# Georgia Standards of Excellence
## High School Curriculum Map
### Course Title: IB Biology HL (Year 1)

**District Abbreviation:** SCI 501-502HL  
**State ID:** 26.01802

## First Semester

<table>
<thead>
<tr>
<th>Unit 1</th>
<th>Unit 2</th>
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<th>Unit 8</th>
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</table>
| **Unit 1**  
Statistical Analysis and Intro to the IB Lab Report | **Unit 2**  
Cell Biology | **Unit 3**  
Molecular Biology | **Unit 4**  
Genetics | **Unit 5**  
Evolution and Biodiversity | **Unit 6**  
Human Physiology | **Unit 7**  
Ecology | **Unit 8**  
Options |
| 2 Weeks | 4 Weeks | 6 Weeks | 6 Weeks | 5 Weeks | 5 Weeks | 4 Weeks | 4 Weeks |
| GSE Standards:  
SCSh 1-9 | GSE Standards:  
SB1a, SB3b, d | GSE Standards:  
SB1b-d, SB2a-b, e-f, SB3a | GSE Standards:  
SB2c-d | GSE Standards:  
SB3c, SB5a-e | GSE Standards:  
SB4f | GSE Standards:  
SB4a-e | |
| IB Standards:  
1 | IB Standards:  
1.1-1.6 | IB Standards:  
2.1-2.9 | IB Standards:  
3.1-3.5 | IB Standards:  
5.1-5.4 | IB Standards:  
6.1-6.6 | IB Standards:  
4.1-4.4 | IB Standards:  
A, B, C, D |
| TOPICS:  
Statistical analysis | TOPICS:  
Introduction to cells, ultrastructure of cells, membrane structure, membrane transport, origin of cells, cell division | TOPICS:  
Molecules to metabolism, water, carbohydrates and lipids, proteins, enzymes, structure of DNA and RNA, DNA replication, transcription and | TOPICS:  
Genes, chromosomes, meiosis, inheritance, genetic modification and biotechnology | TOPICS:  
Evidence for evolution, natural selection, classification of biodiversity, cladistics | TOPICS:  
Digestion and absorption, blood system, defense against infectious disease, gas exchange, neurons and synapses, hormones | TOPICS:  
Species, communities and ecosystems, energy flow, carbon cycling, climate change | TOPICS:  
A:Neurobiology and Behavior, B:Biotechnology and Bioinformatics, C:Ecology and Conservation |

## Second Semester

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A:Neurobiology and Behavior, B:Biotechnology and Bioinformatics, C:Ecology and Conservation |
<p>| translation, cell respiration, photosynthesis | homeostasis and reproduction | D:Human Physiology |</p>
<table>
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<tr>
<th>Essential Vocabulary:</th>
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<tbody>
<tr>
<td>Mean, median, mode, standard deviation,</td>
<td>Prokaryote, eukaryote, cell theory, cell,</td>
<td>Metabolism, anabolism, catabolism,</td>
<td>Evolution, natural selection, adaptation,</td>
<td>Villi, arteries, capillaries, sinoatrial</td>
<td>Community, species, populations, consumers,</td>
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<tr>
<td>accuracy, precision, levels of confidence</td>
<td>stem cells, fluid mosaic model, plasma</td>
<td>carbohydrates, lipids, proteins, nucleic</td>
<td>binomial system, taxonomy, clad, cladistics,</td>
<td>node, veins, antibiotics, viruses,</td>
<td>detritivores, saprotrophs, abiotic, biotic,</td>
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<td>membrane, cholesterol, phospholipid, active</td>
<td>acids, enzymes, monosaccharides,</td>
<td>cladograms</td>
<td>antibodies, pneumocytes, neurons, synapses,</td>
<td>biomass, trophic, methane, carbon, greenhouse</td>
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<td>transport, passive transport, diffusion,</td>
<td>disaccharides, steroids, triglycerides,</td>
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<td>nerve impulse, testosterone, estrogen,</td>
<td>gases,</td>
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<td>osmosis, concentration gradient, mitosis,</td>
<td>peptide bonds, saturated fats, unsaturated</td>
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<td>melatonin, thyroxin, leptin, progesterone</td>
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<td>meiosis, homeostasis, metabolism, binary</td>
<td>fats, cohesion, adhesion, polarity,</td>
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<td>fission, endocytosis, exocytosis,</td>
<td>hydrogen bond, monomers, polymers, DNA,</td>
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<td>osmolarity, hypertonic, isotonic, hypotonic</td>
<td>RNA, anaerobic, aerobic, cell respiration,</td>
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<td>endosymbiosis, cyclins</td>
<td>photosynthesis</td>
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<td>Stem cell research and ethical issues, microscopy and links to physics, kidney dialysis and membrane transport, Pasteur’s experiment and the generation of cells, tobacco industry and health effects of mitotic division of cells</td>
<td>Food tests to identify reducing sugars, distinguishing scientific claims from pseudoscientific claims, discussion of the variation in prevalence of different health problems around the world, ethical implications of altering genomes, ethics of use of animals in experiments</td>
<td>Ethics of patenting human genes, use of database to compare DNA base sequences and gene loci, ethical issues of prenatal screening, social implications of mutation diagnoses, ethics of genetic modification</td>
<td>Exploring international codes for nomenclature, discussing evidence required to support a theory and types of counter evidence used to refute theories</td>
<td>Social implications of coronary heart disease, heart dissection, social and economic benefits of controlling bacterial disease around the world, social consequences of lung diseases, social effects of psychoactive drugs, fertility treatment and its potential risks to health</td>
<td>Chi-square test and practice of fieldwork techniques, ethical implications of diverting crops into fuel crops, use of databases to analyze concentration of greenhouse gases</td>
<td>A: Implications for today’s animal policies of experimental science, social consequences of psychoactive drugs B: use of bioinformatics to determine sequences, investigation of sequence alignment of related proteins C: investigating factors influencing herbivory, exploring exchange of hazardous waste D: Preparing mounts of hepatocytes from fresh liver, discussion of performance enhancement drugs</td>
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</tbody>
</table>

Each unit integrates laboratory experiences and field work using the process of inquiry. There are several strategies that are common throughout the units such as the use of a laboratory notebook, written lab reports, common teaching strategies, and written assignments relative to technical and seminal documents. Lab safety is stressed in all practical situations. Many standards are recursive in nature and will be revisited in different units throughout the year. Resources [www.georgiastandards.org](http://www.georgiastandards.org)