

## Third Year Science Syllabus – Biology Revision Check-list

### Where is your learning at?

**Green:** I know it all. **Orange:** I have some idea – check the answers. **Red:** I need to start studying this section.

Main Topic	Sub-topics	Students should be able to	R	O	G
1. Sensory system	<p>awareness of, and response to our surroundings through our sense organs</p> <p><u>sensory and motor function of nerves</u></p> <p>communication between the sense organs and the brain</p> <p>structure of the eye and functions of the parts of the eye</p>	<p>OB28: recall five sense organs in the human (eyes, ears, nose, skin and tongue) and explain how these enable students to gather information from their surroundings</p> <p>OB29: describe the role of the central nervous system <u>and the motor and sensory functions of nerves</u></p> <p>OB30: locate the main parts of the eye on a model or diagram and describe the function of the <u>cornea</u>, iris, lens, pupil, retina, optic nerve <u>and ciliary muscle</u></p>			
2. Genetics	<p>inheritable and non-inheritable characteristics</p> <p>chromosomes and genes</p>	<p>OB35: appreciate that humans have inheritable and non-inheritable characteristics, and recall that inheritable characteristics are controlled by genes</p> <p>OB36: <u>recall that genes are located on chromosomes and that in a human there are 23 pairs of chromosomes, which are located in the nucleus</u></p> <p>OB37: <u>recall that chromosomes are made of DNA and protein</u></p>			
3. Ecology	<p>local habitat study</p> <p>simple keys and instruments (quadrat, pooter, pitfall trap, beating tray, line transect) to show variety and distribution of named organisms</p> <p>food chains and food webs, adaptation, competition and interdependence</p> <p>conservation, pollution and waste management</p>	<p>OB59: <u>study a local habitat, using appropriate instruments and simple keys to show the variety and distribution of named organisms</u></p> <p>OB60: appreciate that living things are affected by their environment and respond to changes that occur in that environment, and that their numbers depend on the availability of food and the presence or absence of other organisms</p> <p>OB61: list example of producers, decomposers and consumers in an ecosystem</p> <p>OB62: select a food chain <u>and a food web</u> from a named habitat and identify examples of adaptation, competition <u>and interdependence</u></p> <p>OB63: appreciate the importance of conservation and of pollution and waste management to the environment, and identify ways in which living things contribute to these, both individually and as a community.</p> <p>OB64: discuss how human activity affects the environment, both positively and negatively (two examples in each case)</p>			
4. Microbiology and biotechnology	<p>micro-organisms: bacteria, fungi and viruses</p> <p>biotechnology in industry and medicine</p>	<p>OB65 <u>investigate the presence of of micro-organisms in air and soil</u></p> <p>OB66 state two uses of biotechnology in industry and two uses of biotechnology in medicine</p> <p>OB67: list three common illnesses caused by viruses and three caused by bacteria</p>			

## Third Year Science Syllabus – Chemistry Revision Check-list

Main topic	Sub-topics	Students should be able to	R	O	G
1. Hardness of water Water treatment	dissolved solids in water hardness in water and its effects water treatment	OC30: conduct a qualitative experiment to detect the presence of dissolved solids in water samples, and test water for hardness (soap test) OC31: explain that some dissolved compounds, including compounds of calcium, cause hardness in water, and that water hardness can be removed using an ion exchanger. OC32: carry out simple distillation and obtain a sample of water from seawater OC33: describe the processes involved in the treatment of water supplied to domestic consumers			
2. Electrolysis of water	decomposition of water by electrolysis	OC34: investigate the decomposition of water by electrolysis: recall the composition of water			
3. Hydrocarbons, acid rain	products of combustion of fossil fuels causes and effects of acid rain the effect of acid rain on limestone and on plants crude oil products as raw materials for plastics non-biodegradable plastics and their contribution to pollution	OC53: recall that fossil fuels are sources of hydrocarbons, and that they produce CO <sub>2</sub> and H <sub>2</sub> O when burned OC54: list two examples of fossil fuels OC55: <u>describe the role of the combustion of fuels in the the production of acid rain, with particular reference to SO<sub>2</sub>; describe the effects of acid rain</u> OC56: describe the effects of acid rain on limestone and on plants OC57: appreciate that natural gas is mainly methane OC58: identify everyday applications of plastics, and understand that crude oil products are the raw material for their production OC59: associate the properties of everyday plastics with their use OC60: describe and discuss the impact of non-biodegradable plastics on the environment OC61: appreciate that chemistry has an important role in pharmacy, medicine and the food industry.			

## Third Year Science Syllabus – Physics Revision Check-list

Main topic	Sub-topics	Students should be able to	R	O	G
1. Static electricity	electric charge; effects of static electricity; earthing	OP48: use simple materials to generate static electricity; demonstrate the force between charged objects and the effects of earthing			
2. Current electricity  Voltage	current as a flow of charge; measuring current  measuring potential difference (voltage) and resistance for metallic conductors  relationship between voltage, current and resistance  direct and alternating current; heating, <u>chemical and magnetic</u> effects of an electric current  conductors and insulators	OP49: test electrical conduction in a variety of materials, and classify each material as a conductor or insulator OP50: set up a simple electric circuit, use appropriate instruments to measure current, potential difference (voltage) and resistance, and establish the relationship between them. OP52: perform simple calculations based on the relationship between current, potential difference (voltage), and resistance OP53: describe the heating effect, <u>the chemical effect, and the magnetic effect</u> of an electric current, and identify everyday applications of these, including the action of a fuse OP54: distinguish between direct and alternating current; recall that the voltage of the mains supply is 230 volts a.c.			
3. Electric circuits	simple circuits – series and parallel; function of a switch	OP51; demonstrate simple series and parallel circuits containing a switch and two bulbs			
4. Electricity in the home	mains supply; fuses and circuit breakers and their role in safety; wiring a plug  power rating of electric appliances; units used in calculating electricity bills	OP55: recall that the unit of electrical energy used by electricity supply companies is the kilowatt-hour; calculate the cost of using common electrical appliances based on their power rating. OP56: describe how to wire a plug correctly, and explain the safety role of a fuse or circuit breaker in domestic electrical circuits			
5. Electronics	simple electronic devices; everyday applications	OP57: describe a diode as a device that allows current to flow in one direction only and recall that a light emitting diode (LED) requires less current than a bulb OP58: set up simple series circuits using switches, buzzers, LEDs and resistors. OP59: measure the resistance of a light-dependent resistor (LDR) under varying degrees of brightness of light OP60: identify everyday applications of the diode, including the LED, and of the LDR.			