**List of all the general changes**

1. Fixed all the typo and grammar issue addressed by two examiners.
2. Add a section 4.10 on Simulation studies to address the robustness of the objective function and simulation-annealing algorithm described in this thesis.
3. Add list of abbreviations and symbols for references.
4. Add tables of Phase 1 and 2 designs by McIntyre (1955).
5. Page 59, change group of designs to set of designs.
6. Page 60, define the objective function at the beginning of the chapter.
7. Page 61 and 62, have actual numbers on limits on the subscripts.
8. Page 63, change Tag effects should be estimated to Tag effects should be fitted.
9. Switch Section 3.4 and 3.5, to discuss the example before the optimality criteria, as it flows better from the optimality criteria to the section on deriving the objective function.
10. Page 67 and 68, have the same symbols for the Moore-Penrose generalised inverse of the information matrix for both cases for consistency.
11. Page 68, define notation p\_i earlier.
12. Add a paragraph on page 70 to link the previous section on discuss the MS- and A-optimality criteria and clarify on the process of deriving the objective function. Also, explained why three different examples were chosen.
13. Page 77, addressing weights chosen on the objective function.
14. Pages 84-85, add acceptance probability in the description of SA
15. Page 101, explain the ethical issue of animal with different treatment in a same block.
16. Page 122, changed the first sentence of second paragraph as it was not clear
17. Page 124, addressed the different weights of the basic contrast on the optimal design found.
18. Page 128, re-write second paragraph.
19. Page 147, rewrite part of first paragraph.
20. Page 178, change researcher with user-friendly interface to application with user-friendly interface.
21. Various information matrices for different designs described in Chapter 3 are presented in the appendices.
22. Fixed the references.