LIFE SCIENCES UNDERGRADUATE PROGRAMME: MAJOR IN LIFE SCIENCES

BSc (Hons) / BSc in Life Sciences (For Matriculation Cohort AY2015/2016)

Along with General Education, Faculty Requirements and Unrestricted Elective Modules, to be awarded a BSc (Hons) or BSc in Life Sciences, candidates must satisfy the following:

<table>
<thead>
<tr>
<th>MODULE LEVEL</th>
<th>PRIMARY MAJOR IN LIFE SCIENCES REQUIREMENTS (FOR MATRICULATION COHORT AY15/16)</th>
<th>CUMULATIVE MAJOR MC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1000 (24 MC)</td>
<td>Pass LSM1101, LSM1102, LSM1103, LSM1104, CM1401* and ST1232*. (If a precluding module to CM1401 (i.e. CM1121 or CM1402 or CM1501) is passed, the precluding module is accepted to be fulfilling the Major in Life Sciences in lieu of CM1401.)</td>
<td>24</td>
</tr>
<tr>
<td>Level 2000 (20 MC)</td>
<td>Pass LSM2101, LSM2102, LSM2103, and LSM2191, and one of the following: LSM2212, LSM2234, LSM2241, LSM2251, and LSM2291.</td>
<td>44</td>
</tr>
<tr>
<td>Level 3000 (20 MC)</td>
<td>Pass five LSM32xx elective modules (except LSM3289), of which up to two (up to 8 MC) may be LSM42xx (except LSM4299) and/or LSM-recognised elective modules.</td>
<td>64</td>
</tr>
<tr>
<td>Level 4000 (32 MC) [For BSc (Hons)]</td>
<td>Pass 32 MC of LSM4xxx, of which may include either LSM4199 or LSM4299 but not both:</td>
<td>96</td>
</tr>
</tbody>
</table>

**Honours Research Project Option**
Pass LSM4199 Honours Project in Life Sciences, AND pass another four LSM42xx elective modules.

**Applied Internship Project Option**
Pass LSM4299 Applied Project in Life Sciences, AND pass another four LSM42xx elective modules.

**Coursework Taught Modules Option**
Pass eight LSM42xx elective modules.

To fulfil a specialisation: Pass 24 MC of LSM4xxx from the corresponding list for the chosen specialisation (refer to pg. 3)

<table>
<thead>
<tr>
<th>Module</th>
<th>BSc</th>
<th>BSc (Hons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>20 MC</td>
<td>20 MC</td>
</tr>
<tr>
<td>Faculty Requirements</td>
<td>4 MC</td>
<td>8 MC</td>
</tr>
<tr>
<td>Major Requirements</td>
<td>64 MC</td>
<td>96 MC</td>
</tr>
<tr>
<td>Unrestricted Elective Modules</td>
<td>32 MC</td>
<td>36 MC</td>
</tr>
<tr>
<td>Total</td>
<td>120 MC</td>
<td>160 MC</td>
</tr>
</tbody>
</table>

Refer to pg. 3 for the list of LSM-prefixed elective modules and LSM-recognised elective modules.

Refer to pg. 4 for typical schedule of completion (i.e. study plan) of BSc (Hons) degree in Life Sciences. For details on Life Sciences Major modules, please refer [http://lifesciences.nus.edu.sg/modules/lsm/lsm_modules.pdf](http://lifesciences.nus.edu.sg/modules/lsm/lsm_modules.pdf).

To qualify for Honours year/project, students must fulfil the Life Sciences Major Requirements at BSc standard (i.e. Levels 1000, 2000 and 3000 Major Requirements), and obtained a minimum overall CAP of 3.20 on completion of 100 MC (Modular Credits) or more.

The number of MC earned from Level 1000 modules for graduation requirements is capped at 60.
Faculty Requirements for Life Sciences Major:
Please refer to the following for details and subject groupings:
http://www.science.nus.edu.sg/undergraduate-studies/ugreq/curriculum-structure?id=212

Faculty Requirements are at 12 MC (BSc) and 16 MC (BSc (Hons)) respectively. Major modules CM1401 and ST1232 satisfy 8 MC of the Faculty Requirements. **DO NOT read ST1131 or ST2334.**

Modules to fulfil Faculty Requirements:
- Module 1: CM1401 [4 MC; recognised as Major Requirements]
- Module 2: ST1232 [4 MC; recognised as Major Requirements]
- Module 3: SP1541 Exploring Science Communication through Popular Science (if precluded from taking SP1541, please read 1 module from Physical Sciences OR Computing Sciences OR Multidisciplinary & Interdisciplinary Sciences subject group) [4 MC]
- Module 4 [for BSc (Hons)]: 1 module from any subject group except LSM-prefixed modules [4 MC]
## List of Life Sciences Major (LSM) Modules

All LSM modules are 4MC each except otherwise if indicated.

### LSM2xx Elective Modules
- LSM2211 Metabolism and Regulation
- LSM2212 Human Anatomy
- LSM2231 General Physiology
- LSM2232 Genes, Genomes and Biomedical Implications
- LSM2233 Cell Biology
- LSM2234 Physical Concepts in Biology
- LSM2241 Introductory Bioinformatics
- LSM2251 Ecology and Environment
- LSM2252 Biodiversity
- LSM2253 Applied Data Analysis in Ecology and Evolution
- LSM2291 Fundamental Techniques in Microbiology

### LSM32xx Elective Modules
- LSM3201 Research and Communication in Life Sciences
- LSM3211 Fundamental Pharmacology
- LSM3212 Human Physiology: Cardiopulmonary System
- LSM3214 Human Physiology – Hormones and Health
- LSM3215 Neuronal Signaling and Memory Mechanisms
- LSM3216 Neuronal Development and Diseases
- LSM3217 Human Ageing
- LSM3218 Cardiopulmonary Pharmacology
- LSM3219 Neuropharmacology
- LSM3222 Human Neuroanatomy
- LSM3223 Immunology
- LSM3224 Molecular Basis of Human Diseases
- LSM3225 Molecular Microbiology in Human Diseases
- LSM3226 Medical Mycology and Drug Discovery
- LSM3231 Protein Structure and Function
- LSM3232 Microbiology
- LSM3233 Developmental Biology
- LSM3234 Biological Imaging of Growth and Form
- LSM3235 Epigenetics in Human Health and Diseases
- LSM3241 Genomic Data Analysis
- LSM3242 Translational Microbiology
- LSM3243 Molecular Biophysics
- LSM3245 RNA Biology and Technology
- LSM3246 Synthetic Biology
- LSM3247 Practical Synthetic Biology
- LSM3252 Evolution and Comparative Genomics
- LSM3254 Ecology of Aquatic Environments
- LSM3255 Ecology of Terrestrial Environments
- LSM3256 Tropical Horticulture
- LSM3258 Comparative Botany
- LSM3259 Fungal Biology
- LSM3262 Environmental Animal Physiology
- LSM3264 Environmental Biochemistry
- LSM3265 Entomology
- LSM3266 Avian Biology and Evolution
- LSM3267 Behavioural Biology
- LSM3272 Global Change Biology
- LSM3273 Ecology, Conservation and Management of Sri Lankan Ecosystems
- LSM3288 Advanced UROPS in Life Sciences

### LSM4xx Elective Modules (Biomedical Science)
- LSM4199 Honours Project in Life Sciences (16MC)
- LSM4200 Topics in Biomedical Science
- LSM4211 Toxicology
- LSM4213 Systems Neurobiology
- LSM4214 Cancer Pharmacology
- LSM4215 Extreme Physiology
- LSM4217 Functional Ageing
- LSM4221 Drug Discovery and Clinical Trials
- LSM4222 Advanced Immunology
- LSM4223 Advances in Antimicrobial Strategies
- LSM4225 Genetic Medicine in the Post-Genomic Era
- LSM4226 Infection and Immunity
- LSM4227 Stem Cell Biology
- LSM4228 Experimental Models for Human Disease and Therapy
- LSM4229 Therapeutic and diagnostic agents from animal toxins

### LSM4xxx Elective Modules (Molecular and Cell Biology)
- LSM4199 Honours Project in Life Sciences (16MC)
- LSM4231 Structural Biology
- LSM4232 Advanced Cell Biology
- LSM4234 Mechanobiology
- LSM4235 Nuclear Mechanics and Genome Regulation
- LSM4241 Functional Genomics
- LSM4242 Protein Engineering
- LSM4243 Tumour Biology
- LSM4244 Oncogenes and Signal Transduction
- LSM4245 Advanced Epigenetics and Chromatin Biology
- LSM4251 Plant Growth and Development
- LSM4252 Animal Reproduction

### LSM4xx Elective Modules (Environmental Biology)
- LSM4199 Honours Project in Life Sciences (16MC)
- LSM4254 Principles of Taxonomy and Systematics
- LSM4255 Methods in Mathematical Biology
- LSM4256 Evolution of Development
- LSM4257 Aquatic Vertebrate Diversity
- LSM4261 Marine Biology
- LSM4262 Tropical Conservation Biology
- LSM4263 Field Studies in Biodiversity
- LSM4264 Freshwater Biology
- LSM4265 Urban Ecology
- LSM4267 Animal Communications & Sensory Ecology

### LSM4xxx Elective Modules (Biomedical Science)
- LSM4199 Honours Project in Life Sciences (16MC)
- LSM4200 Topics in Biomedical Science
- LSM4211 Toxicology
- LSM4213 Systems Neurobiology
- LSM4214 Cancer Pharmacology
- LSM4215 Extreme Physiology
- LSM4217 Functional Ageing
- LSM4221 Drug Discovery and Clinical Trials
- LSM4222 Advanced Immunology
- LSM4223 Advances in Antimicrobial Strategies
- LSM4225 Genetic Medicine in the Post-Genomic Era
- LSM4226 Infection and Immunity
- LSM4227 Stem Cell Biology
- LSM4228 Experimental Models for Human Disease and Therapy
- LSM4229 Therapeutic and diagnostic agents from animal toxins

### LSM4xx Elective Modules (Environmental Biology)
- LSM4199 Honours Project in Life Sciences (16MC)
- LSM4254 Principles of Taxonomy and Systematics
- LSM4255 Methods in Mathematical Biology
- LSM4256 Evolution of Development
- LSM4257 Aquatic Vertebrate Diversity
- LSM4261 Marine Biology
- LSM4262 Tropical Conservation Biology
- LSM4263 Field Studies in Biodiversity
- LSM4264 Freshwater Biology
- LSM4265 Urban Ecology
- LSM4267 Animal Communications & Sensory Ecology

### List of LSM-Recognised Elective Modules

<table>
<thead>
<tr>
<th>Other LSM-Prefixed Modules</th>
<th>Faculty of Arts and Social Sciences</th>
<th>Faculty of Engineering</th>
<th>Saw Swee Hock School of Public Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSM3991 Exchange Enrichment Module</td>
<td>PL3232 Biological Psychology</td>
<td>PL3233 Cognitive Psychology</td>
<td>Biostatistics for Public Health</td>
</tr>
<tr>
<td>CM3221 Organic Synthesis: The Disconnection Approach</td>
<td>CN4247 Enzyme Technology</td>
<td>CN4249 Engineering Design in Molecular Biotechnology</td>
<td>Public Health Communication</td>
</tr>
<tr>
<td>CM3222 Organic Reaction Mechanisms</td>
<td>CN4249 Engineering Design in Molecular Biotechnology</td>
<td>CN5172 Biochemical Engineering</td>
<td>Infectious disease epidemiology and public health</td>
</tr>
<tr>
<td>CM3251 Nanotechnology</td>
<td>SPH3101 Infectious disease epidemiology and public health</td>
<td>SPH3104 Public Health Practice</td>
<td>Public Health Practice</td>
</tr>
</tbody>
</table>
# LIFE SCIENCES UNDERGRADUATE PROGRAMME: MAJOR IN LIFE SCIENCES

## Schedule for Completion of BSc (Hons) in Life Sciences – Matriculation Cohort AY2015/2016

Typical Study Plan for students reading Life Sciences as Primary Major. Numbers in [ ] are Modular Credits (MC).

<table>
<thead>
<tr>
<th>Semester</th>
<th>Life Sciences Major Modules</th>
<th>Other Graduation Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YEAR 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>YEAR 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>YEAR 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th Semester (Sem 1) &amp; 6th Semester (Sem 2)</td>
<td>Pass 2 LSM32xx (except LSM3289) [2x4=8]</td>
<td>☐ 1 Science regular module except LSM-prefixed module [4]</td>
</tr>
<tr>
<td></td>
<td>☐ Pass 3 LSM32xx (except LSM3299) [2x4=8]</td>
<td>Unrestricted Elective Modules (UEM): 36 MC or typically 9 modules</td>
</tr>
<tr>
<td></td>
<td>☐ Pass 2 LSM32xx/LSM42xx/LSM-recognised elective modules (except LSM3289 and LSM4299) [2x4=8]</td>
<td>☐</td>
</tr>
<tr>
<td></td>
<td>☐ Pass 32 MC of LSM4xxx, of which may include either LSM4199 or LSM4299 but not both.</td>
<td>☐</td>
</tr>
<tr>
<td><strong>YEAR 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7th Semester (Sem 1) &amp; 8th Semester (Sem 2)</td>
<td>To fulfil a specialisation, pass 24 MC of LSM4xxx from the corresponding list for the chosen specialisation.</td>
<td>Typical workload for one semester is 20 MC. Read modules on top of the Major modules secured to fulfill other graduation requirements.</td>
</tr>
</tbody>
</table>

Note: The number of MC earned from Level 1000 modules for graduation requirements is capped at 60 (typically 15 modules).