



Curriculum for *Biology* Grades 7-12 Short version

Reference curriculum: Thuringia, Germany
Year created: 2018

According to the bilingual concept, Biology is taught in modules, some in English and some in German. Content printed in *italics* will be taught in English.

Grade	Contents
Grade 7 2 hours/week	<ol style="list-style-type: none">1. <i>Cells</i><ul style="list-style-type: none">- <i>impact of the microscope</i>- <i>the cell as the basic unit of all life</i>2. <i>Cell structure and life cycle of bacteria</i>3. <i>From individual cells to multicellular organisms</i><ul style="list-style-type: none">- <i>cell structure and life forms of single cell organisms (plant-like and animal-like)</i>- <i>from single cell organisms to multicellular organisms, e.g. green algae</i>4. <i>Invertebrates and their habitats</i>5. <i>Movement – a property of life</i>

<p>Grade 8</p> <p>2 hours/week</p>	<ol style="list-style-type: none"> 1. Metabolism in humans <ul style="list-style-type: none"> - nutrition (and malnutrition) and digestion - blood and the circulatory system (i.e. cardiovascular diseases) - respiratory system (i.e. why is smoking dangerous to your health?) 2. <i>Senses, nerves and hormones</i> <ul style="list-style-type: none"> - <i>sensory organs</i> - <i>nervous system (i.e. the danger of addictive substances)</i> - <i>Biological responses (i.e. stress response)</i> 3. Human reproduction and sexuality
<p>Grade 9</p> <p>2 hours/week, either in the first or second semester</p>	<ol style="list-style-type: none"> 1. Anatomy and physiology of plants 2. <i>Health and illness</i> <ul style="list-style-type: none"> - <i>infectious diseases</i>
<p>Grade 10</p> <p>3 hours/week</p>	<ol style="list-style-type: none"> 1. Organisms in their environments <ul style="list-style-type: none"> - ecosystem forest 2. <i>Cell biology</i> <ul style="list-style-type: none"> - <i>structure and functions of cell organelles</i> 3. Genetics <ul style="list-style-type: none"> - <i>classical genetics (i.e. Mendel, genetic diseases)</i> - <i>introduction to molecular genetics (i.e. cell cycle, mitosis, meiosis)</i> 4. Evolution <ul style="list-style-type: none"> - introduction to the theory of evolution - proof of evolution (i.e. fossils, age determination) - human evolution <p>Optional: Formation of Earth</p>
<p>Grade 11</p> <p>3 hours/week</p>	<ol style="list-style-type: none"> 1. <i>The cell as a structural and functional unit</i> <ul style="list-style-type: none"> - <i>microscopes and microscopy</i> - <i>cell components and their functions</i>

	<ul style="list-style-type: none"> - <i>Kingdoms of Life</i> 2. <i>Plasma membrane</i> <ul style="list-style-type: none"> - <i>discovery of the plasma membrane</i> - <i>transport mechanisms</i> 3. The role of enzymes as the cell's biological catalysts <ul style="list-style-type: none"> - structure, function and mode of action of enzymes - influencing factors (i.e. enzyme inhibition) - enzyme regulation 4. Metabolic processes <ul style="list-style-type: none"> - photosynthesis - cellular respiration 5. <i>Molecular genetics</i> <ul style="list-style-type: none"> - <i>human genome (i.e. analysis of karyograms)</i> - <i>mitosis and meiosis</i> - <i>structure of DNA</i> - <i>DNA replication</i> - <i>protein synthesis</i> - <i>genetic engineering</i> 6. Ecology <ul style="list-style-type: none"> - applied ecology - population growth - demographics - biological interaction
<p>Grade 12</p> <p>3 hours/week</p>	<ul style="list-style-type: none"> 1. <i>Neurophysiology</i> <ul style="list-style-type: none"> - <i>stimulus-response circuit</i> - <i>structure, function and types of neurons (structure-function relations)</i> - <i>stimulus conduction: resting potential, action potential, types of AP conduction</i> - <i>structure and function of synapses</i> - <i>effect of psychoactive substances and neurotoxins on neurons</i> - <i>brain structures and function</i> - <i>nervous systems of animals</i>

	<p>2. Evolution</p> <ul style="list-style-type: none"> - theories of evolution - analysis of cladograms - methods of evolutionary research - homologies and analogies - natural selection
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Evaluation of student performance:

We evaluate the individual student performance with regards to the acquired knowledge, methods expertise as well as self and social competence by means of appropriate tests and learning situations in individual and cooperative forms of learning.

This evaluation is done on the basis of written, oral and hands-on testing, such as:

- written and oral performance evaluation and class exams,
- experimental tasks and appropriate documentation (e.g. microscopic drawings, lab reports),

	Number of tests/exams	Test/exam performance	Remaining class performance
		Weighting of performance in %	
Grade 7/8	1 per semester	40	60
Grade 9	1 class test if the subject is taught for only one semester out of the school year, or 1 written test per semester	40	60
Grade 10	2 per semester	50	50
Grade 11 and 12/1	1 or 2 per semester ¹	50	50
Grade 12/2	1 per semester	40	60

– class

participation,
– presentations.

Assessment scale:

¹ As adopted by the Department Meeting as of the 2017/18 school year

As adopted by the GISW Biology Department Meeting on 9/30/2013 (in effect as of the 2013/14 school year, revised in July 2016)
Short version of the curriculum created on February 17, 2019 by Nicole Bankert, Head of the GISW Biology Department