ Programme
NUS High School believes in developing students’ global outlook to their fullest potential, and nurturing world-ready scientific minds who will make distinguished contributions as Pioneers, Achievers, Thinkers and Humanitarians. The Internationalisation Programme embraces the world as its classroom, as we enable our students to learn from overseas experience, and to develop a global outlook.

The objectives of the programme:

- Develop in our students the global awareness and cross-cultural skills and sensitivities of the 21st century;
- Expose students to Asia and the world and sensitise them to the place of Singapore in the world; and
- Deepen students’ commitment and rootedness to Singapore

Every student will be offered at least one opportunity to extend their learning overseas through student exchange programmes, NUS High School Overseas Student Academic Programme (OSAP), academic learning field trips, service learning programmes and overseas conferences, fairs or competitions.

NUS High School has established exchange and research programme collaborations with top Math and Science schools in many countries, including Brunei, China, Japan, Netherland, Russia, South Korea, Thailand and United Kingdom. The exchange programmes include lesson observations, research presentations and cultural sharing, among others. During the visits, students will be able to learn and appreciate other cultures, as well as to build friendship with peers from these top math and science schools.

In addition, there is the NUS High School OSAP, where students can learn advance math or science in renowned overseas universities and research institutes. While engaging in challenging academic work in the company of peers who share their exceptional abilities and love of learning, their learning experience is further enhanced by the strong friendship that they develop through the programme.

Motivated and enthusiastic students will be identified to represent the school in overseas conferences, science fairs and/or competitions, as we recognise the need for students to learn with the best, and be aspired with the best in the international arena. This will spur talented students to achieve their fullest potential in their individual peaks of excellence.
INTERNATIONALISATION
Programme
Our Guiding Philosophy and Aims

The school is guided by our belief that student development takes place inside and outside of the classroom, in a safe and nurturing environment that is student-centric and values-driven. Through effective and caring student-teacher engagement, rigour and standards, and a diversity of pathways and opportunities, the school aims to:

- nurture well-rounded and world-ready scientific minds;
- inculcate sound moral values and moral ethics;
- build a generation proud and firmly rooted to their culture and heritage;
- equip our students with social-emotional competencies and 21st century skills;
- develop our students to become active contributors to their community; and
- develop our students to become distinguished Pioneers, Achievers, Thinkers and Humanitarians.
Core of the Student Development Framework

a. Core Values
Values are the foundational principles that guide and provide purpose to an individual’s behaviour. Values refer to the national and school values that are explicitly taught in the formal and informal curriculum. Enactment of actions without grounding in values would lead to inconsistency in purpose and actions.

- Respect
- Responsibility
- Resilience
- Integrity
- Care
- Harmony
- Humility
- Continuous Learning

b. Core Social and Emotional Competencies
Social and Emotional Learning (SEL) refers to an individual’s ‘acquisition of skills to recognise and manage emotions, develop care and concern for others, make responsible decisions, establish positive relationships, and handle challenging situations effectively’.

Core social-emotional competencies are taught to students to ensure that they acquire the skills, knowledge and dispositions that will help them face future challenges with resilience and tenacity.

- Self Awareness
- Social Awareness
- Self Management
- Relationship Management
- Responsible Decision Making

Teaching of these associated skills can be through structured learning experiences or through incidental learning moments. Students equipped with these skills, anchored in sound moral values will be able to demonstrate good character and citizenship.

c. 21st Century Competencies
To better position our students to take advantage of opportunities in a globalised world, our students need to possess life-ready competencies such as creativity, innovation, cross-cultural understanding and resilience.

- Civic Literacy
- Critical and Inventive Thinking
- Cross-Cultural Skills
- Global Awareness
- Information and Communication Skills

d. Structures and Programmes

Mentoring Programme:
The teacher is a mentor who acts as the care-giver and role-model for the students.

Character-based Discipline:
The school adopts a restorative approach to discipline.

Affective and Character Education (ACE) programme:
RICH3 (Respect, Responsibility, Resilience, Integrity, Care and Harmony), Social-Emotional Learning of Self, Family and Community, Cyberwellness, and Sexuality Education programmes aim to develop and equip our students with sound moral values, good character, resilience and tenacity in life.

Boarding Programme:
Year 5 stay-in programme that exposes the students to cooperative learning, self-discipline, independence and community living across cultures.

- Aesthetics Appreciation Programme
- Co-Curricular Activities (CCA)
- National Education (NE)
- Pastoral and College Counselling
- Service Learning and Community Involvement Programmes
- Student Leadership Development
**Mission**
Nurture well-rounded and world-ready scientific minds to make distinguished contributions as Pioneers, Achievers, Thinkers & Humanitarians.

**Vision**
To be a wellspring of inspiration for Math & Science Education and Research

**Student Development Framework**

**Academic Programmes**
- Core, Elective & Enrichment Modules
- Research, Innovation & Enterprise
- Acceleration & NUS Modules
- Continuous Assessment
- Talent Development
- Overseas Attachment
- Olympiad Training
- SAT & AP Test
- Ma, Bio, Chem
- Phy, Stat, Comp
- Engineering
- EL, MT & FL
- Geo, His & Lit
- Mu & Art

**Co-curricular Programmes**
- Community Involvement
- Student Leadership
- College Counselling
- Pastoral Counselling
- Sexuality Education
- Internationalisation
- Mentoring
- Boarding
- Discipline
- ACE
- CCA
- NE
- PE
- ICT

**21st Centuries Competencies**
- Social-Emotional Competencies
- Core Values
US High School provides a wide range of Co-curricular Activities (CCA), catering to our students’ diverse abilities. These activities offer students opportunities to develop life-long interests and broaden experiences outside the classroom. They not only provide a platform for character and leadership development, but also promote the acquisition and application of social and co-operative skills.

All students are required to take part in at least one CCA from the four main groups, i.e. Clubs and Societies, Performing Arts, Sports & Games and Uniformed Groups.

The following list shows the available CCA offered by our school:

<table>
<thead>
<tr>
<th>Clubs &amp; Societies</th>
<th>Performing Arts</th>
<th>Sports &amp; Games</th>
<th>Uniformed Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art Club</td>
<td>Chinese Orchestra</td>
<td>Badminton</td>
<td>NCC Land</td>
</tr>
<tr>
<td>Astronomy Club</td>
<td>Choir</td>
<td>Basketball</td>
<td>Scouts</td>
</tr>
<tr>
<td>Chess Club</td>
<td>Dance Club</td>
<td>Football</td>
<td>St. John’s Ambulance Brigade</td>
</tr>
<tr>
<td>Gavel Club</td>
<td>Drama Club</td>
<td>Netball</td>
<td></td>
</tr>
<tr>
<td>Infocomm Club</td>
<td>Gamelan Ensemble</td>
<td>Table Tennis</td>
<td></td>
</tr>
<tr>
<td>Journalism Club</td>
<td>School Orchestra</td>
<td>Tennis</td>
<td></td>
</tr>
<tr>
<td>Media Club</td>
<td></td>
<td>Track Team</td>
<td></td>
</tr>
<tr>
<td>Robotics Club</td>
<td></td>
<td>Outdoor Adventure Club</td>
<td>(Year 5 &amp; 6 only)</td>
</tr>
<tr>
<td>Youth Flying Club</td>
<td></td>
<td>Water Sports</td>
<td>(Year 5 &amp; 6 only)</td>
</tr>
</tbody>
</table>
Co-curricular Activities
US High School students have taken part in international and national competitions and won many accolades.

International Competitions:

- **International Mathematical Olympiad (IMO)**
  The International Mathematical Olympiad is the World Championship Mathematics Competition for High School students and is held annually in a different country.

- **Asian Pacific Mathematics Olympiad (APMO)**
  The Asian Pacific Math Olympiad is a regional mathematics competition which involves countries from the Pacific Rim as well as the United States.

- **China Mathematical Olympiad (CMO)**
  This annual competition is the highest level of Mathematical Olympiad competition in China, in which Hong Kong, Macau, Russia and Singapore are invited to send their best team to compete with the top students in mainland China.
• **International Biology Olympiad (IBO)**
The International Biology Olympiad is an annual competition for passionate Biology students who compete at the international level. Students are tested on biological problems and experiments, in which their interest in Biology, inventiveness, creativity and perseverance are vital.

• **International Chemistry Olympiad (IChO)**
The International Chemistry Olympiad is an annual international event, bringing together the world’s best in Chemistry.

• **International Physics Olympiad (IPhO)**
The International Physics Olympiad is the largest annual international Physics competition for students. The competition consists of a theoretical and an experimental round where participants are required to solve sets of problems based on a fixed syllabus.

• **Asian Physics Olympiad (APhO)**
The Asian Physics Olympiad is an annual regional (Asia) competition for students on Physics concepts learnt in school. The competition consists of a theoretical and an experimental round where participants are required to solve sets of problems based on a fixed syllabus.

• **International Olympiad on Astronomy and Astrophysics (IOAA)**
The International Olympiad on Astronomy and Astrophysics is an annual event in which high school students from around the world compete against each other, solving theoretical, analytical and observational problems in the fields of astronomy and astrophysics.
• Singapore Science and Engineering Fair
The Singapore Science and Engineering Fair is a national competition open to all secondary and junior college students. Participants are required to submit research projects which cover all areas of science and engineering. It is affiliated to the Intel International Science and Engineering Fair in the United States, commonly regarded as the “Olympics” of Science Research Competition.

• A* Talent Search (A*TS)
A* Talent Search is an annual competition which acknowledges and rewards students aged 15 to 18 years old who have a strong aptitude for science and technology. This competition provides students the opportunity to exhibit their stellar projects and encourage them to further explore science and technology.

<table>
<thead>
<tr>
<th>Year</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2nd Prize</td>
</tr>
<tr>
<td>2009</td>
<td>1st Prize</td>
</tr>
<tr>
<td>2010</td>
<td>2nd Prize</td>
</tr>
<tr>
<td>2011</td>
<td>1st Prize</td>
</tr>
<tr>
<td>2012</td>
<td>3rd Prize</td>
</tr>
</tbody>
</table>
Co-Curricular Activities

- Singapore Youth Festival Central Judging Competition 2011

The Singapore Youth Festival is an annual event organised by the Ministry of Education to celebrate the achievements of our youths in their co-curricular activities. The performing arts group has done the school proud with the following achievements:

Our achievements:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dance Club</td>
<td>Silver Award (Secondary)</td>
</tr>
<tr>
<td>Gamelan Ensemble</td>
<td>Silver Award (Junior College)</td>
</tr>
<tr>
<td>String Ensemble (From School Orchestra)</td>
<td>Silver (Junior College)</td>
</tr>
<tr>
<td></td>
<td>Bronze Award (Secondary)</td>
</tr>
<tr>
<td>Chinese Orchestra</td>
<td>Bronze (Junior College)</td>
</tr>
<tr>
<td>Choir</td>
<td>Bronze (Junior College)</td>
</tr>
</tbody>
</table>
Astronomy Club 2011 - NUS High Team clinches 1st position (Senior Category) at NUS-NTU Astro Challenge

NCC attains Bronze for Best Unit Award 2010

Sports & Games

Scouts attains Silver for Best Unit Award 2011

Uniformed Groups

NUSHS attains 2nd position at Singapore Inter-Gavel Club Speech Competition

Robotics 2011 - NUSHS Team wins 2nd position at Singapore Robotics VEX Championship

National Cross Country Championship 2011 - Tan Teck Chye wins 5th position (Individual) - B Division Boys category

Fencing 2011 - Nicole Aw clinches 3rd position in National Inter-School Fencing Championships 2011, Women’s Epee Individual - C Division category

Netball 2011 - Tan Shi Ni (Youth Team) wins Gold medal in the ASEAN School Games

SJAB attains Bronze for Corps Achievement Award 2012

Tanjong Pagar Primary School

Taekwando 2011 - Wong Wai Kein (3rd from the right) wins Silver in National Inter-School Taekwando Championship 2011, Kyorugi - C Division category

Clubs & Societies

NUSHS attains 2nd position at Singapore Inter-Gavel Club Speech Competition

Astronomy Club 2011 - NUS High Team clinches 1st position (Senior Category) at NUS-NTU Astro Challenge

Taekwando 2011 - Wong Wai Kein (3rd from the right) wins Silver in National Inter-School Taekwando Championship 2011, Kyorugi - C Division category

Media Club 2010 - Timothy Chua (2nd from the right) clinches 1st position in Singapore Young Photographer Award

NCC attains Bronze for Best Unit Award 2010

Uniformed Groups

Scouts attains Silver for Best Unit Award 2011