

# PROJECT PLANNING FORM

## Engineering Tripos Part IIB 2020/21

To be submitted to Group Centres by Friday 5 June 2020 at the latest.

**Please write clearly**

Name of Student Samuel Drury email: spd38@cam.ac.uk

College Christ's Director of Studies Dr Sam Stanier

**Project is:** Type (a) / ~~Type (b)~~ (delete as appropriate)

Name of Supervisor Dr Sam Grimshaw

Short title of project Ducted Fan Propulsors for VTOL Electric Vehicles

Aims of project

Ducted fans can achieve 40% or higher theoretical thrust than a propeller and so are attractive for vertical take-off and landing (VTOL); maximising the fan's efficiency and minimising its weight are crucial in achieving this improvement.

This project aims to optimise VTOL performance by exploring and understanding the design space of conventional and counter-rotating ducted fan systems. A flying test-bed has already been developed and will be used to test new designs, alongside theory and CFD simulations. The project will run in parallel with Dr James Taylor's project on e-VTOL propulsion systems.

If access to the Whittle Laboratory is restricted the project will increase its focus on CFD simulation.

Preparatory work for the long vacation

Read 2019/20 4th year project reports and familiarise yourself with the theory and code underpinning existing design tools.

Signature of student 

Signature of supervisor 

Workshop facilities needed (please tick):

none

☐

insignificant

☐

significant

☒

(when access to the Whittle Laboratory is possible)

Any special safety implications .....

No - all experimental work will be risk assessed.

**IMPORTANT:** please give project reference no.

**A-SDG33-2**

eg B-ANO22 7 / B-ANO2-type(b)

**NOTE: Each student is responsible for handing in his or her form to the Group Centre.**