

## DEPARTMENT OF BIOLOGICAL SCIENCES

# MAJOR IN LIFE SCIENCES

### Graduation Requirements for BSc (Hons) in Life Sciences – Cohort AY2019/20 [160MC]

[MC refers to Modular Credits. Each module typically earns 4MC.]

	<b>Life Sciences Major:</b> <i>Your Primary Discipline</i> [84MC]	<b>Life Sciences Plus (LS+):</b> <i>Unrestricted Elective Modules</i> (UEM) [48MC or typically 12 modules]	<b>Other Graduation Requirements</b> [28MC or 7 modules]
<b>YEAR 1</b>	<b>LSM1102 Molecular Genetics</b> <b>LSM1106 Molecular Cell Biology</b> <b>LSM1105 Evolutionary Biology</b> <b>ST1232 Statistics for Life Sciences</b> <b>CM1401 Chemistry for Life Sciences</b>	<b>Example:</b> <b>Second Major in Data Analytics</b>  CS1010S Programming Methodology MA1101R Linear Algebra I MA1102R Calculus CS2040 Data Structures and Algorithms ST2131/MA2216 Probability ST2132 Mathematical Statistics DSA2101/2 Essential Data Analytics Tools ST3131 Regression Analysis MA3252 Linear Network Optimisation DSA4211 High Dimensional Statistical Analysis CS3244 Machine Learning ST3240 Multivariate Statistical Analysis ST3247 Simulation	<b>General Education:</b> GER1000 – Quantitative Reasoning GEH1XXX – Human Cultures GES1XXX – Singapore Studies GET1XXX – Thinking and Expression GEQ1000 – Asking Questions  <b>Faculty Requirements:</b> <b>Either CS1010 (or a variant) or COS2000 for Computational Thinking Requirements</b>  <b>SP1541 Exploring Science Communication through Popular Science</b> (if precluded, please read 1 module from any Science subject group except LSM-prefixed modules)
<b>YEAR 2</b>	<b>LSM2191 Laboratory Techniques in Life Sciences</b>  <b>Pass 3 LSM22xx</b> (except LSM2288/9)	<b>Example: Minor in Management</b>  MNO1706X Organisational Behaviour EC1301 Principles of Economics MKT3701 Marketing Management MNO3701 Human Capital Management BSN3701 Technological Innovation DOS3701 Supply Chain Management	
<b>YEAR 3</b>	<b>Pass 2 LSM32xx</b> (except LSM3289)  <b>Pass 2 LSM32xx/LSM42xx/LSM-recognised elective modules</b> (except LSM3289 and LSM4299)	<b>Example: Minor in Pharmaceutical Science</b>  PR1110 Foundations for Medicinal Chemistry PR2114 Formulation and Technology I PR2115 Medicinal Chemistry for Drug Design PR3301 Pharmaceutical Dosage Forms PR4205 Bioorganic Principles of Medicinal Chemistry PR4206 Industrial Pharmacy	
<b>YEAR 4</b>	<p><b>{2 options to fulfil the Honours Year.}</b></p> <p><b>Honours Research Project Option</b> Pass LSM4199 Honours Project in Life Sciences, AND pass another <b>4</b> LSM42xx elective modules.</p> <p>- <b>To fulfil a specialisation, pass LSM4199 and 2 LSM4xx from the corresponding list for the chosen specialisation.</b></p> <p><b>Final Year Internship Option</b> Pass LSM4299 Applied Project in Life Sciences, AND pass another <b>4</b> LSM42xx elective modules.</p>	<p><b>{Pursue a Minor, Second Major, Study Abroad Programme, NOC Programme, or expand to a Double Degree Programme.}</b></p>	

#### Notes:

- A Minor typically takes up of 24MC (i.e. 6 modules).
- A Second Major typically takes up of 48MC (i.e. 12 modules).
- Double-count up to 8MC (i.e. 2 modules) between a Major and a Minor, or up to 16MC (i.e. 4 modules) between a Major and a Second Major.

#### APPLYING TO NUS LIFE SCIENCES MAJOR

- Possess two H2 or GCE 'A' Level passes (or equivalents) in Biology, Chemistry, Mathematics/Further Mathematics, or Physics.
- Select '**Science**' as the choice of course for single degree study, or any choice of course for DDP/DMP/MMP study with '**Life Sciences**'.



## List of Life Sciences Major (LSM) Elective Modules

All are 4MC each except otherwise indicated.

<p>LSM2211 LSM2212 LSM2231 LSM2232  LSM2233 LSM2234 LSM2241 LSM2251 LSM2252 LSM2253  LSM2254 LSM2291</p>	<p><b><u>LSM22xx Elective Modules</u></b> 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</p>	<p>LSM4199 LSM4210 LSM4211 LSM4213 LSM4214 LSM4215 LSM4216 LSM4217 LSM4221 LSM4222 LSM4223 LSM4225 LSM4226 LSM4227 LSM4228  LSM4229  LSM4252</p>	<p><b><u>BIOMEDICAL SCIENCE SPECIALISATION</u></b> <b><u>LSM4xxx Elective Modules</u></b>  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</p>
<p>LSM3201  LSM3211 LSM3212  LSM3214  LSM3215  LSM3216 LSM3217 LSM3218 LSM3219 LSM3222 LSM3223 LSM3224 LSM3225  LSM3226 LSM3227 LSM3231 LSM3232 LSM3233 LSM3234 LSM3235</p>	<p><b><u>LSM32xx Elective Modules</u></b> 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 General Virology Protein Structure and Function Microbiology Developmental Biology Biological Imaging of Growth and Form Epigenetics in Human Health and Diseases</p>	<p>LSM4199 LSM4231 LSM4232 LSM4234 LSM4235 LSM4241 LSM4242 LSM4243 LSM4244 LSM4245 LSM4251</p>	<p><b><u>MOLECULAR AND CELL BIOLOGY SPECIALISATION</u></b> <b><u>LSM4xxx Elective Modules</u></b>  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</p>
<p>LSM3241 LSM3242 LSM3243 LSM3244 LSM3245 LSM3246 LSM3247 LSM3252 LSM3254 LSM3255 LSM3256 LSM3258 LSM3259 LSM3262 LSM3265 LSM3266 LSM3267 LSM3272 LSM3288</p>	<p>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 Advanced UROPS in Life Sciences I</p>	<p>LSM4199 LSM4254 LSM4255 LSM4256 LSM4257 LSM4259 LSM4261 LSM4262 LSM4263 LSM4264 LSM4265 LSM4267</p>	<p><b><u>ENVIRONMENTAL BIOLOGY SPECIALISATION</u></b> <b><u>LSM4xxx Elective Modules</u></b>  Honours Project in Life Sciences (16MC) Principles of Taxonomy and Systematics Methods in Mathematical Biology Evolution of Development Aquatic Vertebrate Diversity Evolutionary Genetics of Reproduction Marine Biology Tropical Conservation Biology Field Studies in Biodiversity Freshwater Biology Urban Ecology Animal Communications &amp; Sensory Ecology</p>
		<p>LSM4299</p>	<p><b><u>FINAL YEAR INTERNSHIP</u></b> <b><u>(Not for any specialisation)</u></b> Applied Project in Life Sciences (16MC)</p>

Modules in red – Biomedical Science focus

Modules in blue – Molecular and Cell Biology focus

Modules in green – Environmental Biology focus