

IB Biology - Category 1 Workshop

Session 5: Creating a personalised teaching / learning programme (Telescoping the syllabus)

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SYLLABUS TOPIC / SUB-TOPIC	Estimated time	Practical Skills	NoS topics	aryNoS topics	(These are prescribed in the syllabus)	Comments / considerations (see examples)
						Consider links to other parts of the syllabus. Also consider seasons, national systems, resources, etc
Core		<i>An example has been provided for you</i>				
first year						
1.1 introduction to cells 1 out 2	2 hours	1. Light microscope (Wet mount preparation). 2. Surface area to volume ration experiment.	3,1	4,5		Possible link to viewing microscopic aquatic organisms in Ecology - Link to physics.
2.1 molecules to metabolism	2 hour	1. Drawing of molecules. 2. Identification of biochemicals.	1,9			
2.2 water	1 hour		2,2			Link to "water policy" school project.
2.3 carbohydrates and lipids	3 hours	1. Molecular visualization software. 2. Body mass index.	5,2			Link to "wellness week" school project.
2.4 proteins	2 hours	1. Drawing of proteins.	3,1			
1.1 introduction to cells 2 out 2	3 hours	1. Light microscope (Wet mount preparation). 2. Surface area to volume ration experiment.	3,1	4,5	1. Calculation of magnification	Possible link to viewing microscopic aquatic organisms in Ecology - Link to physics.
1.5 the origin of cells	1 hour		1,9			
1.2 ultrastructure of cells	2 hours	1. Drawing prokaryotic and eukaryotic cells. 2. Identify organelles in micrographs.	1,8			
1.3 membrane structure	3 hours	1. Drawing of fluid mosaic model. 2. Analysis of evidence and falsification of Davson-Danielli model.	1,11	1,9		
1.4 membrane transport	4 hours		3,1		2. Osmosis experiment.	
2.6 structure of DNA and RNA	2 hours	1. Drawing DNA and RNA molecules.	1,10			
2.7 DNA replic, transcr, transl	3 hours	1. Use of the table of the genetic code. 2. Analysis of Meselson and Stahl's results. 3. Use of mRNA codons table.	1,8			
2.5 enzymes	4 hours	1. Design of an experiment about enzyme activity.	3,2		3. Enzyme activity investigation.	
2.8 cell respiration	2 hour	1. Analysis of results from experiments with respirometer.	4,5			
2.9 photosynthesis	4 hours	1. Drawing of an absorption spectrum and an action spectrum.	3,1		4. Separation of photosynthetic pigments.	
3.1 genes	2 hours	1. Use of NCBI database.	1,8			
3.2 chromosomes	2 hours	1. Use of databases to identify the locus of a human gene.	1,8			
1.6 cell division	2 hours	drawing structure of 1 xylem vessels in stem sections; Design an experiment to test hypotheses about the effect of temp or humidity on transpiration rates	1,4			
3.3 meiosis	2 hours	1. Drawing diagrams to show the stages of meiosis.	1,8			Link to "Down syndrome" school project.
3.4 inheritance	5 hours	1. Construction of Punnet grids. 2. Comparison of predicted and actual outcomes of genetic crosses. 3. Analysis of pedigree charts.	3,2			
3.5 genetic modific and biotech	4 hours	1. Design of an experiment about rooting of stem-cuttings. 2. Analysis of examples of DNA profiles. 3. Analysis of data on risks to monarch butterflies of Bt crops.	4,8			
B.2 biotechnology in agriculture	4 hours	1. Evaluation of data on the environmental impact of glyphosphate-tolerant soybeans. 2. Identification of an open reading frame.	4,8			
B.1 microbiology: organisms in industry	4 hours	1. Gram staining of Gram + and Gram - bacteria; 2. Experiments showing zone of inhibition of bacterial growth by bactericides; 3. Production of biogas in a small scale fermenter	1,4			Start of the Internal assessment.
B.3 environmental protection	4 hours	1. Evaluation of data or media reports on environmental problems caused by biofilms.	1,8			

second year					
4.2 energy flow	2 hours	1.Representation of energy flow.	2.2		Start of the Group 4 project.
4.3 carbon cycling	3 hours	1.Construct a diagram of the carbon cycle.	3.1		
4.4 climate change	3 hours		5.2		
4.1 species, communities and ecosystems	4 hours	1.Classifying species. 2. Testing for association between two species using the chi-squared test. 3.Recognizing and interpreting statistical significance.	3.1		5. Setting up sealed mesocosms.
5.1 evidence for evolution	3 hours		3.1		
5.2 natural selection	3 hours		2.1		
5.3 classification of	3 hours	1.Constructing dichotomous keys	4.3		
5.4 cladistics	3 hours	1.Analysis of cladograms	1.9		
6.3 defence against infectious disease	3 hours		4.8		Link to "Leprosy" school project.
6.1 digestion and absorption	3 hours	1.Diagram of the digestive system	1.1		
6.2 the blood system	4 hours	1.Identification of blood vessels. 2. Recognition of the chambers and valves of the heart and the blood vessels connected.	1.9		
6.4 gas exchange	4 hours		1.8		6. Ventilation at rest and after mild and vigorous exercise.
6.6 hormones, homeostasis and reproduction	3 hours	1.Drawing of the male and female reproductive systems and structures	1.8		
6.5 neurons and synapses	3 hours	1.Analysis of oscilloscope traces.	4.3		
4 marzo deadline estrema da dare alla Rampone!					
Febr 15 prova di deadline da dare ai ragazzi					