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EE/RPPF

For use from May/November 2018

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Candidate personal code:

Extended essay - Reflections on planning and progress form

Candidate: This form is to be completed by the candidate during the course and completion of their EE. This document records reflections on your planning and progress, and the nature of your discussions with your supervisor. You must undertake three formal reflection sessions with your supervisor: The first formal reflection session should focus on your initial ideas and how you plan to undertake your research; the interim reflection session is once a significant amount of your research has been completed, and the final session will be in the form of a viva voce once you have completed and handed in your EE. This document acts as a record in supporting the authenticity of your work. The three reflections combined must amount to no more than 500 words.

The completion of this form is a mandatory requirement of the EE for first assessment May 2018. It must be submitted together with the completed EE for assessment under Criterion E.

Supervisor: You must have three reflection sessions with each candidate, one early on in the process, an interim meeting and then the final viva voce. Other check-in sessions are permitted but do not need to be recorded on this sheet. After each reflection session candidates must record their reflections and as the supervisor you must sign and date this form.

First reflection session

Candidate comments:

Fluids and their behaviours are mysterious, but not taught in school. I wanted to use the Extended Essay as an opportunity to investigate non-Newtonian fluids, especially how they react in different conditions when dropped from multiple heights. I plan to create a variety of systems with different fluids, different surfaces, and with vibrations from sound waves. However, I anticipate several possible problems that could arise. For example, I am uncertain if the liquids will behave in such a way that a mathematical model could be derived from the data. Also, it will be difficult to keep controlled variables and measurements consistent throughout multiple trials and conditions. Nonetheless, I am intrigued by fluids, and I plan to devise another idea if my original one fails. I have a backup plan in the back of my mind about investigating fluids' reactions under other forms of stress than gravity.

Date:

Supervisor initials:



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**Interim reflection**

Candidate comments:

After research, I realised my original idea was overwhelmingly complex to grasp, and I considered how limited I was in terms of equipment and environment. I then spent a long time exploring other phenomena in fluid dynamics while considering if a realistic experiment would be possible and decided to analyse vortices. I researched the physics behind vortices, designed an experiment, thought of using video analysis to take measurements. I also planned out how I would deal with leakage problems with laser cutting holes and covers for a range of vortices. However, I overestimated my abilities and was not able to recreate a controlled vortex due to unexpected problems and had to change once again. I stuck with my original topic of fluid dynamics, and my goal to perform theoretical work and use experiments to verify it. I chose to analyse a tank drainage, relatively simpler in practice, but still had interesting challenges in theoretical work and interpretation of data. I now know I will investigate the relationship between the height of water and time needed to drain it. I understand how difficult it was to design and experiment and obtain good apparatus in my limited environment. I realised I couldn't have a perfect experiment, I plan to use soda bottles as my cylindrical tank and create a hole by myself.

Date:

Supervisor initials:

Final reflection - Viva voce

Candidate comments:

I thought the EE only as a chance to follow your passion for a subject. However, I now realise a balance between ambition and reality must be made. Through my failures I learned to think also as an experimental physicist, considering factors I never thought of at the start of the EE like the amount of money needed or whether I can obtain the necessary equipment and if I can set it up. I also learned that I can't have a perfect experimental setup with precise equipment, and that I sometimes need to accept less sophisticated apparatus and uncertainties due to realistic factors like time. However through writing this I learned how to communicate my ideas to a stranger, and fed my love to become a theoretical physicist.

Date:

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Supervisor comments:

Supervisor: By submitting this candidate work for assessment, you are taking responsibility for its authenticity. No piece of candidate work should be uploaded/submitted to the e-Coursework system if its authenticity is in doubt or if contradictory comments are added to this form. If your text in the box below raises any doubt on the authenticity of the work, this component will not be assessed.

The candidate has finally completed a long process in submitting his final extended essay. He is a strong physics student who initially put forward a wide range of ideas. He went away and researched thoroughly in terms of feasibility studies for experimental work. His first ideas were eventually dismissed as he realised that his goal of researching experimental deviations from theoretical predictions was either going to lead to already well-researched areas or were just too complicated for the constraints of a 4000 word high school essay! He worked tirelessly, fabricating his own apparatus and employing significant creativity in his approach. The viva voce demonstrated a very clear understanding of the topic and was able to respond to tough questions. He would admit that he has learned (the hard way) that a research project cannot take over when it is part of a larger diploma!



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