

# NorthGate College - Scheme Of Work

Department: Science		Year: 2012-2013		Teacher: Jeanelle Looby	
Subject: Biology UNIT 2	Room: Biology Lab	Time: Mondays, Tuesdays & Wednesdays		Form: 6	

## Term 1

Date/Week	Topic	Objective/Learning Outcome (SMART)	Method	Resources	Assessment
03.09.12/1	Photosynthesis and ATP Synthesis	<ul style="list-style-type: none"> <li>Describe the structures of a dicotyledonous leaf, a palisade cell and a chloroplast <i>relating</i> these structures to their roles in the process of photosynthesis</li> <li><u>Make drawings from prepared slides of a transverse section of a dicotyledonous leaf, and a palisade cell</u></li> <li><i>Explain the process of photophosphorylation</i></li> </ul>	Lecture, Discussion	Handouts, pictures, textbook	IA drawing of dicot leaf

10.09.12/2	Photosynthesis and ATP Synthesis	<ul style="list-style-type: none"> <li>• Outline the essential stages of the Calvin cycle involving the light independent fixation of carbon dioxide</li> <li>• Discuss the concept of limiting factors in photosynthesis</li> <li>• <u>Investigate the effect of limiting factors on the rate of photosynthesis</u></li> <li>• Discuss the extent to which knowledge of limiting factors can be used to improve plant productivity</li> </ul>	Lecture, Discussion, Lab	Hand outs, pictures, textbook	IA Photosynthesis Expt
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Date/Week	Topic	Objective/Learning Outcome (SMART)	Method	Resources	Assessment
17.09.12/3	Cellular Respiration and ATP Synthesis	<ul style="list-style-type: none"> <li>• <i>Outline</i> the stepwise breakdown of glucose in cellular respiration</li> <li>• <i>Explain</i> the sequence of steps in glycolysis</li> <li>• <i>Describe the structure of a mitochondria, relating its structure to its function</i></li> <li>• <i>State the fate of pyruvate in the cytosol when oxygen is available</i></li> </ul>	Lecture, Discussion	Hand outs, pictures, textbook	

24.09.12/4	Cellular Respiration and ATP Synthesis	<ul style="list-style-type: none"> <li>• <i>Outline the Krebs cycle</i></li> <li>• <i>Explain the significance of the Krebs cycle / ATP formation</i></li> <li>• <i>Explain the process of oxidative phosphorylation with reference to the electron transport chain</i></li> <li>• <i><u>Investigate the rate of oxygen uptake during respiration using a simple respirometer</u></i></li> <li>• <i>Compare the fate of pyruvate in the absence of oxygen in animals and yeast.</i></li> </ul>	Lecture, Discussion, Lab	Hand outs, pictures, textbook	IA Respiration Expt
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Date/Week	Topic	Objective/Learning Outcome (SMART)	Method	Resources	Assessment
01.10.12/5	Energy Flow and Nutrient Cycling	<ul style="list-style-type: none"> <li>• <i>Distinguish among the terms ecosystem, habitat, ecological niche</i></li> <li>• Discuss the way in which energy flows in an ecosystem</li> <li>• Discuss the efficiency of energy transfer between trophic levels</li> <li>• Discuss the concept of biological pyramids</li> </ul>	Lecture, Discussion	Hand outs, pictures, textbook	

Date/Week	Topic	Objective/Learning Outcome (SMART)	Method	Resources	Assessment
08.10.12/6	Energy Flow and Nutrient Cycling	<ul style="list-style-type: none"> <li>• <i>Describe how nitrogen is cycled within an ecosystem</i></li> <li>• Distinguish between energy flow and nutrient cycling within an ecosystem</li> <li>• Explain how energy flow and nutrient cycling are important for ecosystems to remain self-sustaining units.</li> </ul>	Lecture, Discussion	Hand outs, pictures, textbook	

Date/Week	Topic	Objective/Learning Outcome (SMART)	Method	Resources	Assessment
15.10.12/7	Ecological Systems, Biodiversity and Conservations	<ul style="list-style-type: none"> <li>• <i>Describe how ecosystems function as dynamic systems</i></li> <li>• <i>Explain the concept of biodiversity</i></li> <li>• <i>Discuss the importance of the maintenance of biodiversity</i></li> <li>• <i>Discuss how species diversity is related to the stability of an ecosystem</i></li> <li>• <i>Explain how <u>in situ</u> and <u>ex situ</u> conservation methods are used to maintain biodiversity</i></li> </ul>	Lecture, Field Trip, Discussion	Field Trip, Hand outs, pictures, textbook	Report on Field Trip

Date/Week	Topic	Objective/Learning Outcome (SMART)	Method	Resources	Assessment
22.10.12/8	The Uptake and transport of Water and Minerals	<ul style="list-style-type: none"> <li>• <i>Explain the uptake of ions by active transport in roots</i></li> <li>• Describe the entry of water into plant roots in terms of water potential</li> <li>• <i>Relate the structure of xylem vessels to their function</i></li> <li>• <u>Make drawings from prepared slides of xylem vessels</u></li> <li>• <i>Outline the ascent of water in plants</i></li> <li>• <u>Investigate the impact of</u></li> </ul>	Lecture, discussion, lab	Hand outs, pictures, textbook	IA drawing of xylem IA transpiration expt

		<u>environment factors on the rate of transpiration</u>			
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Date/Week	Topic	Objective/Learning Outcome (SMART)	Method	Resources	Assessment
29.10.12/9	Transport in Phloem	<ul style="list-style-type: none"> <li>• <i>Relate the structure of sieve tubes and companion cells to their function</i></li> <li>• <u>Make drawings of sieve tubes and companion cells from prepared microscope slides</u></li> <li>• <u>Label pertinent features in an electron micrograph of a sieve tube and companion cell</u></li> <li>• <i>Explain how phloem loading in the leaves occurs against a concentration gradient</i></li> <li>• Discuss mass (pressure) flow as a possible mechanism of translocation.</li> </ul>	Lecture, Discussion, Lab	Micrograph, Hand outs, pictures, textbook	IA drawing of phloem IA using micrograph