Title of Dissertation/Practicum: An investigation of XYZ using ABC

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A Dissertation/Practicum submitted to University College Dublin in part fulfilment of the requirements of the degree of M.Sc. in Business Analytics

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Dedication

To X, Y and Z (typically family members)

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Foreword

Preface

Men occasionally stumble over the truth, but most of them pick themselves up and hurry off as if nothing had happened.

— Winston Churchill

Much of the front matter is optional. In particular, include things like a Dedication, List of Figures, List of Tables, List of Algorithms, only if there are enough of them to justify it and it would help the reader.

Don't include both a Foreword and a Preface since they perform similar roles.

The same goes for appendices, index, glossary, list of notation and terms at the end. Include if they would help the reader.

But always, of course, include the Bibliography.

University College Dublin
March 14, 2017

Xxxxx Xxxxxxx
Yyy Yyyyyyyyy

Acknowledgements

Abstract/Executive Summary

Chapter 1

Introduction

Here's an example of a quote.

> bolloxs another test If anybody calls, says the brother, tell them I'm above in Merrion Square workin at the quateernyuns, says he, and take any message. There does be other lads in the same house doing sums with the brother. The brother does be teachin them sums. He does be puttin them right about the sums and the quateernyuns.
>
> *Indeed.*
>
> I do believe the brother's makin a good thing out of the sums and the quateernyuns. Your men couldn't offer him less than five bob an hour and I'm certain sure he gets his tea thrown in.
>
> *That is a desirable perquisite.*
>
> Because do you know, the brother won't starve. The brother looks after Number Wan. Matteradamn what he's at, it has to stop when the grubsteaks is on the table. The brother's very particular about that.
>
> *Your relative is versed in the science of living.*
>
> Begob the sums and the quateernyuns is quickly shoved aside when the alarm for grub is sounded and all hands is piped to the table. The brother thinks there's a time for everything.

1.1 Background

We begin by . . .

1.1.1 Particular Background

Here are some examples of indexing: Newton's algorithm is still widely used, with modifications.

Note that the `\index{algorithm!Newton}` gives an index subentry for Newton under the entry for algorithm. The index entries and/or their page numbers can be formatted using a pipe | symbol in the `\index{}` command as follows:

Definition 1.1. The strictest definition of an *algorithm* is: a finite set of instructions that can be carried out in a finite amount of time: that is, it must terminate.

These instructions must be clear and unambiguous as they are to be interpreted by a (dumb) machine, so we must be absolutely precise about their meaning — mathematical logic is thus crucial in the design of algorithms.

In practice, many useful numerical "algorithms" that we study may get closer and closer to the desired solution without reaching it in a finite time. So, typically, we accept as an "algorithm" a finite set of instructions that will get within any desired tolerance of the true solution in a finite time. If the algorithm is stochastic (involves probability, as many modern ones do) the term "metaheuristic" is sometimes used.

In particular, you could use the `\index{algorithm@\textit{algorithm}}` or `\index{algorithm|\textbf}` to indicate the first or most important occurrence in the text of the term "algorithm", etc.

Some minor examples of other things indexing can do:

- You can handle accented words as in école: the index entry appears in the correct order under E, as desired;

- You can put in cross-references, as in

  Are metaheuristics really algorithms?

Note: when you LaTeX your file `myfile.tex`, a file `myfile.idx` is produced by `\makeindex`; this file must be sorted by an operating system command, e.g.,

```
makeindex myfile
```

This generated a *sorted* index file `myfile.ind`. Running LaTeX one more time gets the index printed in the right place by `\printindex`.

Here is a dummy theorem to show how to reference notation:

Theorem 1.2. *Let $\mathbb{F}_q$ be a finite field of q elements. Then q is a power of some prime number p.*

1.2   Referencing

Recall the strictures against plagiarism. Accidental plagiarism is still plagiarism. If you paraphrase, you must still cite. If your paraphrase is very similar to the original, then delete it and quote instead (and cite).

Use a reference format similar to that used in the journal Management Science. This can be achieved by using the Management Science Endnote style or by using a style based on the Chicago 15th B style in Endnote. Please ensure that volume (and issue numbers where appropriate) are displayed, as well as appropriate page numbers.

The following are examples of suitable output:

Keenan (2003) identified the role of GIS...

Or GIS can seen as a form of IS (Keenan, 2003) ...

Do not put the title of the paper you are citing, normally.

Do not write: (Keenan, 2003) found that...

To insert a citation, use the `\cite` command in LaTeX, or `\citep` and `\citen` etc. if you know `natbib`.

Chapter 2

Business Background

2.1   Introduction

We begin this chapter by . . .

Chapter 3

Literature Review

> Athenian: *And what of the relations of line and surface to volume, or of line and surface to one another? ... A man must be able to distinguish them on examination or else be a very poor creature. We should frequently propound such problems to each other — a much more elegant pastime for the elderly than draughts — and give our passion for victory an outlet in amusements worthy of us.*
>
> Clinias: *I dare say, after all, the game of draughts and these studies are not so widely different.*
>
> — Plato, *Laws VII, 820 a–d*

3.1 Introduction

It is well-known that ...

3.1.1 Examples of citations

In (Atiyah, 1961, 1966b,a), Atiyah builds on the work of Adams (1962) to develop the foundations of topological K-theory. Lewis and McGarraghy (2000) and McGarraghy (2002) later extend parts of this to a previously unexplored algebraic setting.

Chapter 4

Methodology

Research is what I'm doing when I don't know what I'm doing.

— Werner von Braun

4.1   Introduction

The methodology used is ...

Chapter 5

Results

5.1 Introduction

The results . . .

Chapter 6

Discussion

6.1 Introduction

In this chapter we examine . . .

Chapter 7

Conclusions and Future Research

– That's a most foolhardy remark, he said sharply, because the nerve-strings and the sheep's head itself are whirling into the same bargain and you can cancel out one whirl against the other and there you are — like simplifying a division sum when you have fives above and below the bar.

– To say the truth I did not think of that.

– Mollycules is a very intricate theorem and can be worked out with algebra but you would want to take it by degrees with rulers and cosines and familiar other instruments and then at the wind-up not believe what you had proved at all. If that happened you would have to go over it till you got a place where you could believe your own facts and figures as exactly delineated from Hall and Knight's Algebra and then go on again from that particular place till you had the whole pancake properly believed and not have bits of it half-believed or a doubt in your head hurting you like when you lose the stud of your shirt in the middle of the bed.

<div align="right">

— Flann O'Brien, *The Dalkey Archive*

</div>

7.1 Introduction

The significance of . . .

Detailed tables

Xyz

Program code

Xyz etc

Glossary

Entries are listed in alphabetical order.

Bibliography

Adams, J. F. 1962. Vector fields on spheres. *Ann. Math.*, **75**: 603–632.

Atiyah, M. F. 1961. Characters and cohomology of finite groups. *Publ. Math. I.H.E.S.*, **9**: 247–288.

——. 1966a. K-theory and reality. *Quart. J. Math. Oxford Ser. (2)*, **17**: 367–386.

——. 1966b. Power operations in K-theory. *Quart. J. Math. Oxford Ser. (2)*, **17**: 165–193.

Lewis, D. W. and S. McGarraghy. 2000. Annihilating polynomials, étale algebras, trace forms and the Galois number. *Arch. Math.*, **75**(2): 116–120. ISSN 0003-889X.

McGarraghy, S. 2002. Exterior powers of symmetric bilinear forms. *Algebra Colloquium*, **9**(2): 197–218.

List of Notation

Entries are listed in the order of appearance. The "Ref" is the number of the section, definition, etc., in which the notation is explained.

Symbol	Description	Ref
$\mathbb{F}_q$	Finite field of q elements	1.2

Index

algorithm, **2**, *2, see also* metaheuristic
    Newton, 2
algorithm, 2
algorithm, 2

école, 2

metaheuristic, **2**, *see* algorithm

Newton's algorithm, 2