Project proposal template – Faculty studentships Summer 2014

Project title	Numerical modelling of sampling distributions in marine biology	*Director of Study*	Dr Nigel Ling
Second Supervisor	Dr Rosie McNiece	*School*	Mathematics
Other members of supervisory team		*Any requirements from applicant (eg degree in specific subject area)*	

Project summary

(max 1,000 characters)

The purpose of this project is to use numerical methods to investigate the criteria for statistical robustness in the kinds of hierarchical experimental designs found in aquaculture and other marine experiments.
In marine science, the industry of aquaculture is economically important; many studies are carried out on the effect of different fish feeds and the environmental impact of aquaculture, especially the risks of interference to the wild gene pool by escaped farmed fish.

There are two components to this project. Simulation studies will be used to investigate the behaviour of hierarchical data under the kinds of typical conditions encountered in such experiments. Thus it may be established the conditions under which the statistical tests will be robust to violation of the assumptions in the techniques from analysis of variance typically applied to marine experiments.

The project will also include some theoretical work on the development of an analysis for hierarchical regression and a means of calculating power for such an analysis. Simulation may also be used to validate the new statistical tests developed during this work.