

## NUS LIFE SCIENCES UNDERGRADUATE PROGRAMME

### BSC (HONS)/BSC DEGREE IN LIFE SCIENCES *(For Cohort AY2017/18)*

REQUIREMENTS	MODULES INVOLVED <b>(FOR COHORT AY2017/18)</b>	MODULAR CREDITS [BSc(Hons)]	MODULAR CREDITS [BSc]
<b>General Education</b>	Pass <b>one</b> module for each of the five Pillars: GER1000 – Quantitative Reasoning GEH1XXX – Human Cultures GES1XXX – Singapore Studies GET1XXX – Thinking and Expression GEQ1000 – Asking Questions	20	20
<b>Computational Thinking</b>	Pass either <b>CS1010 (or a variant of CS1010) or COS2000</b> .	4	4
<b>Science Communication</b>	Pass <b>SP1541</b> Exploring Science Communication through Popular Science <i>[If pursuing BSc (Hons) and precluded from taking SP1541, please read one module from any Science subject group except LSM-prefixed modules.]</i>	4	4
<b>Life Sciences Major Level 1000</b>	Pass <b>LSM1102, LSM1105, LSM1106, CM1401</b> and <b>ST1232</b> . <i>[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.]</i>	20	20
<b>Life Sciences Major Level 2000</b>	Pass <b>LSM2191</b> and <b>three</b> LSM22xx elective modules (except LSM2288 and LSM2289). <i>(Refer to Page 3.)</i>	16	16
<b>Life Sciences Major Level 3000</b>	Pass <b>two</b> LSM32xx (except LSM3289); and Pass <b>two</b> LSM32xx/LSM42xx/LSM-recognised <b>elective modules</b> (except LSM3289 and LSM4299) <i>(Refer to Page 3.)</i>	16	16
<b>Life Sciences Major Level 4000</b> <i>[For BSc (Hons)]</i>	Pass <b>32MC of LSM4xxx</b> <i>(refer to Page 3.)</i> , of which may include either LSM4199 or LSM4299 but not both:  <u><b>Honours Research Project Option</b></u> Pass LSM4199 Honours Project in Life Sciences, AND pass another <b>four</b> LSM42xx elective modules.  <b>Optional: To fulfil a Specialisation</b> Complete <b>24MC</b> including LSM4199 Honours Project in Life Sciences AND two LSM42xx elective modules from the <b>corresponding list for the chosen specialisation</b> . <i>(Refer to Page 3.)</i>  <u><b>Applied Internship Project Option</b></u> Pass LSM4299 Applied Project in Life Sciences, AND pass another <b>four</b> LSM42xx elective modules.  <u><b>Coursework Taught Modules Option</b></u> Pass <b>eight</b> LSM42xx elective modules.	32	-
<b>Unrestricted Elective Modules</b>	Pass sufficient modules to meet the degree requirements. <i>[These modules can be those for requirements of Minor, Second Major or other enrichment programmes.]</i>	48 <i>[typically 12 modules]</i>	40 <i>[typically 10 modules]</i>
<b>Total</b>		<b>160</b>	<b>120</b>

- Refer to Page 3 for the list of LSM-prefixed elective modules and LSM-recognised elective modules.
- Refer to Page 4 for typical schedule of completion (i.e. study plan) of BSc (Hons) degree in Life Sciences.
- For details on LSM modules, refer to [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**, 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 100MC (Modular Credits) or more.

**The number of MC earned from Level 1000 modules for graduation requirements is capped at 60.** Excluding CFG1010 Roots and Wings (2MC) and ES1103 English for Academic Purposes (4MC).

<http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/degree-requirements.html>

**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>

**CM1401 and ST1232** satisfy 8MC of the Faculty Requirements. **DO NOT read ST1131 or ST2334.**

**Modules to fulfil Faculty Requirements:**

- Module 1: **CM1401** [4MC; recognised as Major Requirements]
- Module 2: **ST1232** [4MC; recognised as Major Requirements]
- Module 3: **Either CS1010 (or a variant of CS1010) or COS2000 for Computational Thinking** [4MC]
- Module 4 [*For BSc (Hons)*]: **SP1541 Exploring Science Communication through Popular Science** (if precluded from taking SP1541, please read 1 module from any Science subject group except LSM-prefixed module) [4MC]

**List of LSM Elective Modules. All are 4MC each except otherwise if indicated.**

LSM2211 LSM2212 LSM2231 LSM2232 LSM2233 LSM2234 LSM2241 LSM2251 LSM2252 LSM2253 LSM2254 LSM2291	<u><b>LSM22xx Elective Modules</b></u> Metabolism and Regulation Human Anatomy General Physiology Genes, Genomes and Biomedical Implications Cell Biology Physical Concepts in Biology Introductory Bioinformatics Ecology and Environment Biodiversity Applied Data Analysis in Ecology and Evolution Fundamentals of Plant Biology Fundamental Techniques in Microbiology	LSM4199 LSM4210 LSM4211 LSM4213 LSM4214 LSM4215 LSM4216 LSM4217 LSM4221 LSM4222 LSM4223 LSM4225 LSM4226 LSM4227 LSM4228 LSM4229 LSM4252	<u><b>LSM4xxx Elective Modules (Biomedical Science)</b></u> Honours Project in Life Sciences (16MC) Topics in Biomedical Science Toxicology Systems Neurobiology Cancer Pharmacology Extreme Physiology Molecular Nutrition and Metabolic Biology Functional Ageing Drug Discovery and Clinical Trials Advanced Immunology Advances in Antimicrobial Strategies Genetic Medicine in the Post-Genomic Era Infection and Immunity Stem Cell Biology Experimental Models for Human Disease and Therapy Therapeutic and diagnostic agents from animal toxins Reproductive Biology
LSM3201 LSM3211 LSM3212 LSM3214 LSM3215 LSM3216 LSM3217 LSM3218 LSM3219 LSM3222 LSM3223 LSM3224 LSM3225 LSM3226 LSM3231 LSM3232 LSM3233 LSM3234 LSM3235 LSM3241 LSM3242 LSM3243 LSM3244 LSM3245 LSM3246 LSM3247 LSM3252 LSM3254 LSM3255 LSM3256 LSM3258 LSM3259 LSM3262 LSM3265 LSM3266 LSM3267 LSM3272 LSM3273 LSM3288	<u><b>LSM32xx Elective Modules</b></u> Research and Communication in Life Sciences Fundamental Pharmacology Human Physiology: Cardiopulmonary System Human Physiology – Hormones and Health Neuronal Signaling and Memory Mechanisms Neuronal Development and Diseases Human Ageing Cardiopulmonary Pharmacology Neuropharmacology Human Neuroanatomy Immunology Molecular Basis of Human Diseases Molecular Microbiology in Human Diseases Medical Mycology and Drug Discovery Protein Structure and Function Microbiology Developmental Biology Biological Imaging of Growth and Form Epigenetics in Human Health and Diseases Genomic Data Analysis Translational Microbiology Molecular Biophysics Molecular Biotechnology RNA Biology and Technology Synthetic Biology Practical Synthetic Biology Evolution and Comparative Genomics Ecology of Aquatic Environments Ecology of Terrestrial Environments Tropical Horticulture Comparative Botany Fungal Biology Environmental Animal Physiology Entomology Avian Biology and Evolution Behavioural Biology Global Change Biology Ecology, Conservation and Management of Sri Lankan Ecosystems Advanced UROPS in Life Sciences I	LSM4199 LSM4231 LSM4232 LSM4234 LSM4235 LSM4241 LSM4242 LSM4243 LSM4244 LSM4245 LSM4251	<u><b>LSM4xxx Elective Modules (Molecular and Cell Biology)</b></u> Honours Project in Life Sciences (16MC) Structural Biology Advanced Cell Biology Mechanobiology Nuclear Mechanics and Genome Regulation Functional Genomics Protein Engineering Tumour Biology Oncogenes and Signal Transduction Advanced Epigenetics and Chromatin Biology Plant Growth and Development
		LSM4199 LSM4254 LSM4255 LSM4256 LSM4257 LSM4261 LSM4262 LSM4263 LSM4264 LSM4265 LSM4267	<u><b>LSM4xxx Elective Modules (Environmental Biology)</b></u> Honours Project in Life Sciences (16MC) Principles of Taxonomy and Systematics Methods in Mathematical Biology Evolution of Development Aquatic Vertebrate Diversity Marine Biology Tropical Conservation Biology Field Studies in Biodiversity Freshwater Biology Urban Ecology Animal Communications & Sensory Ecology
		LSM4299	<u><b>LSM4xxx Elective Modules (Not for any specialisation)</b></u> Applied Project in Life Sciences (16MC)

List of LSM-Recognised Elective Modules

LSM3991  CM3221  CM3222 CM3225 CM3251 CM3261 CM4227 PR3116  PR4205 ZB4171  PL3232 PL3233	<u><b>Other LSM-Prefixed Modules</b></u> Exchange Enrichment Module  <u><b>Faculty of Science</b></u> Organic Synthesis: The Disconnection Approach Organic Reaction Mechanisms Biomolecules Nanochemistry Environmental Chemistry Chemical Biology Concepts in Pharmacokinetics and Biopharmaceutics Bioorganic Principles of Medicinal Chemistry Advanced Topics in Bioinformatics  <u><b>Faculty of Arts and Social Sciences</b></u> Biological Psychology Cognitive Psychology	CN4247R CN4249 CN5172 MT4002  SPH3101 SPH3102 SPH3104 SPH3201  BSN3701 BSN3712	<u><b>Faculty of Engineering</b></u> Enzyme Technology Engineering Design in Molecular Biotechnology Biochemical Engineering Technology Management Strategy  <u><b>Saw Swee Hock School of Public Health</b></u> Biostatistics for Public Health Public Health Communication Infectious disease epidemiology and public health Public Health Practice  <u><b>School of Business</b></u> Technological Innovation (also coded as TR3008) Innovation and Intellectual Property
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### BSC (HONS)/BSC DEGREE IN LIFE SCIENCES *(For Cohort AY2017/18)*

#### Schedule for Completion of BSc (Hons) in Life Sciences – Cohort AY2017/18

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

	Semester	Life Sciences Major Modules	Other Graduation Requirements
<b>YEAR 1</b>	1 <sup>st</sup> Semester (Sem 1) & 2 <sup>nd</sup> Semester (Sem 2)	<input type="checkbox"/> <b>LSM1102</b> Molecular Genetics [4] <input type="checkbox"/> <b>LSM1106</b> Molecular Cell Biology [4] <input type="checkbox"/> <b>LSM1105</b> Evolutionary Biology [4] <input type="checkbox"/> <b>ST1232</b> Statistics for Life Sciences [4] <input type="checkbox"/> <b>CM1401</b> Chemistry for Life Sciences [4] <i>[If a precluding module to CM1401 (i.e. CM1121 or CM1402) is passed, the precluding module is accepted in lieu of CM1401.]</i>	<u><b>General Education:</b></u> <input type="checkbox"/> <b>GER1000</b> – Quantitative Reasoning [4] <input type="checkbox"/> <b>GEQ1000</b> – Asking Questions [4] <input type="checkbox"/> <b>GEH1XXX</b> – Human Cultures [4]  <input type="checkbox"/> <b>GES1XXX</b> – Singapore Studies [4]
<b>YEAR 2</b>	3 <sup>rd</sup> Semester (Sem 1) & 4 <sup>th</sup> Semester (Sem 2)	<input type="checkbox"/> <b>LSM2191</b> Laboratory Techniques in Life Sciences [4]  <input type="checkbox"/> <b>Pass 3 LSM22xx</b> (except LSM2288/9) [3x4=12]	<input type="checkbox"/> <b>GET1XXX</b> – Thinking and Expression [4]  <u><b>Faculty Requirements:</b></u> <input type="checkbox"/> <b>Either CS1010 (or its variant) or COS2000 for Computational Thinking Requirement</b> [4]
<b>YEAR 3</b>	5 <sup>th</sup> Semester (Sem 1) & 6 <sup>th</sup> Semester (Sem 2)	<input type="checkbox"/> <b>Pass 2 LSM32xx</b> (except LSM3289) [2x4=8]  <b>Pass 2 LSM32xx/LSM42xx/LSM-recognised elective modules</b> (except LSM3289 and LSM4299) [2x4=8]	<input type="checkbox"/> <b>SP1541 Exploring Science Communication through Popular Science</b> (if precluded, please read 1 module from any Science subject group except LSM-prefixed modules) [4]
<b>YEAR 4</b>	7 <sup>th</sup> Semester (Sem 1) & 8 <sup>th</sup> Semester (Sem 2)	<input type="checkbox"/> <b>Pass 32MC of LSM4xxx</b> , of which may include either LSM4199 or LSM4299 but not both.  <div style="background-color: yellow; padding: 2px;"><b>To fulfil a specialisation, pass 24MC including LSM4199 AND two LSM42xx elective modules from the corresponding list for the chosen specialisation.</b></div>	<input type="checkbox"/> - <b>48MC or typically 12 modules</b>  <i>Typical workload for one semester is 20 MC. Read modules on top of the Major modules secured to fulfil other graduation requirements.</i>

**Note:** The number of MC earned from Level 1000 modules for graduation requirements is capped at 60 (typically 15 modules). Excluding CFG1010 Roots and Wings (2MC) and ES1103 English for Academic Purposes (4MC).