**Little Heath Sixth Form**

**Biology**

Personal Learning Checklist

**Student Name: ……………………….…………………………………..………**

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| **Unit Name:****Investigative and practical skills in A2 Biology** | **Unit Code:****BIOL6** |
| *Minimum Target Grade:* | *Aspirational Target Grade:* |

*KEY:* ***Red =*** *with difficulty* ***Amber*** *= not sure* ***Green*** *= yes*

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| **Practical skills** | **Red** | **Amber** | **Green** | **To address this before the exam I will:-** |
| Practical work carried out in the context ofUnits 4 and 5 should enable candidates to gainexperience of... | • random sampling |  |  |  |  |
| • the use of a three-way tap in collecting gas samples |  |  |  |  |
| • establishing anaerobic conditions. |  |  |  |  |
| • collection of reliable quantitative ecological data involving a specific abiotic factor, frequency, population density and percentage cover. |  |  |  |  |
| • selecting, using and interpreting an appropriatestatistical test from the following:– standard error and 95% confidence limits– Spearman rank correlation– χ2 |  |  |  |  |

*KEY:* ***Red =*** *with difficulty* ***Amber*** *= not sure* ***Green*** *= yes*

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| **Knowledge/specification content (skills are highlighted in bold)** | **Red** | **Amber** | **Green** | **To address this before the exam I will:-** |
| 3.6.1 Investigating biological problems involves changing a specific factor, the independent variable, and measuring the changes in the dependent variable that result. | Candidates should be able to• use knowledge and understanding from the A level specification to pose scientific questions and define scientific problems |  |  |  |  |
| • identify the independent variable and describe an appropriate method of varying it in such detail that a student starting an A2 course could carry out the suggested procedure without further assistance |  |  |  |  |
| • identify other variables that might be expected to exert a significant influence on the results, use knowledge from relevant parts of the A Level specification to explain why, and describe how they would be kept constant or monitored |  |  |  |  |
| • where necessary, describe how and explain why appropriate control experiments should be established |  |  |  |  |
| • identify the dependent variable and describe how they would collect a full range of useful quantitative data that could be analysed statistically, measured to an appropriate level of accuracy and precision |  |  |  |  |
| • distinguish between accuracy and reliability and describe precautions needed to obtain valid, accurate and reliable data. |  |  |  |  |
| 3.6.2 Implementing involves the ability to work methodically and safely, demonstrating competence in the required manipulative skills and efficiency in managing time. Raw data should be methodically collected and recorded during the course of the investigation. | Candidates should be able to• show full regard for safety and the ethical issues involved with the well-being of living organisms and the environment |  |  |  |  |
| • carry out an investigation in a methodical and organised way, demonstrating competence in the required manipulative skills and efficiency in managing time |  |  |  |  |
| • take all measurements to an appropriate level of accuracy and precision |  |  |  |  |
| • present raw data in a suitable table conforming to the conventions specified in the Institute of Biology publication, Biological Nomenclature, Recommendations on Terms, Units and Symbols, 3rd edition (2000) concerning organisation and presentation of units. |  |  |  |  |
| 3.6.3 Data should be analysed by means of an appropriate statistical test. This allows calculation of the probability of an event being due to chance. Appropriate conclusions should be drawn and scientific knowledge from the A Level specification should be used to explain these conclusions. | Candidates should be able to:• select and justify the choice of an appropriate statistical test from the following:– standard error and 95% confidence limits – Spearman rank correlation – χ2 |  |  |  |  |
| • construct an appropriate null hypothesis |  |  |  |  |
| • calculate the test statistic given a standard scientific calculator |  |  |  |  |
| • interpret the calculated test statistic in terms of the appropriate critical value at the 5% significance level, making reference to chance, probability and acceptance or rejection of the null hypothesis |  |  |  |  |
| • draw valid conclusions, relating explanations to specific aspects of the data collected and applying biological knowledge and understanding from the A Level specification. |  |  |  |  |
| 3.6.4 Limitations are inherent in the material and apparatus used and procedures adopted.These limitations should be identified, evaluated and methods of overcoming them suggested. | Candidates should be able to• identify the limitations inherent in the apparatus and techniques used |  |  |  |  |
| • discuss and assess the relative effects of these limitations on the reliability and precision of the data and on the conclusions that may be drawn, resolving conflicting evidence |  |  |  |  |
| • suggest realistic ways in which the effect of these limitations may be reduced |  |  |  |  |
| • suggest further investigations which would provide additional evidence for the conclusions drawn. |  |  |  |  |

**Grade tracking:**

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| *Grade* | *Date* | *Grade* | *Date* | *Grade* | *Date* | *Grade* | *Date* | *Grade* | *Date* | *Grade* | *Date* |
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*Note: You should discuss this checklist regularly with your subject teacher/mentor*