

Project proposal

<i>Project title</i>	Post-impact failure in offshore wind turbine blade materials under extreme conditions	
<i>First Supervisor</i>	Dr <input type="text" value="v"/>	Hessam Ghasemnejad
<i>Second Supervisor</i>	tbc	
<i>School</i>	Aerospace and Aircraft Engineering <input type="text" value="v"/>	
<i>Other member of supervisory team</i> (no more than three KU supervisors in total)	<input type="text"/>	
<i>Specific requirements</i> beyond 2:1 degree	<input type="text"/>	

Project summary (max 4,000 characters)

MSc by research

FRP composite material design technology has become a main factor in structural integrity to design of composite sub-structures in various engineering disciplines. In particular case offshore wind turbine blades are typically manufactured from FRP composites and delamination failure is an important issue in these structures. In extreme conditions, like ice impacting, multiple delaminations with a triangular shape is found in different parts of a composite wind turbine blade, introducing local damage, which can cause catastrophic failure under various loading conditions such as post-impact, fatigue and buckling. Most of previous researches were focused on the impact behaviour of delaminated composite structures manufactured from synthetic fibers in 2D with limited improvements. Recently we have developed new composite structures with 3D fibre configuration. Preliminary research has shown that the new composites have much better performance against various failure conditions such as delamination failure. However more work is needed to understand the interlaminar and intralaminar fracture mechanisms in 3D FRP and also the interaction between fibre and matrix phases.