

Project proposal template – Faculty studentships Summer 2014

<i>Project title</i>	<input type="text" value="Quantifying urban surface drag for a varying geometry of building arrays."/>	<i>Director of Study</i>	<input type="text" value="Dr Peter Barrington"/>
<i>Second Supervisor</i>	<input type="text" value="Dr Anil Padhra"/>	<i>School</i>	<input type="text" value="Aerospace and Aircr"/>
<i>Other members of supervisory team</i>	<input type="text"/>	<i>Any requirements from applicant (eg degree in specific subject area)</i>	<input type="text" value="A good first degree in Aeronautical/Mechanical Engineering or"/>

**Project summary
(max 1,000 characters)**

As the urban population increases, so does air pollution due to greater emissions from transport and other infrastructure. The dispersion of pollution close to the ground is strongly influenced by the characteristics of the wind and turbulence profiles which in turn are strongly influenced by the geometry of obstacles such as buildings. The ability to understand urban wind flow patterns has a significant benefit for pollution dispersion, the construction of wind sensitive buildings and the location of wind turbines.

Often the urban surface varies from the rural edge to the central business district increasing in surface roughness at the neighbourhood scale. The aim of this PhD project is to quantify the drag for a varying surface roughness and to derive a model that correlates with in-situ measurements. It is likely that the successful candidate will get involved in using GIS to assess the urban surface, conduct wind tunnel experiments and computational simulations and apply fluid dynamic principles to understand the results. The ideal candidate will have a keen interest in fluid dynamics.

Requirements
A good first degree in Aeronautical/Mechanical Engineering or Physics or a masters level degree in Applied Meteorology.