Faculty of Science

Undergraduate Course Briefing

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Faculty of Science

Vision
• Be among the world’s best in Science education and research.

Mission
• Provide quality education, foster the spirit of enterprise and conduct leading edge research to advance knowledge in Science and Technology for the benefit of Singapore and the global community.
Departments in FoS

- Department of Biological Sciences
- Department of Chemistry
- Department of Mathematics
- Department of Pharmacy
- Department of Physics
- Department of Statistics & Applied Probability
NUS MODULAR SYSTEM
# NUS Modular System

<table>
<thead>
<tr>
<th>What is a ...</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module</td>
<td>A unit of study; has a unique module code e.g. CM1111, LSM2201, MA3205</td>
</tr>
<tr>
<td>Module Code</td>
<td>Consist of two- or three-letter prefix that denotes discipline, and four digits. The 1st digit indicates the level e.g. MA3205 is a Level 3 module</td>
</tr>
<tr>
<td>Modular Credit (MC)</td>
<td>A unit of workload. 1 MC = 2.5 hrs of study and preparation per week.</td>
</tr>
<tr>
<td>Prerequisite</td>
<td>The base of knowledge on which the subject matter of a particular module will be built. A student must complete the prerequisites listed before taking the module.</td>
</tr>
<tr>
<td>Preclusion</td>
<td>Modules that have similar emphases and may not be taken together with that particular module.</td>
</tr>
</tbody>
</table>
# NUS Modular System

<table>
<thead>
<tr>
<th>What is a …</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Major</strong></td>
<td>Compulsory. Specialised education in a subject that every undergraduate must complete to fulfill the degree requirements.</td>
</tr>
<tr>
<td><strong>Second Major</strong></td>
<td>Optional. Similar to Primary Major, but less intense (consists of 48 MCs; 8 MCs can be double-counted towards primary major requirements). May be taken from within or outside student’s home faculty. Student will still be awarded a single degree upon completion.</td>
</tr>
<tr>
<td><strong>Minor</strong></td>
<td>Optional. It is a coherent course of study providing depth in a certain area (consists of 24 MCs; 8 MCs can be double-counted towards the major). May be taken from within or outside student’s home faculty. Student will still be awarded a single degree upon completion.</td>
</tr>
<tr>
<td><strong>Specialisation</strong></td>
<td>A programme of study on a particular sub-discipline within its main discipline. Only available to specific primary majors in FoS.</td>
</tr>
</tbody>
</table>
Degree Programmes in FoS

- Bachelor of Science - B.Sc.
- Bachelor of Science (Hons.) – B.Sc. (Hons.)
- Bachelor of Applied Science – B.Appl.Sc.
- Bachelor of Applied Science (Hons.) – B.Appl.Sc. (Hons.)
- Bachelor of Environmental Studies (Hons.) with specialisation in Environmental Biology – BES (Hons.)
- Bachelor of Environmental Studies with specialisation in Environmental Biology - BES
- Bachelor of Science (Pharm.)(Hons.) – B.Sc. (Pharm.)(Hons.)
- Bachelor of Science (Pharm.) – B.Sc. (Pharm.)
Science Majors

- Chemistry
- Chemistry with Specialisation in Environment and Energy
- Chemistry with Specialisation in Materials Chemistry
- Chemistry with Specialisation in Medicinal Chemistry
- Computational Biology (4-year programme)
- Life Sciences with Specialisation in Biomedical Sciences
- Life Sciences with Specialisation in Environmental Biology
- Life Sciences with Specialisation in Molecular and Cell Biology
- Applied Mathematics
- Mathematics
- Pharmacy
- Physics
- Physics with Specialisation in Astrophysics
- Physics with Specialisation in Physics in Technology
- Quantitative Finance
- Statistics
- Statistics with Specialisation in Biostatistics
- Statistics with Specialisation in Finance and Business Statistics
Applied Science Majors

• Food Science and Technology
Second Majors offered by Science

- Chemistry
- Life Sciences
- Statsitics
- Physics
- Math
- Financial Math

2nd Major
Second Majors

• All second majors are non-Honours majors.
• Science students intending to read a second major in Science can declare in CORS upon the first log in.
• Admission to the second major will be subjected to the host department's approval and the availability of quota.
• Science students interested in reading a second major offered by other Faculties in NUS should check your mailbox regularly as the call for application is usually done through email after you have completed your first year of studies.
Double Degrees Programme (DDP)

- A double degree consists of two separate degrees from two discipline areas in the same Faculty or in two different Faculties
- Two types of DDPs: structured or student-designed
- Students may pursue either Honours in both degrees or only Honours in the first degree and non-Honours in the second degree
- Students can declare the intention to enroll for a double degree just after completion of between 60 MCs to 80 MCs
- A/P Wong Yan Loi at Science Dean’s Office will work with you on your programme requirements
- Minimum CAP requirement: 4.0
Double Majors & Double Degrees

Arts & Social Sciences
• Economics
• Geography
• Psychology
• Southeast Asian Studies

and many more...
(Second Majors/Double Degree)

Faculty of Law
• Law with Life Sciences
  (Double Degree)

Faculty of Engineering
• Physics with Materials Science &
  Engineering
  (Double Degree)

School of Business
• Management
• Management Technology
  (Second Majors/Double Degree)

School of Computing
• Computer Science with Math/Appl.Math
  (Double Degree)
Popular Double Major Combinations

- Applied Math and Management
- Chemistry and Management
- Life Sciences and Management
- Applied Math and Economics
- Quantitative Finance and Economics
- Statistics and Economics

- Math and Chinese Studies
- Chemistry and Political Sciences
- Life Sciences and Psychology
- Life Sciences and English Language

... and many more!
Popular Double Degree Combinations

- Chemistry and Business Administration
- Computer Science and Math/Applied Math
- Law and Life Sciences
- Life Sciences and Business Administration
- Life Sciences and Economics
- Mathematics and Economics
- Physics and Materials Science & Engineering
- Physics and Mechanical Engineering
- Quantitative Finance and Business Administration

... and many more!
Minors (offered by FoS)

<table>
<thead>
<tr>
<th>Open Minors</th>
<th>Restricted Minors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry</td>
<td>Aquatic Ecology</td>
</tr>
<tr>
<td>Biophysics</td>
<td>Engineering Materials</td>
</tr>
<tr>
<td>Financial Mathematics</td>
<td>Joint Minor in Environmental Biology with UofT</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Joint Minor in Environmental Chemistry with UofT</td>
</tr>
<tr>
<td>Nanoscience</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>Optical &amp; Semiconductor Tech</td>
<td>Forensic Science</td>
</tr>
<tr>
<td>Physics</td>
<td>Pharmaceutical Sciences</td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
</tr>
</tbody>
</table>

‘Open’ Minor - students can declare their intention to do an open minor via the CORS without any prior approval from the Host Faculty/Department.

‘Restricted’ Minor - students are required to apply to the Host Faculty/Department and obtain approval to read a restricted minor.
Special Undergraduate Programmes

NUS offers a wide range of learning opportunities beyond the traditional single-degree programmes offered by individual Faculties/Schools. The undergraduate curriculum is structured with sufficient flexibility to enable students to obtain knowledge in an additional discipline and/or further specialization within a discipline.

The NUS educational experience is not limited by the physical boundaries of the campus or even Singapore. NUS collaborates with some of the world's finest universities to offer special programmes to NUS students.

Students on these special undergraduate programmes would acquire additional sets of skills and are well-placed for multiple career options upon graduation.

Students may choose to pursue only one of the following types of special programmes, i.e. one Double Degree Programme (DDP) or one Concurrent Degree Programme (CDP) or one Concurrent Double Master Programme (CDMP), in a single continuous candidature. They would not be eligible for another special programme until the first one has been completed and they have graduated from it.

Below are University-level special programmes available to undergraduate students. Individual Faculties/Schools also offer other special programmes, details of which are at the respective Faculties/Schools' websites.

- Double Degree Programmes
- Concurrent Degree Programmes
- Double/Concurrent/Joint Degree Programmes with Overseas Universities
- Double Major Programmes
- Minor Programmes
- Specialisations
- Student Exchange Programme
- Undergrad Research Opportunity Programme

Information on admission to NUS is available at the website of the Office of Admissions
Grading System
**NUS Grading System**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, A+</td>
<td>5.00</td>
</tr>
<tr>
<td>A-</td>
<td>4.50</td>
</tr>
<tr>
<td>B+</td>
<td>4.00</td>
</tr>
<tr>
<td>B</td>
<td>3.50</td>
</tr>
<tr>
<td>B-</td>
<td>3.00</td>
</tr>
<tr>
<td>C+</td>
<td>2.50</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>D+</td>
<td>1.50</td>
</tr>
<tr>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
</tr>
</tbody>
</table>

**No Grade Points**

- **EXE - Exempted**
  
  *Awarded when candidate is exempted from and given credit for a module*

- **IC - Incomplete**

- **IP - In Progress**

- **S - Satisfactory**

- **U - Unsatisfactory**

- **CS - Completed Satisfactorily for non-gradable module**

- **CU - Completed Unsatisfactorily for non-gradable module**

- **W - Withdrawn**
Cumulative Average Point (CAP)

• Academic progress of every student is tracked by the CAP

• Formula for calculating CAP:

\[
\text{CAP} = \frac{\text{Sum (module grade point x MCs assigned to module)}}{\text{Sum (MCs assigned to modules used in calculating the numerator)}}
\]
How to calculate CAP

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Module</strong></td>
<td><strong>MCS</strong></td>
</tr>
<tr>
<td>CM1111</td>
<td>4</td>
</tr>
<tr>
<td>CS1231S</td>
<td>5</td>
</tr>
<tr>
<td>MA1101R</td>
<td>4</td>
</tr>
<tr>
<td>MA1102R</td>
<td>4</td>
</tr>
<tr>
<td>ST1232</td>
<td>4</td>
</tr>
</tbody>
</table>

**CAP at the end of Sem 2**

\[
\text{CAP at the end of Sem 2} = \frac{(5 \times 4 + 3.5 \times 5 + 3.5 \times 4 + 4 \times 4 + 0 \times 4) + (5 \times 4 + 3.5 \times 4 + 0 \times 4 + 4 \times 2)}{(7 \times 4) + (1 \times 5) + (1 \times 2)} = 3.13
\]
Graduation Requirements for BSc/BAppISc

University Level Requirements

- General Education (2 modules)
- Breadth (2 modules)
- Singapore Studies (1 module)

Flexible Component

- Unrestricted Electives (5-9 modules)

B.Sc. / B.Appl.Sc.

- Faculty Requirements (3-4 modules)
- Major Requirements (15-18 modules)

Programme Requirements

Min. CAP = 2.00
Min. Total MCs = 120
Max. Candidature = 4 yrs
Students must complete and pass at least 80 MCs of graded modules at NUS
Graduation Requirements for BSc (Hons)/BApplSc (Hons)

**University Level Requirements**
- **General Education (2 modules)**
- **Singapore Studies (1 module)**
- **Breadth (2 modules)**

**Flexible Component**
- **Unrestricted Electives (5-9 modules)**

**Programme Requirements**
- **Major Requirements (24-26 modules)**
- **Faculty Requirements (4-5 modules)**

**B.Sc. (Hons.) / B.Appl.Sc. (Hons.)**

- Min. CAP = 3.20
- Min. Total MCs = 160
- Max. Candidature = 5 yrs

_Students must complete and pass at least 80 MCs of graded modules at NUS._
Limitation on Level-1000 Modules

• 60 MCs of Level-1000 modules can be counted towards the fulfillment of graduation requirements for both 120-MC and 160-MC programmes.

• Level-1000 modules taken in excess of the 60 MCs limit are also included in CAP computation.
University Level Requirements (ULR)

**General Education Module (GEM)**
- Group A = Science & Technology (GExx5xx)
- Group B = Humanities & Social Sciences (GExx0xx)
- Science student must read
  - 2 Group B, or
  - 1 Group A + 1 Group B

**Breadth Module**
- 1 compulsory Breadth Module will be *ES1541 Exploring Science Communication through Popular Science Plus*
- Any module outside Science except Group A GEMs offered by other Faculties/Schools; Excess Group B GEMs can be used as Breadth, even if it is offered by Science

**Singapore Studies Module (SS)**
- 1 module
Students staying in Residential Colleges in UTown will need to fulfill a set of UTown requirements (5 modules)

This set of requirements will replace the ULR:

<table>
<thead>
<tr>
<th>UTown Requirements</th>
<th>Equivalent ULR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior Seminar</td>
<td>General Education Module</td>
</tr>
<tr>
<td>First Senior Seminar</td>
<td>General Education Module</td>
</tr>
<tr>
<td>Second Senior Seminar</td>
<td>Singapore Studies Module</td>
</tr>
<tr>
<td>First Writing Module</td>
<td>Breadth Module</td>
</tr>
<tr>
<td>Second Writing Module</td>
<td>Breadth Module</td>
</tr>
</tbody>
</table>

Students in the University Scholars Programme (USP) who have read the 48 MCs of USP requirements, would have fulfilled the ULR.
Faculty Requirements

<table>
<thead>
<tr>
<th>Degree</th>
<th>Faculty Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.Sc.</td>
<td>12 MCs from 3 distinct subject groups outside the group(s) under which the major falls.</td>
</tr>
<tr>
<td>B.Sc. (Hons.)</td>
<td>16 MCs from at least 3 distinct subject groups outside the group(s) under which the major falls, where 4 MCs may come from the same subject group under which the major falls but not from the major *.</td>
</tr>
<tr>
<td>B.Appl.Sc.</td>
<td>8 MCs from Professional Placement Programme, and 8 MCs from 2 distinct subject groups outside the group(s) under which the major falls.</td>
</tr>
<tr>
<td>B.Appl.Sc. (Hons.)</td>
<td>8 MCs from Professional Placement Programme, and 12 MCs from 2 distinct subject groups outside the group(s) under which the major falls, where 4 MCs may come from the same subject group under which the major falls but not from the major *.</td>
</tr>
</tbody>
</table>

*Not from the major* refers to modules that carry a prefix not associated with the student’s major. Example, PR for Pharmacy, LSM for Life Sciences,
<table>
<thead>
<tr>
<th>Subject Group</th>
<th>Majors in this Group</th>
<th>Module Prefix/Code in this Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing Science</td>
<td>Computational Biology, Quantitative Finance</td>
<td>CZ, CS, IT1001, IT1002, IT1006, QF, ZB</td>
</tr>
<tr>
<td>Chemical Sciences</td>
<td>Chemistry and its related specialisations, Food Science &amp; Technology, Pharmacy</td>
<td>CM, FST, PR</td>
</tr>
</tbody>
</table>
Direct Honours with Options

Year 1 | Year 2 | Year 3 | Year 4
---|---|---|---
B.Sc. or B.Sc.(Hons.) in ≈ 4 yrs for ≈ 65-70% of students

Year 1 | Year 2 | Year 3
---|---|---
B.Sc. (Merit) or B.Sc. in ≈ 3 yrs for CAP < 3.50 or by choice
Honours Project Eligibility

• Accumulated at least 100 MCs
• Completed the Bachelor requirement of at least one major
• Obtained a CAP of at least 3.50

For those who are eligible for Honours Project but choose not to continue into Honours year will graduate with a Bachelor degree.
CAP for Continuation & Graduation

• Minimum CAP required for Graduation is 2.00

WARNING
A student will be issued a warning when his/her CAP falls below 2.00 (but above 1.50) for the first time.

PROBATION
A student will be placed on probation when his/her CAP
– falls below 1.50 for the first time; or
– still falls below 2.00 in the subsequent semester after a warning is issued but not sufficiently to warrant immediate dismissal (i.e. 1.50 < CAP < 2.00)

DISMISSAL
A student will be dismissed if his/her CAP
– is below 1.50 for 2 consecutive semesters
– is below 2.00 for 3 consecutive semesters
Degree Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>CAP Cut-offs</th>
<th>Bachelor Programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; Class Honours</td>
<td>At least 4.50 plus at least an A- in Honours Thesis/Project</td>
<td>N.A.</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Class Upper</td>
<td>4.00 – 4.49</td>
<td>N.A.</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Class Lower</td>
<td>3.50 – 3.99</td>
<td>N.A.</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Class</td>
<td>3.20 – 3.49</td>
<td>3.20 and above</td>
</tr>
<tr>
<td>Pass with Merit</td>
<td>N.A.</td>
<td>3.20 and above</td>
</tr>
<tr>
<td>Pass</td>
<td>2.00 – 3.19</td>
<td></td>
</tr>
<tr>
<td>Fail</td>
<td>Below 2.00</td>
<td></td>
</tr>
</tbody>
</table>

Note: Student in Honours programme with CAP less than 3.20 will graduate with B.Sc. / B.Appl.Sc. / B.Sc. (Pharm.)
Advanced Placement Credits and Exemption

• Students who have been granted APCs are deemed to have successfully read and passed the module(s), and will **not** be allowed to register for this/these module(s) again.
• Module(s) from which students have been granted exemption will **not** be included in the calculation of the CAP.
• Students may be granted APCs of up to 40 MCs, of which 20 MCs for programme requirements are subjected to performance in the APC Tests carried out earlier in June-July.
• Polytechnic Diploma holders are granted 20 MCs of APCs up front, not including those obtained from APC Tests.
## APCs for Polytechnic Diploma Holders

<table>
<thead>
<tr>
<th>Module</th>
<th>No. of MCs</th>
<th>Module Type</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>GXK1999</td>
<td>4</td>
<td>Group B GEM</td>
<td>These are included in the limit of 60 MCs of Level-1000 modules that students are allowed to read in fulfillment of the 120/160 MCs for graduation.</td>
</tr>
<tr>
<td>POY1904</td>
<td>4</td>
<td>Breadth</td>
<td></td>
</tr>
<tr>
<td>POY1901</td>
<td>4</td>
<td>Unrestricted Elective</td>
<td>These are not included in the limit of 60 MCs of Level-1000 modules.</td>
</tr>
<tr>
<td>POY1902</td>
<td>4</td>
<td>Unrestricted Elective</td>
<td></td>
</tr>
<tr>
<td>POY1903</td>
<td>4</td>
<td>Unrestricted Elective</td>
<td></td>
</tr>
</tbody>
</table>
Satisfactory/Unsatisfactory (S/U) Option

- **Up to 12 MCs** may be taken on an S/U basis during a student’s candidature.
- **S/U option is not applicable to ALL Science modules** as well as modules meant for Faculty, Major, 2nd Major, Minor* requirements or University Scholars Programme requirements.
- For modules read on S/U basis, ‘S’ grade will be assigned only if the student receives a ‘C’ grade or above for the module.
- **S/U option, once exercised, is irrevocable.**
- All modules read on S/U basis are **excluded from CAP computation.**
- **S/U declaration exercise** will be conducted **upon the release of examination results** and end by the stipulated deadline, which will be announced each semester.
- **If students read extra modules within the basket of the Minor, they can exercise S/U on the extra modules** (as long as 24 MCs in fulfillment of the Minor are graded).
Limitations on S/U Option

• **Science students** are **not allowed** to exercise S/U option on **ALL** regular Science modules, even if the modules are read as Unrestricted Electives.

**Exception:** Science students are allowed to exercise S/U option on GEMs or SS offered by Science. However, if the GEM is cross-listed with a Science module (e.g. GEK1507/PR1301), students reading the module under the Science code cannot S/U the module.

• S/U option is not applicable to modules [1] in which students have been found to have committed plagiarism, or [2] dropped with a ‘F’ grade during the semester.
Freshman Seminar
Unique features:
Small group teaching characteristic of a liberal arts education setting
Exchange of ideas in a relaxed setting
Academic mentorship by Professors
An exciting array of topics:
DNA – 2 strands, 3 men, 1 dark lady • Biological Machines
• Idols of the Mind • From Magic to a Modern Science –
The Changing History of Chemistry • Analogy and Intuition in
Mathematics • The Physics of Time • Are We Alone? • The Beauty
of Symmetry • Statistical Game Theory • From Toxins to Therapeutics
• and many more…
Freshmen Modules

- **ES1541 Exploring Science Communication through Popular Science**
- Compulsory module for all freshmen (except Pharmacy and Environmental Studies students and students residing in UTown)
  - to develop a habit of reading, especially in science-related topics
  - to enhance the ability to critically question published scientific information
  - to enhance the ability to articulate opinions and perspectives
  - to develop coherence in writing and oral communication
- Students are expected to bid for this module in Sem 1 or Sem 2 of the first year
Students who scored below a C grade for GP/International students without the required English qualifications:

Qualifying English Test (QET)

Band 1:
- ES1000 Basic English (Yr 1, Sem 1)
- ES1102 English for Academic Purposes (Yr 1, Sem 1)
- ES1541 (Yr 2, Sem 1)

Band 2:
- ES1102 English for Academic Purposes (Yr 1, Sem 1)
- ES1541 (Yr 1, Sem 1)

Band 3:
- Exempted from ES modules
- ES1541 (Yr 1, Sem 1)

Students who are not required to take QET:

ES1541 (Yr 1, Sem 1)

Note:
1. ES1541 is a graduation requirement.
2. ES1541 may be counted towards the Breadth requirement.
3. Students who have not passed ES1541 will not be allowed to apply for Study Abroad Programmes.
With effect from AY2012/13, NUS Career Center has introduced a NCC1001 Head Start Series to Freshmen to:

• Encourage students to discover and pursue their academic and career interests early

• Gain greater knowledge of job market trends and skills desired by employers

• Equip students with career skills so that they can differentiate and market themselves successfully for internships and jobs

Will be preallocated to Freshmen in Year 1, Sem 2 or Year 2, Sem 1
Undergraduate Research Opportunities Programme in Science (UROPS)

- Gain first-hand experience in research by embarking on an independent project in Year 2 and Year 3
- Acquire effective communication and presentation skills
- Avenue for talented undergraduate to make significant contributions to existing scientific knowledge
- Stimulate intellectual exchange and collaboration between student and faculty members on a one-to-one basis
Some of our Study Abroad Programmes

French Double Degree Programme – 2 yrs in France
ANU-NUS Joint Degree Programme – 3 semesters in ANU
UNCCH-NUS Joint Degree Programme – 2-3 semesters in UNCCH
NUS Overseas College Programme – 1 year
Student Exchange Programme (SEP) – 1 semester
Joint Minors – 1 semester
Summer Programmes – 4-7 weeks
Summer Research – 6-12 weeks
Triple Qualifications in 5 Years


Year 5: NUS National University of Singapore

Last Year @ NUS Masters

Year 4: French Grandes Écoles

Next 2 years @ France: Core Curriculum including internships / I.A.

Year 3:

Year 2: NUS National University of Singapore

First 2 years @ NUS: Training in French Language including immersion in France Special training in Maths & Physics

Year 1:
ANU-NUS Joint Degree

• An intensive programme for outstanding USP students majoring in Chemistry, Physics or Mathematics
• Spend 3 semesters at ANU
• Engage in independent undergraduate research work
• Students graduate with a BSc (Honours) with the field of study recorded. The degree carries the crests of both universities and certifies the completion of Joint Degree Programme for Bachelor of Philosophy (Honours) from ANU and Bachelor of Science (Honours) from NUS
UNCCH-NUS Joint Degree

- Joint Degree in Life Sciences with University of North Carolina Chapel Hill
- Spend 2-3 semesters at UNC-CH
- Experience the exceptional liberal arts education at UNC-CH
- Experience the well-structured General Education requirement known as “The Making Connections Curriculum”
- Choose from a wide variety of specialized electives at advanced levels: animal behavior, cell biology, developmental biology, ecology, evolution, genetics and molecular biology, organismal biology and plant biology
- Students graduate with a BSc (Honours) in Life Sciences
- The degree carries the crests of both universities
Study Abroad Briefings

Come and find out the details for Student Exchange Programmes and Summer Programmes at:

• 19 August 2013, 10 -12 pm (LT31)
• 20 August 2013, 10 -12 pm (LT31)

International Exchange Day:
5 September 2013 (9 am – 6pm)
@ Central Forum
Global Science Programme

**Years 1 - 2**
- Special Programme in Science (SPS)

**Years 3 - 4**
- BSc (Honours)
  - Students can spend up to 2 summer semesters doing UROPS in labs of partner universities

**Year 5**
- Joint MSc with overseas partner universities

**Years 6 - 8**
- Joint MRes/PhD with overseas partner universities
  - Students can exit with a MSc

**Other PhD Options**
- NGS
- CREATE/SMART
- Duke-NUS GMS

*NGS: NUS Graduate School for Integrative Sciences & Engineering
CREATE: Campus for Research Excellence & Technological Enterprise
SMART: Singapore-MIT Alliance for Research & Technology
Duke-NUS GMS: Duke-NUS Graduate Medical School*
Special Programme in Science (SPS)

- An **intense** programme for students with the **passion and aptitude** for Science
- Emphasis on an **inter-disciplinary approach** to the study of Science
- Small group teaching
- Focus on **mentorship** through senior SPS students, graduate students & dedicated professors
- Students read four **specially designed inter-disciplinary, thematic modules**. Each of these modules **integrates Mathematics, Biology, Chemistry and Physics**
- **One Discovering Science module & one project module**
- SPS modules can be used to fulfil Faculty requirements
Integrated Science Curriculum

- 4 specially designed thematic modules integrating Mathematics, Biology, Chemistry and Physics:

**Atoms to Molecules**
Insights into the fundamental properties of atoms, the concepts of orbitals and relationship between the shape of a molecule and the nature of the atoms in it will be introduced in this first module of the series. The interdisciplinary perspectives of atoms and molecules from physics and chemistry will also be emphasised.

**The Earth**
Focuses on the physical, chemical and biological processes that have shaped the development of the Earth. A systems approach is taken in order to understand the interconnectivity between the various components of the Earth system.

**The Cell**
Key chemical and physical principles underlying several biological processes which cells can integrate and function as an autonomous machine in order to regenerate (self-replicate), repair and re-program (differentiate), respond (force-sensing) and re-model (tissue formation) will be explored in this second module. These processes can occur from single molecule, single cell to multi-cellular or tissue levels because of their general ability to: self-assemble; harness and utilise energy; and store, decode and process information.

**The Universe**
The evolution of the Universe is traced from the Big Bang, through star formation and nuclear synthesis to the formation of planets, the Earth in particular. Physics and Chemistry will be used to address fundamental questions such as the origins of the Universe.
Concurrent Degree Programmes with King’s College London (KCL)

Years 1 – 4* (in NUS)
- BSc (Hons)
- 12-week Summer Research at KCL during vacation

Year 5 (in KCL)
- MRes in
  - Biophysics
- MSc in
  - Analytical Toxicology
  - Forensic Science

Years 6 -8 (in NUS & KCL)
- Option for joint PhD

* Students have the option of accelerating and completing their BSc (Hons) in 3 years and starting on the MRes in Biophysics in the 4th year.

- Concurrent Degree Programmes (CDP) is whereby the undergraduate degree at NUS is integrated with a postgraduate degree at a partner University
- Provides a through-train education pathway for students
- Students are awarded both a Bachelor degree certificate and a Master degree certificate upon completion of the programme.
Duke-NUS Graduate Medical School

Training Physician Scientists and Medical Leaders for the 21st Century

ADMISSION:

- Undergraduate or Advanced Degree
  - First degree can be in any field, such as the Life Sciences (Biology, Pharmacology, etc), Engineering (Bioengineering, Chemical, Electrical Engineering, etc), Physical Sciences (Chemistry, Physics, etc), Humanities, or Social Sciences

- Demonstrated evidence of competence in core areas of general Chemistry, Physics, Biology, and Organic Chemistry
  Successful completion of university courses in biochemistry and cell biology is recommended

- Students with advanced degrees in scientific fields are encouraged to apply

DEGREE AWARDED:

Joint Doctor of Medicine (M.D.) degree from Duke University and NUS
About the NUS Pre-Med Track (PMP)

• NUS-PMP aims to prepare students for graduate medical education.
• In the NUS PMP, students have the opportunities to engage in scientific research, clinical and volunteer activities and leadership experiences.
• The NUS-PMP puts students in good position to receive special consideration for early admission into DUKE-NUS or apply for admission into other graduate medical programmes or graduate programmes in bio-medical fields.
What do you need to do in the NUS-PMP

Students will be required to fulfill the following under this track:

- **Pre-Med Freshman Seminar**
  To provide an opportunity for students to better understand aspects of medicine, clinical research and other relevant areas. This may possibly help students to decide if a medical education is right for them and also provide an opportunity for faculty to better understand these students.

- **Science Foundational**
  To prepare for graduate medical study & the MCAT exams, students need to acquire knowledge and understanding in the following key foundational sciences: Biology, Chemistry, Organic Chemistry, Physics, and Math. These requirements may be acquired through student’s major, reading relevant modules or self-study.

- **Writing/Communications**
  To develop confidence & skill in writing & communications; which can be achieved partly through reading communications, writing and/or critical thinking module(s).
Entry Criteria for PMP

• NUS undergraduates are invited to apply during their first or second year of study.

• Shortlisted candidates will read the Pre-Med Freshman Seminar, where they will be assessed based on their academic potential & achievements, passion, motivation and curiosity.

• Successful students would be offered a place in the Pre-Med Programme at the end of the Freshman Seminar.
Entry into
Duke-NUS Graduate Medical School

• Good annual review of PMP students by PMP advisors
• Good MCAT score

• Important: Students who do not satisfy the requirements for direct entry or who did not participate in the NUS PMP may still apply through the standard application process into Duke-NUS.
TAKE-HOME MESSAGE

1. Familiarize yourself with the curriculum of your intended major.
3. Check your NUS email a/c frequently for announcements and any important information.

For any enquiries, you may find us at:
Undergraduate Programmes Office
Dean’s Office, Faculty of Science
Block S16 Level 2, 6 Science Drive 2
Singapore 117546

UG Helpdesk: +65 6516 8471
UG Email: askscience@nus.edu.sg
## Programme Schedule for the Day

<table>
<thead>
<tr>
<th>TIME</th>
<th>LT27</th>
<th>LT28 &amp; LT29 (webcast till 1.30 pm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.50am</td>
<td>9.00am</td>
<td>Video Presentation by Science Club</td>
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<tr>
<td>9.00am</td>
<td>10.30am</td>
<td>Introduction to NUS Modular System &amp; Science Curriculum by Assoc. Prof. Eric Chan Chun Yong, Vice Dean (Undergraduate Programmes)</td>
</tr>
<tr>
<td>10.30am</td>
<td>11.30am</td>
<td>Introduction to the Centralised Online Registration System (CORS) &amp; e-Learning Week by Dr. Ng Kah Loon, Assistant Dean (Undergraduate Programmes)</td>
</tr>
<tr>
<td>11.30am</td>
<td>12.00nn</td>
<td>Welcome Address &amp; Introduction to Deanery, Headship of Departments &amp; Programme Directors by Professor Andrew Wee, Dean of Science</td>
</tr>
<tr>
<td>12.00nn</td>
<td>12.50pm</td>
<td>Lunch Reception @ Foyer of LT27</td>
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<tr>
<td>1.00pm</td>
<td>1.30pm</td>
<td>“Do You Want To Know?” by Professor Wong Sek Man, Vice Dean (Student Life)</td>
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<td>Safety Matters @ Science by Mr. Syam Kumar Prabhakaran, Associate Director (Safety &amp; Infrastructure)</td>
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## Programme Schedule for the Day

<table>
<thead>
<tr>
<th>TIME</th>
<th>LT27 Time</th>
<th>Programme Title</th>
<th>TIME</th>
<th>LT28 Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.30 pm</td>
<td>2.00 pm</td>
<td>Programme Talk: What is to Come in Chemistry Curriculum by Assoc. Prof. Lai Yee Hing</td>
<td>1.30 pm</td>
<td>1.45 pm NUS Overseas Colleges – An NOC Experience Unlike Any by Ms. Gean Chu</td>
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<tr>
<td>2.00 pm</td>
<td>2.30 pm</td>
<td>Programme Talk: Food Science &amp; Technology @ NUS: The One &amp; Only!! by Professor Zhou Weibiao</td>
<td>2.00 pm</td>
<td>2.15 pm Office of Student Affairs – Dream Big. Aim High by Ms. Jenny Tan</td>
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<tr>
<td>2.30 pm</td>
<td>3.00 pm</td>
<td>Programme Talk: Life Sciences @ NUS by Assoc. Prof. Liou Yih-Cherng</td>
<td>2.30 pm</td>
<td>2.45 pm Science Library – Supporting Your Learning &amp; Research by Mr. Kenneth Lim</td>
</tr>
<tr>
<td>3.00 pm</td>
<td>3.30 pm</td>
<td>Programme Talk: Mathematics, Applied Mathematics &amp; Quantitative Finance Programmes by Assoc. Prof. Victor Tan</td>
<td>3.00 pm</td>
<td>3.15 pm Counselling Centre, University Health Centre – Introduction to Counselling and Psychological Services by Mr. Yeo Eng Kwan</td>
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<tr>
<td>3.30 pm</td>
<td>4.00 pm</td>
<td>Programme Talk: Physics @ NUS by Assoc. Prof. Osipowicz Thomas</td>
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<tr>
<td>4.00 pm</td>
<td>4.30 pm</td>
<td>Programme Talk: Statistics at NUS by Assoc. Prof. Lim Tiong Wee</td>
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For SPS Students

Afternoon Programme Schedule for SPS Students:

Potential SPS students will attend a Tea Session at the end of the afternoon programme talks at the SPS Room [Blk S16, Level 3 Room 2], from 5:00pm. Programme Talk: The Special Programme in Science: Toward 21st-Century Scientist by Programme Director, Dr. Adrian Michael Lee or Assistant Director, Mr. Andreas Dewanto (Light refreshment will be served)
WE WISH YOU ALL THE BEST IN YOUR ACADEMIC ENDEAVOURS