

**SEMESTERS I, II and IV**  
**LSM1301 – GENERAL BIOLOGY**

**Preclusion:** *Must not have read 'A' Level Biology, or equivalents. Cannot be read concurrently with LSM1101, LSM1102, LSM1103, LSM1201 and LSM1202.*

**'A' Level equivalents include:**

**American High School Diploma**

**Australian High School (New South Wales HSC, Queensland Senior Certificate, South Australian Matriculation, Victoria Certificate of Education, Western Australia Year 12)**

**Bangladeshi HSC**

**Filipino High School**

**French Baccalaureate (FB) Diploma**

**German Abitur**

**Indian Standard 12 (Central, ISCE, State, and other boards)**

**Indonesian SMU UAN (Ebtanas)**

**International Baccalaureate (IB) Diploma**

**Mauritius HSC**

**Mathayom 6 (Thai High School)**

**Myanmar High School**

**New Zealand University Entrance, Bursaries and Scholarship Examination or**

**National Certificate of Educational Achievement Level 3**

**Ontario Secondary School Diploma (OSSD) or Canadian Pre-U (CPU)**

**Pakistani Intermediate**

**PRC National College Entrance Examination or Gao Kao**

**Sijil Tinggi Persekolahan Malaysia (STPM)**

**Turkish High School**

**Unified Examination Certificate (UEC)**

**Vietnamese High School Graduation Examination**

**Workload:** *24 lecture hours + 26 tutorial hours (open laboratory sessions, assignments, and museum visit).*

This is an introductory module that explores what a living thing is, the basics of life, and the science behind it. The course will introduce the chemistry of life and the unit of life. The question of how traits are inherited will be discussed and the field of biotechnology, including its applications and the ethical issues involved will be introduced. The diversity of life on earth will be explored, with discussions how life on earth possibly came about and how biologists try to classify and make sense of the diversity. The course will also introduce the concept of life functions from cells to tissues and from organs to systems. The concept of how organisms maintain their internal constancy and organisation of major organ systems will be discussed. The focus will be to introduce the unifying concepts in biology and how they play a role in everyday life.

<b>S/N</b>	<b>Topics</b>	<b>Lecture Hours</b>
1	<b>Science of Biology</b> What is a living thing? What is the science of biology? What are the limits of science?	2
2	<b>Chemistry of Life</b> Carbon compounds in cells – carbohydrates, lipids, amino acids, and nucleic acids.	2
3	<b>Cell Structure and Function</b> Features of eukaryotic and prokaryotic cells.	2
4	<b>Energy and Life</b> Glycolysis. Citric acid cycle. Oxidative phosphorylation.	2

S/N	Topics	Lecture Hours
5	<b>DNA and Heredity</b> DNA structure and replication.	2
6	<b>Gene Expression</b> From DNA to proteins. Mutations and control mechanisms.	2
7	<b>Biotechnology</b> DNA recombination and genetic engineering. Applications and implications of biotechnology.	2
8	<b>Biodiversity</b> Identification, naming, and classifying of organisms. How many species are there?	2
9	<b>Plant Form and Function</b> Types of plant tissues. Plant nutrition and transport.	2
10	<b>Animal Form and Function</b> Animal tissues and organ systems. Example of an animal organ system.	2
11	<b>Ecology</b> Community interactions. Food chain and energy flow.	2
12	<b>Evolution</b> Principles of evolution. Evidence for natural selection.	2
<b>Lectures:</b>		<b>24 h</b>
<b>Tutorials (Open Laboratory Sessions, Assignments, and Museum Visit):</b>		<b>26 h</b>
<b>Total Hours:</b>		<b>50h</b>

#### TEXTBOOKS:

1. *Biology* by Sylvia S. Mader, 10th Edition, 2010, McGraw-Hill Higher Education.
2. *Biology: Concepts and Investigations* by Marielle Hoefnagels, 2009, McGraw-Hill Higher Education.
3. *Biology: Life on Earth with Physiology* by Gerald Audesirk, Teresa Audesirk, and Bruce E. Byers, 8th Edition, 2008, Pearson Prentice Hall.
4. *Biology: The Unity and Diversity of Life* by Cecie Starr, Ralph Taggart, Christine Evers, and Lisa Starr, 12th Edition, 2009, Thomson Brooks/Cole.

**MODE OF ASSESSMENT:** 40% Continual Assessment + 60% Final Examination

#### MODULE CO-ORDINATORS:

Dr Seow Teck Keong (Semester I) (Tel: 6516-2695, E-mail: teckeong@nus.edu.sg)  
A/P Loh Chiang Shiong (Semester II) (Tel: 6516-2916, E-mail: dbslohcs@nus.edu.sg)  
Dr Wu Jinlu (Semester IV) (Tel: 6516-8476, E-mail: dbswjl@nus.edu.sg)

#### LECTURERS:

##### Semester I

Dr Seow Teck Keong (E-mail: teckeong@nus.edu.sg)  
Dr Tan Swee Hee (E-mail: sweehee@nus.edu.sg)

##### Semester II

Dr Wu Jinlu (E-mail: dbswjl@nus.edu.sg)  
A/P Loh Chiang Shiong (E-mail: dbslohcs@nus.edu.sg)

##### Semester IV

A/P Loh Chiang Shiong (E-mail: dbslohcs@nus.edu.sg)  
Dr Wu Jinlu (E-mail: dbswjl@nus.edu.sg)