

FACULTY OF SCIENCE FAQs

NUS e-OPEN HOUSE 2020

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OVERVIEW OF DEGREES OFFERED IN FACULTY OF SCIENCE

1. What are the undergraduate degrees offered in the Faculty of Science (FoS)?

FoS offers three full-time degree programmes:

i. Bachelor of Science (B.Sc.) / Bachelor of Science (Honours) (B.Sc. (Hons))

Majors available under the B.Sc. programme include:

- Applied Mathematics
- Applied Mathematics (Specialisation in Mathematical Modelling and Data Analytics)¹
- Applied Mathematics (Specialisation in Operations Research and Financial Mathematics)¹
- Chemistry
- Chemistry (Specialisation in Materials Chemistry)¹
- Chemistry (Specialisation in Medicinal Chemistry)¹
- Chemistry (Specialisation in Environment and Energy)¹
- Computational Biology²
- Data Science and Analytics²
- Food Science and Technology
- Life Sciences
- Life Sciences (Specialisation in Environmental Biology)¹
- Life Sciences (Specialisation in Biomedical Science)¹
- Life Sciences (Specialisation in Molecular and Cell Biology)¹
- Mathematics
- Pharmaceutical Science²
- Physics
- Physics (Specialisation in Astrophysics)¹
- Physics (Specialisation in Nanophysics)¹
- Physics (Specialisation in Quantum Technologies)¹
- Quantitative Finance (QF)
- Statistics
- Statistics (Specialisation in Data Science)¹
- Statistics (Specialisation in Finance and Business Statistics)¹

ii. B. Pharmacy/B. Pharmacy (Hons)²

iii. Bachelor of Environmental Studies/Bachelor of Environmental Studies (Hons)³

- Specialisation in Environmental Biology (Run by FoS)
- Specialisation in Environmental Geography (Run by the Faculty of Arts and Social Sciences, or FASS)

¹Specialisations are awarded only with B.Sc. (Hons) degrees

²These are strictly four-year programmes. With the exception of these programmes, all other majors allow for graduation after three years with a general B.Sc. degree.

³The Bachelor of Environmental Studies is a strict four-year programme.

FoS also offers a spread of minors, multidisciplinary programmes and special programmes, which broaden students' educational experience.

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ADMISSION TO NUS AND FACULTY OF SCIENCE

2. What are the minimum admission requirements for applying to NUS?

For GCE 'A' Level Students

To apply, students should meet the following criteria:

- A) Best four content-based subjects (i.e. three H2 and one H1 content-based subjects, with at least one content subject from a contrasting discipline)
- B) Either General Paper (GP) or Knowledge & Inquiry (KI) in the same sitting
- C) Meet the Mother Tongue Language (MTL) requirement for admission by having one of the following:
 - Minimum of D7 for the higher MTL paper taken at the 'O' Level examination.
 - Minimum of S grade for the H1 MTL paper or General Studies in Chinese.
 - Minimum of S grade for the H2 MTL paper taken at the 'A' Level examination.
 - Pass in the MTL 'B' Syllabus paper at the 'A' Level examination.

For students exempted from MTL, the Ministry of Education (MOE)-approved subject-in-lieu will be considered as the MTL subject.

Candidates who are unable to fulfil the MT requirement for admission but satisfy all other admission requirements will be admitted on a provisional basis. During their course of study, they will be required to attend the MT course conducted by the University, or attain the minimum requirements as listed above by retaking the MT paper at the 'A' Level examination before they are allowed to graduate. If a candidate is exempted from MT as approved by MOE, the MOE approved subject-in-lieu will be considered as the MT subject.

Meeting the above minimum admission requirements does not guarantee a place in the university as admission to the university is based on **open competition** and would depend on the applicant's **academic standing, course selection** and competition amongst applicants. In exceptional cases, work experience and other achievements may be considered. Please refer to

<http://www.nus.edu.sg/oam/apply-to-nus/singapore-cambridge-gce-a-level/admissions-requirements> for more information.

For Polytechnic Students

To apply, students should present a diploma from a polytechnic in Singapore, which must be accredited to the University's course(s) applied for. Please refer to <http://www.nus.edu.sg/oam/apply-to-nus/polytechnic-diploma-from-singapore/subject-pre-requisites> for more details.

Note: Students in their final year of study at the polytechnic can apply with their results obtained from their first five semesters of study. They should submit their final semester results to the Office of Admissions, NUS, as soon as these are available.

3. What are the minimum grades to be admitted to the FoS?

Generally, the minimum entry requirements differ from year to year. Applicants can refer to the Indicative Grade Profile (IGP) for AY2019/2020 published at this URL for reference:

[http://www.nus.edu.sg/oam/undergraduate-programmes/indicative-grade-profile-\(igp\)](http://www.nus.edu.sg/oam/undergraduate-programmes/indicative-grade-profile-(igp)).

4. If I failed the General Paper (GP) at the GCE 'A' Level examinations, would I be denied admission into FoS?

Students will still be considered for admission if they meet our minimum eligibility criteria. The offer of admission depends on the number of places available and the quality of those competing for a place. However, if they do not possess the necessary English Language qualifications when offered a place in NUS, they would need to sit for the Qualifying English Test (QET) in July before the start of the new academic year.

5. Is it possible for an arts student from Junior College (JC) to enter FoS?

It is possible as long as the student has the relevant H2 (or equivalent) passes in two of the following subjects: Biology, Chemistry, Computing, Physics, Mathematics/ Further Mathematics.

6. What is Aptitude-based Admission [formerly known as Discretionary Admission (DA)]?

Under this route, up to 15% of vacancies will be set aside for consideration of exceptional candidates for admission to NUS. For such candidates, other factors besides grades will be taken into consideration. The following are some samples of exceptional achievements that the University may take into consideration:

1. Winner in the National Science and Talent Search
2. Represented Singapore in Arts and/or Sports
3. Active participation in community service and volunteer programmes
4. Work experience relevant to the course applied for (supporting document/s is/are required)
5. Key leadership positions in community organisations, sports and athletic clubs etc. (outside school)

In addition, applicants can provide information on awards/honours that they have won. If candidates wish to be considered under this scheme, they should provide the details in the 'Outstanding Achievements' section in the online application form and follow up by sending supporting documents to NUS.

7. How are GCE 'A' Level graduates considered for admission?

Admission to the university is based on an applicant's University Admission Score (UAS) comprising the grades of six 'A' Level (H2/H1) subjects as follows:

- Best three H2 and one H1 content-based subjects, with at least one content subject to be from a contrasting discipline
- GP or KI
- Project Work (PW).

The best Mother Tongue Language (MTL) subject grade (e.g. H1 MTL or 'O' Level higher MTL) will be considered only if the candidate provides the result for consideration. The University will include it in the scoring only if it raises the competitiveness of the candidate.

To provide applicants with information to make their course choices, we provide information in the following areas:

- Representative grade profiles of the 10th and 90th percentiles of applicants offered places in AY2019/2020 for applicants holding Singapore-Cambridge GCE 'A' Level qualifications.

The grade profiles refer to the grades scored by 'A' Level applicants in their **three H2 and one H1 subjects**. For the purpose of this exercise, Grade C is assumed for both GP and PW in determining the grade profiles.

- The number of course places taken up in Academic Year 2019/2020. The number of places is subject to change from year to year.

8. How is UAS computed?

Computation of University Admission Score (UAS) for 'A' Level Students

For computation of the university score, the following subjects are being considered:

- The best four content subjects (i.e. three H2 and one H1 content subjects, with at least one content subject from a contrasting discipline);
- either GP or KI grade taken in the same sitting;
- H1 Project Work (PW)

The maximum points for H2 and H1 subjects are 20 and 10 respectively.

The best MT subject grade (e.g. 'H1' MT or 'O' Level higher MT) will be considered only if the candidate provides the results for consideration. The University will include it in the scoring only if it raises the University score of the candidate. H3 papers taken at the 'A' Level examination are not considered in the computation of the University Admission Score. They are, however, considered when shortlisting scholarship applicants.

If the student's 'A' Level subject combination is beyond the norm, selection for admission will be as follows:

Subject Combinations	Selection for Admission
<ul style="list-style-type: none"> • Three H2 content-based subjects • Two or three H1 content-based subjects • MTL • GP • PW 	Take grades in: <ul style="list-style-type: none"> • Three H2 subjects and best H1 subject (at least one has to be a contrasting subject) • GP • PW
<ul style="list-style-type: none"> • Four H2 content-based subjects • MTL • GP • PW 	Take grades in: <ul style="list-style-type: none"> • Best three H2 subjects, with worst H2 subject counted as one H1 subject (at least one has to be a contrasting subject) • GP • PW
<ul style="list-style-type: none"> • Four H2 content-based subjects • One H1 content-based subject • MTL • GP • PW 	Take grades in: <ul style="list-style-type: none"> • Best three H2 subjects, with worst H2 subject counted as one H1 subject (at least one has to be a contrasting subject), <i>or</i> • Best three H2 subjects and one H1 subject (at least one has to be a contrasting subject) • GP • PW
<ul style="list-style-type: none"> • Knowledge and Inquiry (KI) • Three H2 content-based subjects • MTL • PW 	Take grades in: <ul style="list-style-type: none"> • KI, counted as two H1 subjects (one in place of GP and one for H1 requirement) • Three H2 subjects • PW
<ul style="list-style-type: none"> • KI • Three H2 content-based subjects • One H1 content-based subject • MTL • PW 	Take grades in: <ul style="list-style-type: none"> • Three H2 subjects, and the better H1 subject <i>or</i> KI as H1 subject (at least one has to fulfil the contrasting subject requirements) • KI as H1 subject (in place of GP) • PW
<ul style="list-style-type: none"> • KI • Three H2 content-based subject • Two H1 content-based subjects • MTL • PW 	Take grades in: <ul style="list-style-type: none"> • Three H2 subjects, and best of H1 subjects or KI as H1 subject (at least one has to fulfil the contrasting subject requirements) • KI as H1 subject (in place of GP) • PW

Table above from: http://www.nus.edu.sg/oam/docs/default-source/singapore-cambridge-gce-a-level/subjectcombination_moe.pdf?sfvrsn=ad5ee5bb_0

Computation of University Admission Score (UAS) for Polytechnic Students

From the Academic Year (AY) 2020 admission exercise onwards, applicants will be considered for admissions to the University based on their polytechnic academic performance. In addition, the University may evaluate applicants via interviews/apptitude tests, as well as any other academic and non-academic achievements presented for admissions.

Applicants should ensure that their diplomas are accredited to their applied course(s). They should also submit their Singapore-Cambridge GCE 'O' Level results, if available, to fulfil the subject requirements for selected courses.

9. What are the chances of me getting admitted to a particular course if I have attained the 'A' Level grade profiles or polytechnic GPA as indicated in the tables listed below?

The 'A' Level grade profiles are based on last year's admission requirements.

Each year, the 'A' Level grade profiles and polytechnic GPA may differ depending on the number and performance of applicants and the places available for the course.

This means that meeting last year's (AY2019/2020) 'A' Level grades are only indicative and do NOT guarantee admission to the course for the new academic year (AY2020/2021).

10. How should 'A' Level graduates interpret the information indicated in Table 1?

Table 1 shows the indicative grade profiles of 'A' Level graduates who were offered admission in AY2019/2020. The grades indicated at the 10th and 90th percentiles are for the three H2 and one H1 content-based subjects, in that order. The grade profiles assumed the grade C for GP and PW.

This can be best explained by using an example. For example, if the 10th percentile grade profile is ABC/A (3H2, 1H1), it means that the bottom 10% of applicants offered places score **below** ABC/A. If the 90th percentile grade is AAA/B, it means the top 10% of the successful applicants score **above** AAA/B.

[http://www.nus.edu.sg/oam/undergraduate-programmes/indicative-grade-profile-\(igp\)](http://www.nus.edu.sg/oam/undergraduate-programmes/indicative-grade-profile-(igp))

Table 1: Grade Profiles of the 10th and 90th Percentiles of 'A' Level Applicants Offered Places for Courses in NUS

University	Courses	Representative Grade Profile 3H2/1H1	
		10th percentile	90th percentile
NUS	Pharmacy	AAA/A	AAA/A
NUS	Pharmaceutical Science	AAA/A	AAA/A
NUS	Science	AAA/C	AAA/A
NUS	Data Science and Analytics	AAB/C	AAA/A
NUS	Food Science and Technology	AAA/A	AAA/A
NUS	Environmental Studies	AAA/C	AAA/A

Total Number of NUS Course Places Taken Up in AY2019/2020

University	NUS Courses	Course Places
NUS	Pharmacy	156
NUS	Science (including DSA, FST and Pharmaceutical Science)	855
NUS	Environmental Studies	47

11. What are the available undergraduate scholarships?

Candidates will be considered and shortlisted for interviews through their scholarship application to NUS. Scholarship applications are open from **1 February 2020 to mid-March 2020**. The two tiers of NUS scholarships are namely:

University Level Scholarships (For Singapore citizens)

- NUS Global Merit Scholarship

- NUS Merit Scholarship

The other undergraduate scholarships/awards offered are as follows:

Some other University scholarships/awards (For Singapore citizens)

- NUS Sports Scholarships
- NUS Performing and Visual Arts Scholarship
- LKY-STEP Award [Only for polytechnic graduates who are Singapore citizens/Singapore Permanent Residents (PR)]

For the full list of scholarships available, please refer to the Office of Admissions (OAM) website: <http://www.nus.edu.sg/oam/scholarships>

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MODULE EXEMPTIONS (APCs) AND ADVANCED PLACEMENT TEST

12. What is the Advanced Placement (AP) Test?

The AP test assesses the knowledge and ability of students and grants advanced placement credits (APCs) to those who do well so that they can be exempted from reading lower level modules and have the pre-requisites to read higher level modules directly. This way, students can graduate in a shorter time.

The decision to award APCs will be made by the department after the consideration of (a) students' 'A' Level (or equivalent) qualifications or polytechnic results and (b) students' performance in AP tests set by the department.

Once an exemption is granted, it is irreversible.

13. How are Advanced Placement Credits (APCs) awarded?

A) For Polytechnic Diploma Holders

Polytechnic diploma holders may be granted APCs in relevant modules for up to a maximum of 40 modular credits (MCs) as follows:

'Auto Granted' MCs

(i) 20 MCs from Unrestricted Elective Modules

'Performance Based' MCs

(ii) Up to 20 MCs from programme requirements will be granted based on performance in APC tests and/or interviews set by the department offering the module.

(B) For GCE 'A' Level or Equivalent Qualifications

Students with GCE 'A' Level (or equivalent) qualifications who have obtained good grades may be granted up to 20 MCs of advanced placement from programme requirements subject to performance in placement tests set by the Faculty.

14. For which modules may APCs be awarded?

The lists of modules for which APCs may be given are listed in the table at Q17. The awarding of APCs depends solely on the students' performance in AP tests, and not on students' intended major.

15. Who may be considered for AP tests?

Students who have done sufficiently well in either the relevant subjects at 'A' Level (or equivalent), or selected modules at polytechnic level, and have excellent overall results, may apply for AP tests.

[Students who have read and passed H3 modules at NUS are not allowed to sit for the AP test for the module(s) that they have read and passed. Students have to declare this upfront at the point of application.]

16. How do I apply for AP Tests?

If students are successful in gaining admission to FoS and meet the stated criteria, they should complete the application form available on the AP test website:

<https://www.science.nus.edu.sg/admissions/undergraduates/advanced-placement-credits/> (application form and dates for 2020 will be updated by April).

An administrative fee of S\$50 (before prevailing GST) is chargeable on a per module basis.

17. What are the modules that I can apply for AP tests and when are the tests held?

Module Code	Module Title
MA1505	Mathematics I
MA1101R	Linear Algebra I
MA1102R	Calculus
ST1131 [†]	Introduction to Statistics
CM1121	Organic Chemistry I
CM1131	Physical Chemistry I
PC1431	Physics IE
PC1141	Introduction to Classical Mechanics
PC1142	Introduction to Thermodynamics and Optics
PC1143	Introduction to Electricity and Magnetism
PC1144	Introduction to Modern Physics
LSM1401*	Fundamentals of Biochemistry
LSM1102	Molecular Genetics

* LSM1401 is not for students intending to read the Life Sciences major/minor.

+ ST1131 is not for Life Sciences students as it precludes the module ST1232, which is a core module in the Life Sciences major.

The AP tests are usually held during the last week of June every year. Dates of the test, details of the application procedure and other latest information will be updated on the AP test website by April.

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SCIENCE MAJORS/SECOND MAJORS/MINORS AND THEIR PREREQUISITES

18. What is the difference between a primary major and second major?

A second major is taken on top of the primary major to broaden students' undergraduate education.

The differences between a primary and second major are:

- A second major will not give students as comprehensive an education as a primary major.
- Students **cannot** graduate with only a second major. The primary major is what gives the degree.
- Students cannot graduate with an honours degree in the second major.
- The second major will be recorded only in the transcript but not in the degree scroll.

19. What are the prerequisites for FoS Major and Minor Courses?

Course	Subject Prerequisites for Students Offering		
	H2 Curriculum	IB Diploma	NUS High School Diploma
Majors			
<ul style="list-style-type: none"> Chemistry Chemistry [<i>Specialisation in Materials Chemistry (Hons)</i>] Chemistry [<i>Specialisation in Medicinal Chemistry (Hons)</i>] Chemistry [<i>Specialisation in Environment and Energy (Hons)</i>] 	<p>Good H2 pass (or equivalent) in Chemistry and at least a good 'O' Level pass in Mathematics</p>	<p>Good pass in Higher Level (HL) Chemistry and at least a good 'O' Level/Standard Level (SL) pass in Mathematics</p>	<p>Good pass in Chemistry and Mathematics</p>
<ul style="list-style-type: none"> Computational Biology* 	<p>Good H2 passes (or equivalent) in Mathematics / Further Mathematics and either Biology or Chemistry. <i>[Students without H2 passes (or equivalent) in either Biology or Chemistry should have at least an 'O'-Level pass (or equivalent).]</i></p>	<p>Good passes in HL Mathematics and either HL Biology, HL Chemistry. <i>[Students without HL passes in either Biology or Chemistry should have at least 'O' Level/SL passes in them.]</i></p>	<p>Good passes in Mathematics, and either Biology or Chemistry</p>
<ul style="list-style-type: none"> Food Science and Technology (<i>Application is by direct admissions only</i>) 	<p>Good H2 pass (or equivalent) in Chemistry and a good H2 pass (or equivalent) in Biology or Physics or Computing or Mathematics / Further Mathematics. <i>[Students without H2 Biology are required to take the bridging module in Biology (i.e. LSM1301) in Semester 1 to fulfil the prerequisite for the relevant Level 1000 Life Sciences module in the syllabus]</i></p>	<p>Good passes in HL Chemistry, and in HL Biology, HL Mathematics or HL Physics or HL Computer Science</p>	<p>Good passes in Chemistry, and in Biology or Mathematics or Physics or Computer Science</p>

<ul style="list-style-type: none"> Life Sciences Life Sciences [(Specialisation in Biomedical Science) (Hons)] Life Sciences [(Specialisation in Environmental Biology) (Hons)] Life Sciences [(Specialisation in Molecular and Cell Biology) (Hons)] 	<p>Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics / Further Mathematics or Physics</p> <p><i>[Students without a H2 pass in Biology or Chemistry may read the relevant bridging modules as entry requirements]</i></p>	Two good passes in HL Biology, HL Chemistry, HL Mathematics or HL Physics	Two good passes in Biology, Chemistry, Mathematics or Physics
<ul style="list-style-type: none"> Mathematics Applied Mathematics Applied Mathematics [(Specialisation in Mathematical Modeling and Data Analytics) (Hons)] Applied Mathematics [(Specialisation in Operations Research and Financial Mathematics) (Hons)] Quantitative Finance* 	Good H2 pass (or equivalent) in Mathematics / Further Mathematics	Good pass in HL Mathematics	Good pass in Mathematics
<ul style="list-style-type: none"> Pharmacy (Professional programme, where application is by direct admissions only) 	Very good H2 passes or equivalent in Chemistry and Biology or Mathematics / Further Mathematics or Physics	Very good passes in HL Chemistry and HL Biology or HL Mathematics or HL Physics	Very good passes in Chemistry and Biology or Mathematics or Physics
<ul style="list-style-type: none"> Pharmaceutical Science (Application is by direct admissions only) 	Very good pass in H2 chemistry and very good pass in H2 Biology or H2 Physics or H2 Mathematics / Further Mathematics	A very good pass in HL Chemistry and a very good pass in either HL Biology or HL Physics or HL Mathematics.	Very good passes in Chemistry and either Biology or Physics or Mathematics
<ul style="list-style-type: none"> Physics Physics [(Specialisation in Astrophysics) (Hons)] Physics [(Specialisation in Nanophysics) (Hons)] 	Good H2 passes or equivalent in Physics and Mathematics / Further Mathematics	Good passes in HL Mathematics and HL Physics	Good passes in Mathematics and Physics
<ul style="list-style-type: none"> Statistics Statistics [(Specialisation in Data Science) (Hons)] Statistics [(Specialisation in Finance and Business Statistics) (Hons)] 	Good H2 pass or equivalent in Mathematics / Further Mathematics	Good pass in HL Mathematics	Good pass in Mathematics
Second Majors (Optional) (About 48 – 52 MCs)			

<ul style="list-style-type: none"> Chemistry 	Good H2 pass or equivalent in Chemistry	Good pass in HL Chemistry	Good pass in Chemistry
<ul style="list-style-type: none"> Data Analytics 	Very good H2 pass (or equivalent) in Mathematics / Further Mathematics	Very good HL pass in Mathematics	Very good pass in Mathematics
<ul style="list-style-type: none"> Food Science <i>(Application is by direct admissions for Chemistry and Food Science second major (Double Major Programme only))</i> 	Good H2 pass in at least two science subjects; one of them should be Chemistry	Good HL pass in at least two science subjects, one of them should be Chemistry	Good pass in at least two science subjects, one of them should be Chemistry
<ul style="list-style-type: none"> Life Sciences 	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics / Further Mathematics or Physics	Good passes in HL Biology, HL Chemistry, and either HL Mathematics or HL Physics	Good passes in Biology, Chemistry, and either Mathematics or Physics
<ul style="list-style-type: none"> Mathematics Statistics 	Good H2 pass (or equivalent) in Mathematics / Further Mathematics	Good pass in HL Mathematics	Good pass in Mathematics
<ul style="list-style-type: none"> Physics 	Good H2 pass (or equivalent) in Physics	Good pass in HL Physics	Good pass in Physics
Minors (Optional) (About 24 MCs)			
<ul style="list-style-type: none"> Analytical Chemistry 	Good H2 pass (or equivalent) in Chemistry	Good pass in HL Chemistry	Good pass in Chemistry
<ul style="list-style-type: none"> Biophysics 	Good H2 passes (or equivalent) in Physics, Chemistry and/or Biology	Good passes in HL Physics, HL Chemistry and/or HL Biology	Good passes in Physics, Chemistry and/or Biology
<ul style="list-style-type: none"> Forensic Science <i>(Application is subject to department approval)</i> 	Good H2 passes (or equivalent) in Chemistry and Biology <i>[Requirements for selection to this programme include good grades for GEK1542 or LSM1306 and a CAP of 3.0 or higher]</i>	Good passes in HL Chemistry and HL Biology	Good passes in Chemistry and Biology
<ul style="list-style-type: none"> Life Sciences <i>(Application is subject to department approval)</i> 	Good H2 pass or equivalent in Biology	Good pass in HL Biology	Good pass in Biology

	<i>[Students without H2 Biology are required to take the bridging module in Biology (i.e. LSM1301/X) to fulfil the prerequisite for relevant Level 1000 Life Sciences module in the syllabus]</i>		
<ul style="list-style-type: none"> Financial Mathematics Mathematics Statistics 	Good H2 pass (or equivalent) in Mathematics / Further Mathematics	Good pass in HL Mathematics	Good pass in Mathematics
<ul style="list-style-type: none"> Nanoscience 	Good H2 pass (or equivalent) in either Chemistry or Physics	Good pass in either HL Chemistry or HL Physics	Good pass in either Chemistry or Physics
<ul style="list-style-type: none"> Pharmaceutical Science <i>(Application is subject to department approval)</i> 	<p>Good H2 pass (or equivalent) in either Chemistry or Biology</p> <p><i>[Students without H2 pass in Biology or Chemistry may read the relevant bridging modules as entry requirements]</i></p>	Good H2 pass in either HL Chemistry or HL Biology	Good pass in either Chemistry or Biology
<ul style="list-style-type: none"> Physics Optical and Semiconductor Technology 	Good H2 pass (or equivalent) in Physics	Good pass in HL Physics	Good pass in Physics
Joint Minors (Optional)			
<ul style="list-style-type: none"> Aquatic Ecology <i>(Application is subject to department approval)</i> 	<p>Open to students from all disciplines (except students in the Bachelor of Environmental Studies Programme) with an interview required</p> <p>In addition, a good H2 pass (or equivalent in Biology) is required.</p> <p><i>[Students without H2 Biology are required to take the bridging module in Biology (i.e. LSM1301/FC/X) to fulfil the prerequisite for relevant Level 1000 Life Sciences module in the syllabus]</i></p>	Open to students from all disciplines (except students in the Bachelor of Environmental Studies Programme) with an interview required	Open to students from all disciplines (except students in the Bachelor of Environmental Studies Programme) with an interview required

<ul style="list-style-type: none"> Engineering Materials (Application is subject to department approval) 	Good H2 pass (or equivalent) in either Chemistry or Physics	Good pass in either HL Chemistry or HL Physics	Good pass in either Chemistry or Physics
<ul style="list-style-type: none"> Environmental Biology (Application is subject to department approval) 	Good H2 passes (or equivalent) in Biology and Mathematics / Further Mathematics	Good passes in HL Biology and HL Mathematics	Good passes in Biology and Mathematics
<ul style="list-style-type: none"> Environmental Chemistry (Application is subject to department approval) 	Good H2 passes (or equivalent) in Physics and Mathematics / Further Mathematics	Good passes in HL Physics and HL Mathematics	Good passes in Physics and Mathematics
<ul style="list-style-type: none"> Medical Physics (Application is subject to department approval) 	Good H2 passes (or equivalent) in Physics and Biology [Open to students from FoS and FoE with an interview required]	Good passes in HL Physics and Biology	Good passes in Physics and Biology
Interdisciplinary Degree Programme			
<ul style="list-style-type: none"> Bachelor of Environmental Studies Programme (Specialisation in Environmental Biology) 	Good H1 pass (or equivalent) in Mathematics and good H2 pass (or equivalent) in either Biology or Chemistry	Good passes in SL Mathematics and either HL Biology or HL Chemistry	Good passes in Mathematics and either Biology or Chemistry
<ul style="list-style-type: none"> B.Sc. (Hons) with Major in Data Science and Analytics 	Very good pass in H2 Mathematics / Further Mathematics and a good pass in H2 Biology or H2 Chemistry or H2 Physics or H2 Computing	Very good pass in HL Mathematics and a good pass in HL Biology, HL Chemistry, HL Physics or HL Computer Science	Very good major CAP in Mathematics and a good major CAP in Biology or Chemistry or Physics or Computer Science

* Admission to the Faculty of Science does not automatically qualify a student to choose these majors as there are additional departmental selection criteria applied due to limited places.

Subject prerequisites for students offering the Singapore-Cambridge GCE 'A' Level: <http://www.nus.edu.sg/nusbuletin/faculty-of-science/undergraduate-education/degree-requirements/curriculum-structure-and-graduation-requirements/major-prerequisites/>

Subject prerequisites for students offering the International Baccalaureate (IB) Diploma: [http://www.nus.edu.sg/oam/apply-to-nus/international-baccalaureate-\(ib\)-diploma/subject-pre-requisites](http://www.nus.edu.sg/oam/apply-to-nus/international-baccalaureate-(ib)-diploma/subject-pre-requisites)

Subject prerequisites for students offering the NUS High School Diploma: <http://www.nus.edu.sg/oam/apply-to-nus/nus-high-school-diploma/admissions-requirements>

20. As a polytechnic diploma holder, what majors can I read at FoS?

Please refer to <http://www.nus.edu.sg/oam/apply-to-nus/polytechnic-diploma-from-singapore/subject-pre-requisites> for the full list of accredited diplomas.

Polytechnic diploma holders who present diplomas that have been accredited by the university can only apply to read specific programmes. The following polytechnic diplomas are acceptable for admission to FoS undergraduate programmes:

Accepted Diplomas from Nanyang Polytechnic	NUS Degree Courses
Biologics and Process Technology	Science (Chemistry)
Biomedical Engineering	Science (Physics)^
Chemical and Green Technology	Environmental Studies Science (Chemistry)
Chemical and Pharmaceutical Technology	Science (Chemistry)
Digital and Precision Engineering	Science (Physics)^
Electronic Systems <i>[Previously named as Electronics, Computer & Communication Engineering]</i>	Science (Physics)^
Engineering with Business	Science (Physics)^
Food Science and Nutrition <i>[previously named as Food Science]</i>	Science (Chemistry) Science (Food Science and Technology)^ Science (Life Sciences)
Manufacturing Engineering	Science (Physics)^
Mechatronics Engineering	Science (Physics)^
Medicinal Chemistry	Science (Chemistry) Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science) ^
Molecular Biotechnology	Science (Chemistry) Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science) ^
Molecular Biotechnology (Pharmaceutical and Clinical Trial track)	Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science) ^
Molecular Biotechnology (R&D/Bioenterprise/Manufacturing track)	Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Nanotechnology and Materials Science	Science (Chemistry) Science (Physics)^
Nursing (three-year programme)	Science (Life Sciences)
Pharmaceutical Sciences	Science (Chemistry) Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^

Accepted Diplomas from Ngee Ann Polytechnic	NUS Degree Courses
Aerospace Technology/ Aerospace Technology (with minor in Business Management)	Science (Physics)^
Biomedical Engineering / Biomedical Engineering (with minor in Business Management)	Science (Computational Biology)^ Science (Life Sciences) Science (Physics)^
Biomedical Laboratory Technology / Biotechnology	Science (Chemistry) Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Biomedical Science (for 2014 polytechnic graduates & earlier)/ Biomedical Science (Medical Laboratory Technology option)	Environmental Studies Science (Chemistry) Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Biomedical Science (for 2015 polytechnic graduates	Science (Chemistry)

onwards) with Specialisation in Clinical Laboratory Technology Specialisation in Biomedical Research Specialisation in Medicinal Chemistry	Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Chemical Engineering	Science (Chemistry)
Chemical and Biomolecular Engineering	Science (Chemistry)
Electrical Engineering/Electrical Engineering (with Minor in Business Management)	Science (Physics)^
Engineering Science	Science (Physics)^
Environmental and Water Technology	Environmental Studies
Horticulture and Landscape Management/ Landscape Design and Horticulture	Science (Life Sciences)
Molecular Biotechnology	Environmental Studies Science (Chemistry) Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Optometry	Science (Life Sciences)
Pharmacy Science	Science (Chemistry) [<i>for 2013 polytechnic graduates and earlier, and for 2017 polytechnic graduates onwards</i>] Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Veterinary Bioscience	Environmental Studies Science (Life Sciences)

Accepted Diplomas from Republic Polytechnic	NUS Degree Courses
Aerospace Engineering	Science (Physics)^
Biomedical Electronics	Science (Computational Biology)^
Biomedical Science	Environmental Studies Science (Chemistry) [<i>For 2013 polytechnic graduates and earlier</i>] Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Biotechnology	Environmental Studies Science (Chemistry) [<i>For 2013 polytechnic graduates and earlier</i>] Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Environmental Sciences	Environmental Studies Science (Chemistry) Science (Life Sciences)
Marine Science and Aquaculture	Environmental Studies Science (Life Sciences)
Materials Science	Science (Chemistry) Science (Physics)^
Pharmaceutical Sciences	Environmental Studies Science (Chemistry) [<i>For 2013 polytechnic graduates & earlier</i>] Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^

Accepted Diplomas from Singapore Polytechnic	NUS Degree Courses
Aeronautical Engineering	Science (Physics)^
Applied Chemistry (For 2018 polytechnic graduates onwards) Option: Industrial Chemistry Option: Pharmaceutical Science Option: Medicinal Chemistry Research <i>[Merger between Diploma in Applied Chemistry with Pharmaceutical Science and Diploma in Applied Chemistry with Materials Science]</i>	Science (Chemistry) Science (Pharmaceutical Science) Science (Pharmacy)
Applied Chemistry (For 2018 polytechnic graduates onwards) Option: Materials Science <i>[Merger between Diploma in Applied Chemistry with Pharmaceutical Science and Diploma in Applied Chemistry with Materials Science]</i>	Science (Chemistry)
Bioengineering	Science (Physics)
Biomedical Science	Science (Chemistry) Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Biotechnology (Medical Technology Option)	Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Biotechnology	Environmental Studies Science (Chemistry) Science (Computational Biology)^ <i>[For 2017 polytechnic graduates onwards]</i> Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Chemical Engineering	Science (Chemistry) Science (Food Sciences and Technology)^ <i>[For 2017 polytechnic graduates onwards]</i>
Environmental Management and Water Technology	Environmental Studies
Food Science and Technology	Science (Chemistry) Science (Food Science and Technology)^ Science (Pharmacy)^ Science (Pharmaceutical Science)^
Materials Engineering	Science (Chemistry)
Materials Science	Science (Chemistry)
Mechanical Engineering <i>[For 2017 polytechnic graduates onwards]</i>	Science (Physics)^
Medical Technology	Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Nutrition, Health and Wellness	Science (Food Science and Technology)^ Science (Life Sciences)
Optometry	Science (Life Sciences)
Perfumery and Cosmetic Science	Science (Chemistry) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Process Engineering	Science (Chemistry)

Accepted Diplomas from Temasek Polytechnic	NUS Degree Courses
Applied Food Science and Nutrition	Science (Chemistry) <i>[For 2017 polytechnic graduates]</i>

	<i>onwards]</i> Science (Food Science and Technology)^ Science (Pharmacy)^ Science (Pharmaceutical Science)^
Biomedical Engineering [For 2015 polytechnic graduates onwards] [previously named as Biomedical Informatics and Engineering]	Science (Computational Biology)^ Science (Life Sciences) Science (Physics)^
Biomedical Informatics and Engineering	Science (Computational Biology)^ Science (Life Sciences)
Biomedical Science	Environmental Studies Science (Chemistry) Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Biotechnology	Environmental Studies Science (Chemistry) Science (Computational Biology)^ [For 2017 polytechnic graduates onwards] Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Chemical Engineering	Science (Chemistry)
Mechatronics	Science (Physics)^ [For 2017 polytechnic graduates onwards]
Pharmaceutical Science	Science (Chemistry) Science (Food Science and Technology)^ Science (Life Sciences) Science (Pharmacy)^ Science (Pharmaceutical Science)^
Veterinary Technology	Environmental Studies Science (Food Science and Technology)^7 [For 2017 polytechnic graduates onwards] Science (Life Sciences)

^ Polytechnic applicants seeking admission to these science courses are required to attend an admissions interview conducted by the Faculty. Shortlisted candidates will be informed to attend the interview(s) for these courses.

21. Upon successful admission to the FoS, how many majors/minors do I have to take?

Students should satisfy requirements of at least one primary major in order to graduate - this is on top of fulfilling other University level and Faculty level requirements.

Second majors and minors are optional.

22. Is there a quota for each major?

With the exception of programmes like Computational Biology (ZB) and Quantitative Finance (QF) which have fixed quotas per academic year, students with GCE 'A' Level (or equivalent) qualifications admitted into the Science course can read any of the majors under the Science course as long as they can fulfil the pre-requisites to read the required modules needed for graduation.

*Students will need to apply separately for admission into the QF and ZB programmes upon being admitted into FoS.

QF application: Forms will be available in due course at <http://ww1.math.nus.edu.sg/undergraduates.aspx?f=UP-QF#scrolltop>

Please refer to the QF website for the application opening date.

<http://ww1.math.nus.edu.sg/undergraduates.aspx?f=UP-QF>

ZB application: Forms are available at <https://www.science.nus.edu.sg/wp-content/uploads/2020/03/ZB-Feb-2020.pdf>

23. When do I declare my major as a student under the Science course?

Students under the Science course declare their majors after matriculation and before the online modules registration period, via the Academic Plan Application and Declaration (APAD) System. However, it is in no way binding, as these students could change their major declaration every semester **before the 5th semester of study**, although the onus is on students to ensure that they meet all necessary requirements in that major at the point of graduation. The Module Registration System (ModReg) registration schedule for the coming semester will be released at a later date.

24. Who are eligible to read the second majors and how do I apply?

i) For FoS students reading second majors offered by FoS

No prior approval is needed, with the exception of the Second Majors in Food Science and Data Analytics. Students can declare a second major via APAD.

The following should be noted:

1) The Second Major in Food Science is only offered as a Double Major Programme (DMP) with the Primary Major in Chemistry through direct admission. It is not available for current students to apply.

2) The Second Major in Data Analytics is offered to students from the cohort from AY2016/2017 and onwards. Students should apply to the host department (Statistics and Applied Probability) before the start of their fifth semester of study.

ii) FoS students reading second majors offered by other faculties

Application procedures can vary from faculty to faculty. Students are encouraged to look for the latest application information at the website of the faculty offering the second major of their interest. Students should also check their mailboxes regularly as the call for application is usually done through email.

iii) Non-FoS students taking second majors offered by FoS

Non-Science students intending to read Second Majors in Chemistry, Life Sciences, Mathematics, Physics and Statistics offered by FoS will have to first complete at least two-thirds (16 MCs) of the corresponding minor requirements (normally about 24 MCs in total) before writing to the department offering the second major. They should apply to the host department before the start of their fifth semester of study.

25. Can I read two second majors?

No, students are not allowed to read two second majors.

26. Can I read a second major and minor in the same subject?

No. In addition, students intending to read second majors should note the following prohibited combinations:

No.	Second Major (48 - 52 MCs)	Prohibited Primary Majors (60 - 72 MCs)	Prohibited Minors (at least 24 MCs)
1	Chemistry	Chemistry, Food Science and Technology	Analytical Chemistry
2	Data Analytics	Applied Mathematics, Computational Biology, Data Science and Analytics, Mathematics, Quantitative Finance, Statistics	Mathematics, Statistics, Financial Mathematics
3	Food Science	Food Science and Technology	None
4	Life Sciences	Life Sciences (with or without specialisation)	Life Sciences
5	Mathematics	Applied Mathematics (with or without specialisations), Mathematics, Quantitative Finance	Financial Mathematics, Mathematics
6	Physics	Physics (with or without specialisation)	Physics
7	Statistics	Statistics (with or without specialisation)	Statistics

27. Can I drop the second major at any point of time if I cannot cope?

Science Student

In general, if the second major is not restricted and offered by FoS, students can drop it via APAD before the start of every semester. For assistance on dropping the second major, students may email to scimr@nus.edu.sg.

Non-Science Student

Students will have to inform their home faculty and request for the second major to be dropped.

28. How many modules do I have to read and pass for a second major?

Students have to read and pass between 48 to 52 MCs worth of second major modules. The number depends on which second major students are reading.

29. Will I have separate CAPs for the two majors?

No, students will only have one common CAP as they are awarded only one degree.

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DOUBLE MAJOR (DMP) AND MAJOR WITH MINOR PROGRAMMES (MMP)

30. How does one apply for a Double Major Programme (DMP) or a Major with Minor Programme (MMP) at the point of admission to NUS?

In the admission application form, applicants will be asked to rank their preference for a home course, which will all be single degree courses. After that, they will be asked to indicate whether they are interested in DMPs or MMPs. If they are, then they will need to rank their preference for the DMPs and MMPs. Please note that the DMPs and MMPs will be listed together with the Double Degree Programmes (DDPs) and Concurrent Degree Programmes (CDPs) as the second set of courses. Applicants will need to rank their preference from among the DMPs, MMPs, DDPs and CDPs.

31. What are the DMPs and MMPs at the point of admission offered by FoS with Science as the First Major?

DMPs:

FoS Primary Major	Faculty of Arts and Social Sciences (FASS) Second Major	Admission requirements
Applied Mathematics (Hons)	Economics	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Mathematics (Hons)	Economics	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Statistics (Hons)	Economics	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Life Sciences (Hons)	Psychology	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics / Further Mathematics or Physics

FoS Primary Major	NUS Business School Second Major	Admission requirements
Applied Mathematics (Hons)	Management	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Mathematics (Hons)	Management	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Statistics (Hons)	Management	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Life Science (Hons)	Management	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics / Further Mathematics or Physics

FoS Primary Major	School of Computing Second Major	Admission requirements
Applied Mathematics (Hons)	Business Analytics / Computer Science / Information Security	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Mathematics (Hons)	Business Analytics / Computer Science / Information Security	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Statistics (Hons)	Business Analytics / Computer Science / Information Security*	Good H2 pass (or equivalent) in Mathematics / Further Mathematics

FoS Primary Major	FoS Second Major	Admission requirements
Chemistry (Hons)	Food Science	Good H2 pass (or equivalent) in Chemistry and a good H2 pass (or equivalent) in Biology or Mathematics / Further Mathematics or Physics or Computing / Computer Science.

MMPs:

FoS Primary Major	Minor	Admission requirements
Applied Mathematics (Hons)	Information Security	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Computational Biology (Hons)	Information Security	Good H2 passes (or equivalent) in Mathematics / Further Mathematics and either Biology or Chemistry.
Quantitative Finance (Hons)	Information Security	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Statistics (Hons)	Information Security	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Life Sciences (Hons)	Public Health	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics / Further Mathematics or Physics
Applied Mathematics (Hons)	Entrepreneurship	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Mathematics (Hons)	Entrepreneurship	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Statistics (Hons)	Entrepreneurship	Good H2 pass (or equivalent) in Mathematics / Further Mathematics
Data Science and Analytics (Hons)	Entrepreneurship	Very good H2 pass (or equivalent) in Mathematics / Further Mathematics, and a good H2 pass (or equivalent) in Biology or Chemistry or Physics or Computing
Life Sciences (Hons)	Entrepreneurship	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics / Further Mathematics or Physics
Food Science and Technology (Hons)	Entrepreneurship	Good H2 pass (or equivalent) in Chemistry and a good H2 pass (or equivalent) in Biology or Mathematics / Further Mathematics or Physics or Computing / Computer Science

For enquiries on these programmes, please refer to the respective departments hosting the primary majors.

32. What happens if I am not selected for direct admission to a DMP/MMP?

If students are not selected for direct admission to a DMP/MMP, they will be considered for single degree programmes based on the choices they have indicated in the application. This is provided these students meet the cut-offs and subject prerequisites of their choices. Furthermore, students can still apply to read a second major/minor during their course of

study at NUS (except for the Second Major in Food Science) before the start of their fifth semester of study. Faculties/schools will make the selection according to their criteria, for example, the places available and CAP requirement.

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QUALIFYING ENGLISH TEST (QET) AND ENGLISH SKILLS (ES) MODULES

33. Qualifying English Test (QET)

Students in the undergraduate programmes who do not possess the necessary English language qualifications are required to sit for the Qualifying English Test (QET) set by the Centre for English Language Communication (CELC). The objectives of the QET are available at the CELC website.

The tests for Academic Year 2020/2021 are scheduled as follows:

Date:	7 and 14 July 2020
Time:	9:30 am to 11:45 am
Registration:	All students sitting for QET have to register their attendance via the online preregistration system from 19 Jun 2020 (Fri) to 28 Jun 2020 (Sun)
Seat no. & Venues:	This will be published on 3 July 2020 (Fri), 4 pm. As the QET will be conducted in digital format, students are required to: <ul style="list-style-type: none"> • Register for and attend the compulsory briefing session, besides registering and sitting for the QET. • Bring along an identification document with photo (e.g. Student Card, NRIC, Passport) to the test venue for identity verification purpose.
Release of results:	22 July 2020 (Wed)

Please take note that a student can only sit for the QET once.

Students who have any of the following qualifications are exempted from sitting for the QET:

- GP in the Singapore-Cambridge GCE 'A' Level: B4 or better ('AO' Level GP)
- GP in the Singapore-Cambridge GCE 'A' Level: C or better (H1 Level GP)
- KI in the Singapore-Cambridge GCE 'A' Level: D or better
- GP in the International-Cambridge 'AS' Level: C or better
- GP in the High School Certificate (HSC): C or better
- SAT:
 - Scores obtained before March 2016: Critical Reading (750 and above), Writing (750 and above) and Essay (10 and above)
 - Scores obtained from March 2016 onwards: Evidence-based Reading and Writing (770 and above) and Essay (8 for EACH dimension: Reading, Analysis and Writing)
- IELTS : Eight and above (overall) and eight and above (writing and reading)
- TOEFL: 114 and above (internet-based); or 650 and above (paper-based)
- International Baccalaureate (IB) Theory of Knowledge: C (Satisfactory) or better
- New Zealand National Certificate of Educational Achievement (NCEA) Standard 90720, 90721, 91472 or 91473 for English at Level 3 where a minimum rating of A (Achievement) has been attained
- NUS High School of Mathematics and Science:
 - EL5102 English for Academic Purposes (Critical Reading and Writing) in: B Minus (B-) or better; or
 - EL5101 – Language in Society II and EL6103 – Language in Society III - B and above in both

Results and Placement of QET

Based on their QET results, students will be required to read either one or both of these English skills modules:

(1) ES1000 or ES1000FC Basic English Course, (2) ES1103* English for Academic Purposes.

Students who obtain **Band 1** will have to take ES1000 followed by ES1103*.

Students who obtain **Band 2** will have to take ES1103*.

Students who obtain **Band 3** are exempted from an English module.

***Students who matriculated in AY2016/2017 and after are required to read ES1103.**

Note:

- ES1000 will be factored into students' workload but will not be computed into the CAP (although a letter grade is given). They will also not be counted towards the limit of 60 MCs set on the Level 1000 modules. Students are not allowed to exercise the S/U Option on ES1000.
- ES1103 will count towards students' workload, CAP and the limit of 60 MCs set on the level L000 modules. Students may exercise the S/U Option on ES1103.

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SCIENCE CURRICULAR STRUCTURE AND REQUIREMENTS

34. What are university level-requirements, programme requirements and Unrestricted Electives?

The module requirements of the undergraduate curriculum provide the substantive scaffolding to ensure broad-based learning combined with depth of specialisation. They are organised around three categories of requirements: **university-level requirements**, **programme requirements** and a set of **Unrestricted Elective Modules**.

An attractive feature of this curriculum structure is that it is general enough to accommodate different academic programmes and flexible enough to encourage students to pursue their academic interests and aspirations without loss of depth and breadth. Taken together, the requirements prepare students to lead a fulfilling life at the individual, social, and national levels.

University-level requirements aim to broaden students' intellectual horizons, to develop critical and creative thinking skills for independent learning, and to promote spoken and written articulacy.

i) University-level requirements that must be fulfilled by NUS Science students:

This is one of the main components in the NUS curriculum that encourages broad-based learning. University-level requirements comprise General Education (GE) modules that fall into the following five pillars:

- Human Cultures
- Quantitative Reasoning
- Thinking and Expression
- Singapore Studies
- Asking Questions

Science students are required to read one module from each pillar to fulfil university-level requirements.

The **programme requirements** comprise the Faculty-level and major requirements. The **faculty requirements** serve to introduce a student to the different disciplines in FoS or to certain basic areas of study that prepare a student to pursue a particular discipline. The **major requirements** provide specialised education in a subject and include both 'essential' and 'elective' modules. While the former are concerned with the core knowledge and abilities expected of a graduate majoring in the discipline, the latter combine the flexibility of choice with further specialisation within the discipline.

ii) Faculty requirements that must be fulfilled by NUS Science students:

Programme	Faculty Requirements
B.Sc.	12 MCs from three distinct subject groups outside the group(s) under which the major falls.
B.Sc. (Hons.)	16 MCs from at least three distinct subject groups outside the group(s) under which the major falls (where four MCs may come from the subject group under which the major falls, but not bearing the prefix of the major).
B.Sc in .(Pharm.)/B.Sc. (Hons) in (Pharm) For Pharmacy majors of cohort	Read and pass the following essential modules for the Pharmacy major: AY1130, PA1113, PY1131, PX2108.

from AY2014/2015 and onwards	
B.Sc. For FST majors of cohort from AY2015/2016 and after	Four MCs from Professional Placement Programme, and Eight MCs from two distinct subject groups outside the subject group(s) under which the major falls.
B.Sc.(Hons.) For FST majors from cohort from AY2015/2016 and after	Four MCs from Professional Placement Programme, and 12 MCs from at least two distinct subject groups outside the group(s) under which the major falls (where four MCs may come from the subject group under which the major falls, but not bearing the prefix of the major).

Table of Subject Groups

Subject Group	Majors in this Group	Module Codes in this Group
Computing Sciences	Computational Biology (ZB)	CS*, COS, IT1001*, IT1002*, IT1006*, QF, ZB, CM3267
	Quantitative Finance (QF)	
Chemical Sciences	Chemistry (CM)	CM, FST, PHS, PR
	Chemistry (Specialisation in Materials Chemistry) (CM)	
	Chemistry (Specialisation in Medicinal Chemistry) (CM)	
	Chemistry (Specialisation in Environment and Energy) (CM)	
	Food Science and Technology (FST)	
	Pharmaceutical Science (PHS)	
Life Sciences	Pharmacy (PR)	FST, LSM, PHS, PR
	Food Science and Technology (FST)	
	Life Sciences (LSM)	
	Life Sciences (Specialisation in Biomedical Science) (LSM)	
	Life Sciences (Specialisation in Molecular and Cell Biology) (LSM)	
	Life Sciences (Specialisation in Environmental Biology) (LSM)	
	Pharmaceutical Science (PHS)	
Mathematical and Statistical Sciences	Pharmacy (PR)	CZ, DSA, MA, QF, ST
	Applied Mathematics (MA)	
	Applied Mathematics (Specialisation in Mathematical Modelling and Data Analytics) (MA)	
	Applied Mathematics (Specialisation in Operations Research and Financial Mathematics) (MA)	
	Data Science and Analytics (DSA)	
	Mathematics (MA)	
	Quantitative Finance (QF)	
	Statistics (ST)	
	Statistics (Specialisation in Data Science) (ST)	
Statistics (Specialisation in Finance and Business Statistics) (ST)		
Physical Sciences	Physics (PC)	PC
	Physics (Specialisation in Astrophysics) (PC)	
	Physics (Specialisation in Nanophysics) (PC)	
	Physics (with specialisation in Quantum Technologies) (PC)	
Multidisciplinary and Interdisciplinary Sciences	----	FMS12XXB, FMS12XXC, FMS12XXM, FMS12XXP, FMS12XXR, FMS12XXS, SP1202, SP1203, SP1541, SP2251, SP3201, SP3202, SP3203, SP3277, SP2201, SP4261, SP4262, SP4263, SP4264, SP4265

* Modules CSXXXX, IT1001, IT1002, and IT1006 are offered by the School of Computing (SoC) but if read, may be counted towards faculty requirements from the Computing Sciences subject group.

Computational Thinking Requirements (for cohort from AY2017/2018 Onwards)

To remain relevant at the workplace of tomorrow, undergraduates should acquire basic computational skills, i.e. computational thinking (CT).

For FoS Students admitted from Academic Year 2017/2018 onwards, the options to fulfil the CT requirement, by the respective major programmes, are described below:

Majors	Options to Fulfil Computational Thinking Requirement
Computational Biology, Data Science and Analytics, Mathematics and Applied Mathematics, Quantitative Finance, Statistics	These majors will continue to acquire higher-order computational and programming skills in the form of CS1010S Programming Methodology (or its variants) (within the major's core requirements)
Life Sciences, Pharmaceutical Science, Physics	Option 1: COS2000 – Computational Thinking for Scientists or Option 2: CS1010S (or its variants) – Programming Methodology
Chemistry, Food Science and Technology	Option 1: COS2000 – Computational Thinking for Scientists or Option 2: CM3267 – Computational Thinking and Programming in Chemistry* or Option 3: CS1010S (or its variants) – Programming Methodology
Pharmacy	For Cohort AY2018/19 and after, to read one of the following as an Unrestricted Elective module: Option 1: COS2000 – Computational Thinking for Scientists or Option 2: CS1010S (or its variants) – Programming Methodology
Bachelor of Environmental Studies (BES)	All undergraduates [from FASS and FoS, in BES, inclusive of BES students in the University Town College Programme (UTCP) or University Scholars Programme (USP)], will be required to do GET1031A. BES students doing the UTCP at Residential College 4 (RC4) are exempted from GET1031A as the RC4 programme encourages explicit use of representative thinking, using computer models.

Notes

- For all FoS majors, the option to take “CS1010S (or its variants) – Programming Methodology” is open (even if it is not within students' major programme requirements), and can be used to fulfil the CT requirement. However, do note that the availability of this module is subject to successful bidding.
- COS2000 will count as a module from the Computing Sciences subject group of FoS requirements.
- *A new elective module CM3267 will count as a module from the Computing Sciences or Chemical Sciences subject group

SPS students

Students who have completed SPS requirements, by successfully passing the following modules:

1. SP2171 Discovering Science,
2. SP2173 Atoms to Molecules,
3. SP2174 The Cell,
4. SP3172 Integrated Science Project,
5. SP3175 The Earth, and
6. SP3176 The Universe,

are deemed to have fulfilled the CT requirement. A student who does not complete SPS requirements by passing all six SPS modules, would need to ensure that he/she fulfils the CT requirement by reading a module that counts towards CT requirements, according to the options to fulfil CT requirements for his/her major.

Unrestricted Electives allow students to explore greater breadth or depth in various topics by giving them the freedom to choose modules according to their interest. Such unrestricted elective modules are often required apart from university-level requirements and programme requirements, so that students can accumulate sufficient modular credits for graduation.

SP1541 Exploring Science Communication Through Popular Science

FoS students matriculated in AY2013/2014 and after will have to fulfil SP1541 Exploring Science Communication Through Popular Science as a **compulsory** graduation requirement. However, please note that the following groups of students are exempted from reading SP1541:

- Environmental Studies students (they will read ENV1202 instead)
- Special Programme in Science (SPS) students (they will read SP2171 instead)
- UTown, RVRC and USP students (they will read their respective writing modules as required under the UTown, RVRC and USP programme respectively)
- For Pharmacy students, the English module is imbued into, and will be assessed under their final year project PR4196.

If students are required to take ES1000 (Basic English) and ES1103 (English for Academic Purposes), they must complete them before taking SP1541. Hence, students who need to enrol for both ES1000 and ES1103 should take ES1000 in the 1st semester, ES1103 in the 2nd semester and SP1541 in their 3rd semester. Students who need to enrol only for ES1103 should do so in the 1st semester, followed by SP1541 in the 2nd semester.

SP1541 is letter-graded and carries four MCs. SP1541 may be used to fulfil the multidisciplinary and interdisciplinary subject group under faculty requirements or as Unrestricted Electives Requirements (for cohort from AY2015/2016 and onwards). Students are advised to complete this module as early as possible during their candidature. Students who have not completed SP1541 will **not** be allowed to apply for Study Abroad Programmes (SAP).

35. Are there avenues to take up double degrees?

A double degree consists of a combination of two separate degrees in two discipline areas from the same faculty or two different faculties. There are specially designed double degrees developed by faculties as well as double degree combinations put together by students.

Specially designed double degree programmes in FoS include (1) Law and Life Sciences, and (2) Computer Science and Mathematics/ Applied Mathematics

Law and Life Sciences

The DDPs in Law and Life Sciences leverage on the strength of the Faculty of Law (Law) in the legal dimensions of these issues and depth of technical expertise of NUS Life Sciences, FoS, in these areas. It will enable students to discover the broad connections between law and life sciences and acquire broad expertise to occupy the niche position linking up both disciplines.

There is a dual entry for this programme: (1) Direct entry with competitive 'A' Level (or equivalent) qualifications or (2) Entry to the programme with good results after the first year of studies in FoS or Law. Please refer to: <http://www.nus.edu.sg/prog/lawlifesciences/overview.htm>

Computer Science and Mathematics/Applied Mathematics

Computer science and mathematics share a synergistic relationship in many ways – the foundation of computer science has its roots in mathematics, starting from the notion of computation (the Turing machine); discrete mathematics is an indispensable tool in understanding structures and systems in computer science. On the other hand, inventions and advances in computer science have generated new frontiers for research in mathematics. As a result, many fundamental areas in computer science, such as computability and computational complexity, are very much part of mathematics and vice versa. The DDPs in Computer Science and Mathematics/Applied Mathematics leverage the synergistic relationship between the two disciplines.

There is a dual entry for this programme: (1) Direct entry with competitive 'A' Level (or equivalent) qualifications or (2) Entry to the programme with good results after the 1st year of studies in FoS or School of Computing. Please refer to: http://www.comp.nus.edu.sg/undergraduates/dd_cs_math.html

For double degree combinations put together by students, the onus is on the student to ensure that he/she declares his/her intention to enrol for the programme just after completion of between **60 to 80 MCs (excluding MCs earned from student exchange programmes or APCs) with a minimum CAP requirement of 4.0 by writing to askscience@nus.edu.sg with his/her study plan.** The student must also obtain the written approval of both faculties. Normally, students intending to pursue a double degree will have read some modules in the respective areas intended for the double degree at the point of application. They are encouraged to seek proper advice in planning their modules as early as possible in their candidature.

The student will be issued two separate degrees, with each degree classified according to the CAP for the respective modules. Both CAPs and degrees will be noted on the student's transcript. The maximum period of candidature will be **six years.**

Except for certain prohibited combinations, as identified by faculties, all other combinations of double degree programmes will be allowed. Please note that the following double degree combination is prohibited:

- B. Pharmacy (Hons) / with any other degrees

Please refer to: <https://www.science.nus.edu.sg/education/undergraduates/special-programmes/double-degree-programmes-ddp/>

36. Are there opportunities for exchange programmes with other universities?

FoS offers opportunities for overseas study through a host of programmes such as the **Student Exchange Programme**, where students can spend a semester or two studying at a reputable university.

Students who find a semester of study too long may opt for a more affordable and equally enriching alternative by participating in the **Summer Programmes** exclusively offered to Science students at prestigious universities such as Hokkaido University, University of Toronto, and Hong Kong University of Science and Technology.

Budding entrepreneurs may choose the **NUS Overseas Colleges (NOC)** experience and those whose passion and aptitude lie in the mathematical and physical sciences may challenge themselves by enrolling in the highly prestigious **NUS-French DDP**.

Aspiring researchers may wish to participate in one of the **Summer Research Programmes** at the University of North Carolina at Chapel Hill, St John's College, University of Cambridge, and many more.

Joint Minor Programmes (JMPs) in Environmental Biology or Environmental Chemistry are also available for students who are interested in gaining a minor overseas at the University of Toronto. This programme enables students to understand the increasing environmental concerns we face today.

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OTHER USEFUL REFERENCES

A) Overview of FoS Undergraduate Programmes and Courses

Degree	B.Sc. (Hons) ¹ [4-year duration]	B.Sc. (Hons) [4-year duration]
Majors	<ul style="list-style-type: none"> • Chemistry • Chemistry (Specialisation in Materials Chemistry) • Chemistry (Specialisation in Medicinal Chemistry) • Chemistry (Specialisation in Environment and Energy) • Food Science and Technology • Life Sciences • Life Sciences (Specialisation in Biomedical Science) • Life Sciences (Specialisation in Environmental Biology) • Life Sciences (Specialisation in Molecular and Cell Biology) • Mathematics • Applied Mathematics • Applied Mathematics (Specialisation in Mathematical Modelling and Data Analytics) • Applied Mathematics (Specialisation in Operations Research and Financial Mathematics) • Quantitative Finance • Physics • Physics (Specialisation in Astrophysics) • Physics (Specialisation in Nanophysics) • Physics (Specialisation in Quantum Technologies) • Statistics • Statistics (Specialisation in Data Science) • Statistics (Specialisation in Finance and Business Statistics) 	<ul style="list-style-type: none"> • Computational Biology • Data Science and Analytics • Pharmaceutical Science
Bachelor of Pharmacy / Bachelor of Pharmacy (Hons)	<ul style="list-style-type: none"> • Previously B.Sc. Pharmacy / B.Sc. Pharmacy (Hons) 	
Bachelor of Environmental Studies (BES)	<ul style="list-style-type: none"> • Four-year direct Honours programme launched in 2011. • Multi-disciplinary programme jointly hosted by the FoS, FASS, with participation from five other faculties and schools • BES (Specialisation in Environmental Biology) is offered by FoS • BES (Specialisation in Environmental Geography) is offered by FASS 	

Second Majors² (optional)	<ul style="list-style-type: none"> • Chemistry • Data Analytics • Food Science • Life Sciences • Mathematics • Statistics • Physics
Minors² (optional)	<ul style="list-style-type: none"> • Analytical Chemistry • Aquatic Ecology (Jointly offered with FASS) • Biophysics • Engineering Materials (Jointly offered with FoE) • Environmental Biology (Jointly offered with University of Toronto) • Environmental Chemistry (Jointly offered with University of Toronto) • Financial Mathematics • Forensic Science • Geosciences (Jointly offered with FASS) • Life Sciences • Mathematics • Medical Physics (Jointly offered with FoE) • Nanoscience • Pharmaceutical Sciences • Physics • Statistics
Double Degrees (optional)	
Duration	Five years
Faculty-designed	<ul style="list-style-type: none"> • Computer Science and Mathematics/Applied Mathematics • Law and Life Sciences • NUS-Waseda (for USP students) • NUS-French Grandes Écoles
Self-Designed	<ul style="list-style-type: none"> • Double degree combinations within and outside FoS put together by students

¹ Students can choose to exit from the programme and graduate with a Bachelor's degree within three years, except for Computational Biology, Data Science and Analytics, Pharmaceutical Science, Pharmacy and Bachelor of Environmental Studies, which are strictly four-year programme. In addition, students who are majoring in a particular course with specialisation will be awarded with the specialisation upon completion of the course with Honours.

² Students can also choose to read second majors or minors offered by other faculties in NUS that are open to Science students.

B) Overview of the Eligibility Criteria and Curriculum Information for Science Restricted Majors and Restricted Minors

Restricted Major	Eligibility Criteria	Information
<ul style="list-style-type: none"> Quantitative Finance [Interview required] 	<p>Application opens from mid-June and closes by mid-July every year.</p> <p>To apply for this major, applicants must be enrolled in FoS, and show aptitude in Mathematics. They must also have interest in banking and finance.</p>	<p>Please refer to http://ww1.math.nus.edu.sg/undergraduates.aspx?f=UP-QF</p>
<ul style="list-style-type: none"> Computational Biology [Interview required] 	<p>Application is in early July followed by an interview. The interview outcome is usually made known in late July.</p> <p>To apply for this major, applicants must be enrolled in FoS, meet the subject prerequisites, and have keen interest and aptitude for Mathematical Sciences and Life Sciences.</p>	<p>Please refer to https://www.science.nus.edu.sg/wp-content/uploads/2020/03/ZB-Feb-2020.pdf</p>
<ul style="list-style-type: none"> Food Science and Technology 	<p>Direct admission is by application only.</p> <p>To apply for this major, applicants must have a good H2 pass (or equivalent) in Chemistry and a good pass in H2 (or equivalent) Biology or Physics or Computing or Mathematics/Further Mathematics.</p>	<p>Please refer to http://www.fst.nus.edu.sg/programmes/Undergraduates/Prospectus/FSTModules.html</p>
<ul style="list-style-type: none"> Data Science and Analytics 	<p>Direct admission is by application only.</p> <p>To apply for this major, applicants must have a very good pass in H2 Mathematics/Further Mathematics and a good pass in H2 Biology or H2 Chemistry or H2 Physics or H2 Computing</p>	<p>Please refer to https://www.stat.nus.edu.sg/index.php/prospective-students/undergraduate-programme/programme-structure</p>
<ul style="list-style-type: none"> Pharmaceutical Science 	<p>Direct admission is by application only.</p> <p>To apply for this major, applicants must have a very good pass in H2 Chemistry and a very good pass in H2 Biology or H2 Physics or H2 Mathematics/Further Mathematics</p>	<p>Please refer to http://pharmacy.nus.edu.sg/bachelor-of-science-pharm-sci/</p>
<ul style="list-style-type: none"> Pharmacy 	<p>Direct admission to this professional programme is by application only.</p>	<p>Please refer to http://pharmacy.nus.edu.sg/bachelor-of-science-pharmacy/</p>

Restricted Minor	Eligibility Criteria	More Information
<ul style="list-style-type: none"> Overseas Joint Minors at University of Toronto (UofT) Up to 10 students are selected annually to spend one semester at UofT from August to December or January to May 	<p><u>For Environmental Biology specialisation</u></p> <p>Applications are open to all NUS students who have obtained a minimum CAP of 3.0, and passed the following modules at the point of application:</p> <ul style="list-style-type: none"> H2 Biology or equivalent or LSM1301 General Biology; H2 Mathematics or equivalent or any 1st year level NUS mathematics module; Any four MCs of the Statistics* or Probability module of NUS; LSM1102* Molecular Genetics (Semester 1 and 2); LSM1104* General Physiology (Semester 1); LSM2102* Molecular Biology (Semester 1 and 2) <p>*May be changed due to revision to the Life Sciences curriculum.</p> <p><u>For Environmental Chemistry</u></p> <p>Applications are open to all NUS students who have obtained a minimum CAP of 3.0, and who have passed the following modules at the point of application:</p> <ul style="list-style-type: none"> H2 Physics or equivalent, or NUS Physics bridging module; H2 Mathematics or equivalent, or any 1st-year level NUS mathematics module; CM1111 Inorganic Chemistry I (Semester 1); CM1121 Organic Chemistry I (Semester 2); CM1131 Physical Chemistry I (Semester 1); CM2142 Analytical Chemistry I (Semesters 1 and 2) 	<p>To be awarded the minor in the respective fields, students must read a mixture of core and elective modules from NUS and UofT.</p> <p>Please refer to https://www.science.nus.edu.sg/wp-content/uploads/2019/11/JMP.pdf</p>

<ul style="list-style-type: none"> Forensic Science 	<p>Application period 15 October – 15 November</p>	<p>To be awarded the minor, students must read six modules.</p> <p>Please refer to http://www.chemistry.nus.edu.sg/education/undergrads/Minor/forensic.htm</p> <p>http://www.dbs.nus.edu.sg/doc/education/FSminor.html</p>
<ul style="list-style-type: none"> Pharmaceutical Science 	<p>It is preferred that for the following qualifications, applicants have the subject prerequisites (in brackets):</p> <ul style="list-style-type: none"> - Singapore-Cambridge GCE 'A' Level (H2 Biology or H2 Chemistry); - Diploma from local polytechnic(s) (Biology-related or Chemistry-related modules); - NUS High School Diploma (Biology or Chemistry); - IB Diploma (Biology or Chemistry); - A bridging module in either Biology or Chemistry taken at NUS. 	<p>To be awarded the minor, students must read four core and two elective modules offered by the Pharmacy Department.</p> <p>Please refer to http://pharmacy.nus.edu.sg/minor-in-pharm-sci/</p>
<ul style="list-style-type: none"> Aquatic Ecology [Interview required] 	<p>Opens in July to students from all disciplines with an interview required</p>	<p>To be awarded the minor, students must read four foundation modules and two elective modules.</p> <p>Please refer to http://www.lifesciences.nus.edu.sg/info/AE_Minor.pdf</p>
<ul style="list-style-type: none"> Medical Physics [Interview required] 	<p>Open to students from FoE and FoS with good H2 passes (or equivalent) in Physics and Biology and who have read and passed one of the following:</p> <ol style="list-style-type: none"> 1. PC1144 Introduction to Modern Physics (Semester 2); 2. PC1432 Engineering Physics (Semesters 1 and 2); 3. PC2232 Physics for Electrical Engineers (Semester 1); 4. PC2130B Applied Quantum Mechanics (Semester 2) 	<p>To be awarded the minor, students must read three core modules and three elective modules.</p> <p>Please refer to http://www.nus.edu.sg/nusbuletin/faculty-of-science/undergraduate-education/multidisciplinary-opportunities/minor-programmes/medical-physics/</p>