# Appendix A – Project Approval Form [Due March 9th, 2018]

This form must be completed by all students enrolled in the Master of Biostatistics Research Project (POPH90151, POPH90288/POPH90289 and POPH90149) and emailed to Research Project subject coordinator (emilanzi@unimelb.edu.au). Please cc your supervisor/co-supervisor on the email. Please complete this form in consultation with your supervisor.

Note:- For students enrolled in POPH90151 and POPH90288/POPH90289 (25 points total) you will generally need to submit two topic approval forms, one form for each research project. In exceptional cases, you may be approved to complete a single larger project as long as it has sufficient breadth to be equivalent to two separate projects – as evidenced by addressing at least two different types of statistical problem within its scope.

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| **Student information** |  |
| Student name and family name: | Carl Higgs |
| Student ID: | 659810 |
| Student email address: | higgsc@student.unimelb.edu.au |
| **Supervisor information** |  |
| Name of supervisor(s): | Principal (biostatistical) – Enes Makalic  Co (content-area) – Katrina Scurrah |
| Principal supervisor email: | emakalic@unimelb.edu.au |
| **Research Project Information** |  |
| Semester / Year starting project | Semester 1 2018 (12.5% load) |
| Semester / Year completing project | Semester 1 2018 |
| Type of Research Project (for example statistical analysis of data): | Methodological (Statistical literature review > comparison of existing and possible development of novel methods for applied purpose using simulated data > publication of code for public use (possibly multiple formats) > development of an interactive web app (online power calculator) |
| Research question(s) to be addressed: | What are the existing methods for estimating power to detect a difference in correlations between identical (monozygotic) and non-identical (dizygotic) twins, how do these compare and can they be improved upon? This question will be addressed through a literature review, and comparison of methods using both theory and simulation. |
| Does your research project require ethics approval?  If yes, has the ethics approval been obtained?  If no, could you please specify the date by ethics approval will be obtained: | No  n/a |
| Does your research project include data analysis?  If yes, is your dataset ready for analysis?  If no, could you please specify the date by which the dataset will be available for analysis: | Yes  No  This will be using simulated data; the data to be used will be generated subsequent to the literature review and methods write up – probably mid-April. |

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| Short description of research project, including brief description of aspects requiring Masters-level biostatistical expertise (maximum 200 words) | As provided by supervisors (see research question above for my paraphrasing):  *The “classical twin design” aims to estimate components of variation due to shared genetic effects, shared environmental effects, and unshared effects using data from identical and non-identical twins. A recent*  *publication described a method of calculating the power to detect each of these variance components under certain assumptions. However, this method did not address power to detect differences in correlations*  *between identical and non-identical twins, which is an important first step in fitting variance components models.*  *This project will develop methods for estimating power for this first step, using both theory and simulations.*  *The methods will be made available on the Twins Research Australia website for researchers to use worldwide.* |
| Have you discussed with your supervisor(s) how often you are going to meet with them? | Yes; in general, weekly but with a fortnight lead time for initial meeting to allow time for start on literature review. |
| If applicable, have you discussed authorship (publication strategies and recognition of contributions) that should apply to your project with your supervisor(s)? (Please note that publication is not a requirement for MBiostat research projects.) | Yes, this has been discussed as a possibility; I would be keen to take advantage of this opportunity and work towards this. |
| Date when discussed and agreed by supervisor:  Signature of the student:  Date: |  |