**Extended Essay** (4000 words, double spaced, Arial, size 12 font, no names or ID numbers)

**Criterion A: Focus & Method** (focuses on the topic, the RQ and the methodology. It assesses the explanation of the focus of the research topic & question, how the research will be undertaken, and how the focus is maintained throughout the essay.)

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| Topic is communicated unclearly & incompletely. Identification & explanation of the topic is limited; the purpose & focus of the research is unclear, or does not lend itself to a systematic investigation in the subject for which it is registered. | The topic is communicated; Identification & explanation of the research topic is communicated; the purpose & focus of the research is adequately clear, but only partially appropriate | Identification & explanation of the research topic is effectively communicated; the purpose & focus is clear & appropriate. Topic & RQ is explained to readers in terms of contextualizing & justifying its worthiness. |
| RQ is stated but not clearly expressed or too broad. The RQ is too broad in scope to be treated effectively within the word limit & requirements of the task, or does not lend itself to a systematic investigation in the subject for which it is registered. The intent of the RQ is understood but has not been clearly expressed &/or the discussion of the essay is not focused on the RQ | RQ is clearly stated but only partially focused; RQ is clear but the discussion in the essay is only partially focused and connected to the RQ. | RQ is clearly stated & focused; RQ is clear & addresses an issue of research that is appropriately connected to the discussion in the essay. RQ is based on/situated against background knowledge & understanding of chosen subject. |
| Methodology of the research is limited; the sources &/or methods to be used are limited in range given the topic & RQ. There is limited evidence that their selection was informed. | Methodology of research is mostly complete; sources &/or methods to be used are generally relevant & appropriate given the topic & RQ. There is some evidence that their selection(s) was informed.  **If the topic or RQ is deemed inappropriate for the subject in which the essay is registered no more than 4 marks can be awarded for this criterion.** | Methodology is complete; an appropriate range of relevant sources &/or methods have been applied in relation to the topic & RQ. There is evidence of effective and informed selection of sources &/or methods. |

**Biology EE:** topic must be outlined at start of essay & should clearly establish the context of RQ. It is usually appropriate to include general background biological theory required to understand how the RQ has arisen. Example of topic: “Factors affecting the distribution of seagrass in Californian bays”, RQ: “How do different concentrations of ammonium nitrate in sea water tanks affect the growth of seagrass over a 3-month period?” Background: reference to inshore ecosystems, pollution, the decline in seagrasses & possible relationship to sea otter populations. Refer to RQ in intro and be clear on why it is worthy of investigation/why the reader should care about the potential conclusion(s). Students must explain their rationale for choosing practical methods and include sufficient information on their methodology for the work to be repeated. If working in outside lab student must clearly demonstrate their understanding of the methods & materials applied & their role in choosing & applying them.

**Questions to ask yourself:** Is your RQ stated as a Q? Have you explained how your RQ relates to Biology? Have you given insight into why your area of study is important? Did you refer to your RQ throughout the essay (not only in the intro & conclusion)? Did you explain why you selected your methodology in the intro? If you stated a methodology in the intro or specific sources, have you used them? Are there any references listed in the bibliography that were not directly cited in the paper? What is it about the method used that helps answer the RQ (greater reliability/industry standard/less margin of error)?

**Criterion B: Knowledge & Understanding** (Assesses the extent to which the research relates to the subject rea used to explore the RQ, or in case of world studies EE, the issue addressed & the 2 disciplinary perspectives applied, and additionally the way in which this knowledge & understanding is demonstrated through the use of appropriate terminology & concepts.)

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| Knowledge & understanding is limited; selection of source material has limited relevance & is only partially appropriate to the RQ. Knowledge of the topic is anecdotal, unstructured & mostly descriptive with sources not effectively being used. | Knowledge & understanding is good; selection of source material is mostly relevant & appropriate to the RQ. Knowledge of topic is clear; there is an understanding of the sources used but their application is only partially effective. | Knowledge & understanding is excellent; selection of source materials is clearly relevant & appropriate to the RQ. Knowledge of the topic is clear & coherent & sources are used effectively & with understanding. |
| Use of terminology & concepts is unclear & limited; subject-specific terminology &/or concepts are either missing or inaccurate, demonstrating limited knowledge & understanding. | Use of terminology & concepts is adequate; use of subject-specific terminology & concepts is mostly accurate, demonstrating an appropriate level of knowledge & understanding.  **If the topic or RQ is deemed inappropriate for the subject in which the essay is registered no more than 4 marks can be awarded for this criterion.** | Use of terminology & concepts is good; the use of subject-specific terminology & concepts is accurate & consistent demonstrating effective knowledge & understanding. |

**Biology EE:** Experimental work is not a requirement for a Bio EE, however, a theoretical dimension must be part of any empirical investigation. The source materials accessed should be clearly relevant & appropriate to the RQ, effectively referenced & incorporated into the body of the essay in a way that demonstrates the student’s understanding and predominantly from acknowledged scientific sources. Students must demonstrate the ability to apply their selected sources & methods effectively in making relevant connections & in support of their argument. Students need to show a mastery of, and fluency in, the use of appropriate terminology. At the same time, students need to avoid excessive use of jargon & focus on communicating clearly. Any technical terms that are used should be explained & the student must demonstrate an understanding of these terms by using them appropriately within the text. The student must try to maintain a consistent linguistic style throughout the essay. Symbols equations, significant digits & SI units should be applied appropriately & consistently.

**Questions to ask yourself:** Have you explained how your RQ relates to Biology? Have you used relevant terminology & concepts throughout your essay as they relate to Biology? Is it clear that the sources you are using are relevant & appropriate to your RQ? Are your sources reputable? Do you have a range of sources, or have you only relied on one particular type (ie internet)? Is there a reason why you might not have a range? Is this justified? Have your referenced all of your images? Do you refer to all of them in the body of the essay? Are they all relevant?

**Criterion C: Critical Thinking** (assesses the extent to which critical thinking skills have been used to analyze & evaluate the research undertaken.)

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| The research is limited & its application is not clearly relevant to the RQ | The research is adequate; some research presented is appropriate & its application is partially relevant to the RQ | The research is good; the majority of the research is appropriate & its application is clearly relevant to the RQ | The research is excellent and appropriate to the RQ & its application is consistently relevant. |
| Analysis is limited; where there are conclusions to individual points of analysis these are limited & not consistent with the evidence. | Analysis is adequate; there is analysis, but this is only partially relevant to the RQ; the inclusion of irrelevant research detracts from the quality of the argument. Any conclusions to individual points of analysis are only partially supported by the evidence. | Analysis is good; the research is analyzed in a way that is clearly relevant to the RQ; the inclusion of less relevant research rarely detracts from the quality of the overall analysis. Conclusions to individual points of analysis are supported by the evidence but there are some minor inconsistencies. | Analysis is excellent; the research is analyzed effectively & clearly focused on the RQ; the inclusion of less relevant research does not significantly detract from the quality of the overall analysis. Conclusions to individual points of analysis are effectively supported by the evidence. |
| Discussion/evaluation is limited. An argument is outlined but this is limited, incomplete, descriptive or narrative in nature. The construction of an argument is unclear &/or incoherent in structure hindering understanding. Where there is a final conclusion, it is limited & not consistent with the arguments/evidence presented. There is an attempt to evaluate the research, but this is superficial  **If the topic or RQ is deemed inappropriate for the subject in which the essay is registered no more than 3 marks can be awarded.** | Discussion/evaluation is adequate. An argument explains the research but the reasoning contains inconsistencies. The argument may lack clarity & coherence but this does not significantly hinder understanding. Where there is a final or summative conclusion, this is only partially consistent with the arguments/evidence presented. The research has been evaluated but not critically. | Discussion/evaluation is good. An effective reasoned argument is developed from the research, with a conclusion supported by the evidence presented. This reasoned argument is clearly structured & coherent & supported by a final or summative conclusion; minor inconsistencies may hinder the strength of the overall argument. The research has been evaluated, and this is partially critical. | Discussion/evaluation is excellent. An effective and focused reasoned argument is developed from the research with a conclusion reflective of the evidence presented. The reasoned argument is well structured & coherent; any minor inconsistencies do not hinder the strength of the overall argument or the final or summative conclusion. The research arguments have been critically evaluated. (Unlikely or unexpected outcomes can also demonstrate critical thinking. Appropriateness of sources/methods in terms of how they have been used in the development of the argument is presented.) |

**Biology EE:** The research refers to both literature sources & data collected & processed. Student is expected to appropriately present & analyze data & sources & related uncertainties. If the data are analyzed statistically, the student must clearly show understanding in the body of the essay of why that test was chosen, how it was applied, & what the results mean in this context. Essays that attempt to deal with a large number of variables are unlikely to be focused & coherent. A clear & logical argument can be achieved by making repeated reference to the RQ & the hypotheses derived from it. An assessment of the extent to which the hypotheses are supported, or the question is answered, by the data or information accessed should form part of the argument. The stated conclusions must be based on, and consistent with, the research presented in the essay. Biological research often reveals unexpected outcomes & these should be pointed out. The original RQ may not be fully answered by the investigation. In these cases, the student may point out unresolved issues & may make suggestions as to how these might be further investigated. The student must comment on the quality, balance, & quantity of the secondary sources & data used. They are expected to show an awareness of any limitations or uncertainties inherent in their approach. In particular, they should critically comment on the validity & reliability of their data relative to their management of variables within the investigation.

**Questions to ask yourself:** Have you made links between your results & data collected & your RQ? If you included data/information that is not directly related to your RQ have you explained its importance? Are your conclusions supported by your data? If you found unexpected information/data have you discussed its importance? Have you provided a critical evaluation of the methods you selected? Have you considered the reliability of your sources? Have you mentioned & evaluated the significance of possible errors that may have occurred in your research? Are all your suggestions of errors or improvements relevant? Have you evaluated your RQ? Have you compared your results of findings with any other sources? Is there an argument that is clear & easy to follow & directly linked to answering your RQ, & which is supported by evidence?

**Criterion D: Presentation** (assesses the extent to which the presentation follows the standard format expected for academic writing & the extent to which this aids effective communication.)

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| Presentation is acceptable. The structure of the essay is generally appropriate in terms of the expected conventions for the topic, argument & subject in which the essay is registered. | Presentation is good. The structure of the essay clearly is appropriate in terms of the expected conventions for the topic, the argument & subject in which the essay is registered. |
| Some layout considerations may be missing or applied incorrectly. Weaknesses in the structure/layout do not significantly impact the reading, understanding or evaluation of the EE. | Layout considerations are present & applied correctly. The structure & layout support the reading, understanding & evaluation of the EE. Layout includes: title page, table of contents, page numbers, section headings, effective inclusion of illustrative materials (tables, graphs, illustrations, appropriated labelled) & quotations, bibliography & referencing. The referencing system should be correctly & consistently applied & should contain the minimum information in EE guide. EE is within word limit. **If referencing does not meet minimum standard the work is considered a case of possible academic misconduct. Examiners are instructed not to read past the 4000 word limit.** |

**Biology EE:** Students should aim for scientific paper style, rather than a cook book recipe approach. A scientific annotated diagram to introduce key elements of the set-up, relevant details of key equipment & a summary of the essential procedural steps should be included. Must include elements needed for reliability & replicability. A representative sample of raw data collected in large amounts by the student must be included in the core of the essay in a data table, including uncertainties & units. Any table should be designed to clearly display the information in the most appropriate form. Large tables of raw data are best included in an appendix, where they should be carefully labelled. Students should illustrate key mathematical transformations with examples. Equations referred to in the text should be numbered. The title of your essay (on title page) should be a clear, focused summative statement of your research, which gives the reader an indication of your research topic, **It should not be phrased as a RQ. (Word count does not include: Table of contents, diagrams, tables, calculations, citations, bibliography)**

**Questions to ask yourself:** Is your EE double-spaced and size 12 Arial font? Are the topic, RQ, & Subject and word count on the cover page? Are all pages numbered? Do you have a correct table of contents? Do the page numbers in the table of contents match the page numbers in the text? Is your EE subdivided into correct sub-sections? Are all figures & tables properly numbered & labelled? Does your bibliography contain only the sources cited in the text? Do you use the same reference system throughout the EE? Does the EE have less than 4000 words? Is all the material presented in the appendices relevant & necessary? Have you proofread for spelling or grammar errors? Have you made sure that there is no identifying pieces of information (your name, school, teacher, etc) in any of the essay?

**Criterion E: Engagement** (assesses the student’s engagement with their research focus & the research process. It will be applied by the examiner at the end of the assessment of the essay, after considering the student’s Reflection on planning and progress form - RPPF).

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| Engagement if limited. Reflections on decision-making & planning are mostly descriptive. | Engagement is good. Reflections on decision-making & planning are analytical & include reference to conceptual understanding & skill development. | Engagement is excellent. Reflections on decision-making & planning are evaluative & include reference to the student’s capacity to consider actions & ideas in response to setbacks experienced in the research process. Student has engaged in discussion w/ supervisor in the planning & progress of their research; student is able to reflect on & refine the research process, & react to insights gained through the exploration of the RQ; the student is able to evaluate decisions made throughout the research process & suggest improvements for their own working practiced. |
| These reflections communicate a limited degree of personal engagement with the research focus/research process. | These reflections communicate a moderate degree of personal engagement with the research focus & process of research, demonstrating some intellectual initiative. | These reflections communicate a high degree of intellectual and personal engagement with the research focus & process of research demonstrating authenticity, intellectual initiative &/or creative approach in student voice. |

**Biology EE: Students** Student must demonstrate how they arrived at a topic as well as the methods. This criterion assesses the extent to which a student has evidenced the rationale for decisions made throughout the planning process & the skills & understandings developed. Students may reflect on: the approach & strategies they chose, & their relative success, the learning skills they have developed, how their conceptual understandings have developed or changed as a result of their research, setbacks they faced in their research & how they overcame these, questions that emerged as a result of their research & what they would do differently if they were to undertake the research again. Effective reflection highlights the journey the student has engaged in through the EE process. Students must show evidence of critical & reflective thinking that goes beyond simply describing the procedure that have been followed. The reflection must provide the examiner with an insight into student thinking, creativity, & originality within the research process. The student voice must be clearly present & demonstrate that learning has taken place.

**Questions to ask yourself:** Have you demonstrated your engagement with your research topic & the research process? Have you highlighted challenges you faced & how you overcame them? Will the examiner get a sense of your intellectual & skills development? Will the examiner get a sense of your creativity & intellectual initiative? Will the examiner get a sense of how you responded to actions & ideas in the research process?