

The uccthesis L^AT_EX 2_ε document class*

Typesetting a UCC thesis with L^AT_EX

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Summary

This is a L^AT_EX document class for typesetting theses at University College Cork, according to the layout rules specified by the Registrar, Academic Council, and the Graduate Studies Office.

These rules (especially the naming of degrees and the disciplines within which they are granted) are subject to change from time to time, so before using this software, please check <http://research.ucc.ie/latex/> to see if there is an updated version.

This is a late draft for testing. All users at this stage are regarded as testers, and should report any difficulties with the software or the documentation in the first instance to epu@ucc.ie.

You need a copy of the L^AT_EX software and a suitable editor on your computer in order to use this document class. If you are new to L^AT_EX, please ensure that you read the documentation referred to in <http://research.ucc.ie/latex/> before starting.

*This document corresponds to uccthesis v. 2.3β, dated 2014/09/21.

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To struggling authors everywhere

Acknowledgements

My thanks go to all the people who have kept me supplied with solutions to formatting problems which I have been able to incorporate into this package.

Thank you also to the inhabitants of the `comp.text.tex` Usenet newsgroup for answering questions, and for their work in writing and maintaining all the packages on which this class depends.

Most of all, thanks to the patient students of UCC who waited for me to finish this.

What's new?

The Change History on page 155 which lists the stages of development, and the Index lists every T_EX and L^AT_EX command used in the class. Technically-minded authors might want to examine the commented listing in section 9 on page 42: there is much to be gained from understanding how something works.

From version 0.95 this class is distributed in the standard DTX format. Please read the installation instructions in section 1 on page 11.

Main differences from L^AT_EX's default classes

- You MUST start by declaring the document class uccthesis instead of article, book, or report (details on page 15)
- You MUST use at least two options in your document class declaration: one for your discipline and one for your degree (details on page 15)
- You MUST specify your Supervisor[s] and Professor (Head of School or Department) using the special commands provided in section 2.2 on page 15. (You give your title, author, and date in the normal way.)
- The Table of Contents, List of Figures (if used), List of Tables (if used), and Declaration are all automated: you SHOULD NOT include commands for these yourself (see section 3 on page 23)
- There are new environments for your Acknowledgements, Dedication, and any preliminary explanatory sections, if you need them, before your first Part or Chapter (see section 3.1 on page 23)
- There is an optional Epigraph (cited quotation) which you can use immediately after a chapter title (see 'epigraph', the first item in the list in section 3.2.5 on page 26)
- The Quotation environment now has an optional argument for a BibT_EX citation key (see 'quotation', the second item in the list in section 3.2.5 on page 26)
- The default format is draft-mode, 1½-line-spaced, unjustified text, no indentation, and a line-space between paragraphs. These defaults (except draft mode) were set to maximise readability, but can be changed via class options: see the list in section 2.3 on page 21
- Some 30 or so packages are preloaded (according to the options you choose for the document class): see Table 11 on page 38. You SHOULD NOT re-specify any of these if they have already been loaded

Introduction to L^AT_EX

L^AT_EX is a document preparation system for the T_EX typesetting program. It is designed to automate all the tedious and repetitive tasks of preparing a document, freeing authors to concentrate on their writing.

While it can also be used for almost any typesetting task, it is ideal for long or complex documents (the two are not necessarily synonymous), especially for documents with a well-defined structure such as books, articles, journals, theses, reports, white papers, and manuals.

Although it originally came from the disciplines of mathematics and computing science, it is nowadays equally at home in the Humanities, thanks to the enormous range of add-ons or plug-ins ('document classes' and 'packages'), and the extensive range of typefaces, which extend the basic typesetting capabilities into hundreds of specialist areas and formatting requirements.

What You Got Is What You Gave Me

L^AT_EX is a typesetter, not a wordprocessor. It has no graphical interface of its own — instead, you can choose one of many L^AT_EX editors available, or use your own favourite plaintext editor.

L^AT_EX works by formatting your text according to how you have labelled it. If you label some text as a section title, that is how it will be formatted. If you mislabel it, L^AT_EX cannot guess how you really wanted it: you have to tell it.

Documentation and training

If you haven't used L^AT_EX before, you should read the online beginners' guide, *Formatting Information* (Flynn, 2011) from

<http://latex.silmaril.ie/formattinginformation/>, and install the latest version of the software from the T_EX Collection DVD issued by the T_EX Users Group (<http://www.tug.org/>). UCC is a TUG member and the DVD can be obtained from the Computer Centre Electronic Publishing Unit. The software is free in both senses: free of restrictions (it can be copied and given away); and also free of charge.

- Unix and GNU/Linux users do not normally need the DVD: the software can be installed online as `texlive-full` from each distribution's own archive or Software Centre (eg *yum*, *rpm*, *apt*, *Synaptic*, etc). A choice of editors and viewers is available the same way.
- Apple Mac users should use the DVD or download the latest `MacTeX.mpkg.zip` from <http://tug.org/mactex/> (about 1.5Gb);

- Windows users should use the DVD and select the *ProT_EXt* distribution. Details of how to do this are in *Formatting Information* (Flynn, 2011).

The Training Centre holds occasional 1-day beginners' courses in L^AT_EX: contact tcentre@ucc.ie for details.

L^AT_EX support (questions about L^AT_EX itself, not about the uccthis document class)

T_EX and L^AT_EX are strongly supported by millions of users worldwide, and by the teams of developers organised around the T_EX Users Group and other users groups around the world.

There are therefore lots of places you can ask or search for help, depending on how common or rare your query is. Before you post a question on a web site or mailing list or newsgroup, make sure you are providing enough information for people to understand what you are trying to do. Best of all, have a minimal example that you can upload, that demonstrates what you want, or how what you are trying doesn't work.

1. The T_EX FAQ maintained by the UK T_EX Users Group on behalf of the worldwide T_EX community at <http://www.tex.ac.uk/faq> — always try here first, to make sure you're not asking something that a million people before you have asked
2. The UCC L^AT_EX mailing list tex-users@lists.ucc.ie — this is open to all: those who go on the 1-day course are automatically added; anyone can join at <http://lists.ucc.ie/tex-users.html>
3. The island-wide public mailing list italic-1@listserv.heanet.ie for the Irish T_EX And L^AT_EX In-print Community at <http://listserv.heanet.ie/italic-1.html>
4. The Usenet newsgroup `comp.text.tex` (ask your ISP for access, or use the Google Groups interface). This is the principal technical forum, monitored by the designers and developers. High-volume (which is why it's a newsgroup, not a web site or mailing list), but full of information
5. A native Google Group called latexusersgroup@gmail.com
6. Hundreds of web sites, led by the excellent tex.stackexchange.com, whose searchable archive and votable answers make it heavily used
7. Online and on paper: *TUGboat*, the quarterly journal of the T_EX Users Group. Reference copies are available in UCC; email latex@ucc.ie or check the index at <http://tug.org/tugboat/>.
8. Dozens of languages and cultures have T_EX users groups for communication, development of their own typefaces and resources: see the list at <http://tug.org/usergroups.html>

Terminology

T_EX and L^AT_EX terminology and appearances used in this document are highlighted in the following ways:

- The names of class options and package options are shown in **bold monospace type**;
Example: **phd**

Class options are the ones you use in the `\documentclass` (first) line of your document; package options are the ones you use in `\usepackage` commands in your Preamble. Class and package options always go in [square brackets] between the command and the curly brace of the argument.

- The names of document classes and packages are shown in sans-serif type;
Example: `xcolor`;
- The names of L^AT_EX commands are in monospace type;
Example: `\appendix`;
- Where it is important to demonstrate the arguments that a command may take, they are shown mnemonically in angled brackets; this means you must replace them with meaningful values of your own:
Examples: `\prelim{<title>}`, `\project[<option>]{<name>}`;
- The names of environments are in monospace type;
Example: `dedication`.

Commands and environments are also shown in the margin, if specially relevant, and can be found in the Index.

The keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL have a specific meaning when shown in THIS TYPESTYLE, following the specification in RFC 2119 (Bradner, 1997).

1 Installation

Please note

As of June 2012 these instructions have changed. This class is now distributed as a TDS-conformant zip file.

Please remove any earlier copy you may have been using, because the subfolders have changed.

You MUST have a full T_EX system installed before you can use this document class. L^AT_EX is a part of every full T_EX installation. Please see the details on page 8. For further information and a copy of the installation DVD, contact the Electronic Publishing Unit. T_EX is also available online at <http://www.tug.org/interest.html#free> or from the T_EX Users Group or a local user group.

For personal use, this class MUST be installed in the same way as any add-on L^AT_EX package or document class: *in your personal T_EX folder* as described in section 1.1 on the following page, *not*, repeat NOT in the main or local T_EX folders used by your T_EX system installation.

If this is the first time you have installed a package or class like this, or if you haven't yet set up your personal T_EX folder, see section 1.1 on the next page first.

Installation on shared (multiuser) systems is different: see the instructions for systems administrators in section 1.2 on page 13.

Instructions for personal users

1. Download the uccthesis document class zip file from the link in <http://research.ucc.ie/latex/>. This is only accessible from UCC IP addresses
2. Unzip the uccthesis-n.nn.tds.zip file directly into your personal T_EX folder.
3. Users of MiK_TE_X on Windows MUST update the FNDB after installation (see the list 'Updating the FileName DataBase' in section 1.1.2 on the next page), otherwise L^AT_EX will not find the new files.

UCC users must also download and install the ucccrest from <http://research.ucc.ie/latex/#uccclasses> (section 2.4.1). This is only accessible from UCC IP addresses, as the crest is restricted to UCC students. You unzip this file into your personal T_EX folder in the same way as for the document class above.

1.1 Your personal T_EX folder

If you don't have a personal T_EX folder yet, create one now. The place for your personal T_EX folder is different on Apple Mac, Linux, and Windows systems:

Operating System	Location of your personal T _E X folder
Apple Macintosh OS X	~/Library/texmf
Unix and GNU/Linux	~/texmf
Microsoft Windows	
• 95/98/XP/2003	C:\texmf
• 2007/2010 and up	Computer\System\Users\ <i>your name</i> \texmf

If this folder does not already exist on your computer, create it now.

1.1.1 Unix, GNU/Linux, and Apple Macintosh OS X

You do not need to run *texhash* or *mktexlsr* after installing software into your personal T_EX folder (indeed, you should *not* do so).

1.1.2 MiK_TE_X on Windows

For users of MiK_TE_X on Windows, there is an additional task after you create your personal T_EX folder:

1. Run the *MiK_TE_X Settings* program by clicking on the **Start** | Programs or **Windows** | Programs button, and then click on | MiK_TE_X x.y | Maintenance | *Settings*;
2. Click on the **Roots** tab;
3. Click the **Add** button;
4. Navigate to your new texmf folder;
5. Click **OK**.

On subsequent occasions (when you install software or updates manually) you must update the File Name Data Base (FNDB):

Updating the File Name Data Base

1. Run the *MiK_TE_X Settings* program as before;
2. In the **Main** tab, click the **Refresh FNDB** button.

You **MUST** do this after installing or updating software in your personal T_EX folder, otherwise MiK_TE_X won't find anything.

1.2 Installation on a shared (multiuser) computer

If you need to install the files on a shared (multiuser) system, you need to be root (Administrator). If you are not, ask your local systems administrator to do it for you.

1. Identify where the local shared T_EX directory is. This is conventionally something like `/usr/local/share/texmf/` or `/usr/local/texlive/2012/./texmf-local` but you can find out by typing the command:

```
kpsewhich -expand-var '$TEXMFLOCAL';
```

2. Unzip the `uccthesi-n.nn.tds.zip` and the `ucccrest.zip` files into this folder;
3. Run the T_EX index program `texhash` (some systems call this `mktexlsr`) to update the fast-find (`ls-R`) database. Until you do this, your L^AT_EX users will not be able to find the files.

These instructions are for Unix-based systems, including GNU/Linux and Apple Macintosh OS X. If someone would like to provide me the equivalents for shared Windows systems I would be pleased to include them.

1.3 Manual installation

This is only for older or non-TDS-conformant systems. Do not use this method on modern systems.

1. Download and unzip the `uccthesi-n.nn.tds.zip` file into a temporary directory (eg `/tmp`), *without* preserving all the paths: use the `-j` option to `unzip` to do this
2. Run `pdflatex` on `uccthesi.ins`. This will re-extract the `uccthesi.cls` file (so the program will ask you if you want to overwrite it: answer yes by typing `y` and pressing the Return or Enter key)
3. Move or copy the files into a location where your installation of T_EX will find them. This varies from distribution to distribution: it is sometimes known as 'the `TEXINPUTS` directory', but it is *your responsibility* to know where this is.
4. Repeat the procedure for the `ucccrest.zip` file.
5. Run the T_EX index program `texhash` (some systems call this `mktexlsr`) to update the fast-find (`ls-R`) database. Until you do this, your L^AT_EX users will not be able to find the files.

1.4 Testing the installation

The file `thesis-example.tex` (one-sided) is provided as an example to test the document class with.

Move this file into your Documents folder (or somewhere else you keep documents) and open it with your \LaTeX editor and click or to typeset it. This should create a file `thesis-example.pdf` that you can open in your PDF reader or viewer.

MiK \TeX users please note you CANNOT do this in your personal \TeX folder or any of its subfolders, as MiK \TeX will not run \LaTeX in those folders. You must move the document to somewhere else to process it.

2 Author's Guide — How to set up your thesis

The first line of your thesis document MUST say

```
\documentclass[options]{uccthesis}
```

where *options* is a list of options separated by commas. Two options are compulsory (see section 2.1):

1. one option for specifying your discipline or affiliation, taken from the tables in section 4 on page 29;
2. one option for specifying your class of degree, taken from the tables in section 5 on page 33.

In addition, you can also use any of the other options explained in section 2.3 on page 21 that you find relevant.

Apart from the title page (see section 2.2) and a few additional structures (see section 3.2.5 on page 26), the remainder of your document SHOULD use standard L^AT_EX commands, environments, and packages which you can find explained in *Formatting Information* (Flynn, 2011) or any book or web site on how to use L^AT_EX.

2.1 Selecting your discipline and class of degree

1. You MUST select one of the options for your College, Faculty, School, Department, or discipline from the first column in the lists in Table 2 to Table 6 on pages 29–32.
2. You MUST select one of the options for the class of degree for which you are submitting from the first column in the lists in Table 7 to Table 10 on pages 33–36.

These options automatically use the official names of the disciplines and degrees granted by UCC: you cannot make up your own. The two options are mutually exclusive within their respective lists: you can only use one of each. Consult your supervisor if you are unsure.

The disciplines and degrees change from time to time, and are updated in this class when they become known. Older names and codes are kept (but undocumented) so that your thesis will remain processable as long as L^AT_EX is around (nearly 30 years so far, and going strong).

2.2 Setting up your title page

The title page of your thesis follows the rules set down by the Registrar's Office and the Graduate Studies Office. This package does the formatting automatically if you provide the right information.

You will have already given your class of degree and your discipline or affiliation in the `\documentclass` options described in section 2.1 on the previous page.

You MUST provide the following (see Figure 1 on the next page for an example):

1. Your thesis title;
2. Your full name;
3. The date of submission;
4. The name[s] of your Supervisor[s];
5. The name of your Professor or Head of Department, School, or Discipline.

These are done with standard L^AT_EX `\title`, `\author`, and `\date` commands, plus two additional commands which are compulsory: `\supervisor` and `\professor`.

The `\title` command has an optional argument where you can supply a short title for use in running headers and footers, eg¹

```
\title[Nucleotide sequence of mitochondrial maxicircle DNA]
  {The nucleotide sequence of a 3.2 kb segment of mitochondrial
  maxicircle DNA from \textit{Crithidia fasciculata} containing
  the gene for cytochrome oxidase subunit III, the N-terminal
  part of the apocytochrome $b$ gene and a possible frameshift
  gene}
\subtitle{Further evidence for the use of unusual initiator triplets
  in trypanosome mitochondria}
```

You MAY also provide any of the following:

6. Your existing postgraduate or professional qualifications, if relevant and permitted (see section 2.2.2 on the following page);
7. A subtitle for your thesis (see section 2.2.3 on the next page);
8. The volume number and total number of volumes² (see section 2.2.4 on the following page);
9. Your Institute, Research Centre, Unit, or Hospital, if appropriate (see section 2.2.5 on page 19);
10. The name of your sponsor or funding organisation or person, if relevant (see section 2.2.6 on page 19).

The title block commands MAY occur in any order, but they MUST be terminated in the normal way with the `\maketitle` command. See the example in Figure 1 on the next page and the output in Figure 2 on page 18.

2.2.1 Professor and Supervisor

Give the name of your Professor (or Head of College, School, Department, or Discipline) with the command `\professor`. Give the name of your Supervisor with the command `\supervisor` (but see the note below). These commands are compulsory.

¹<http://nar.oxfordjournals.org/content/15/1/51.abstract>

²This is compulsory if there is more than one volume to your thesis.

Figure 1: Example title block of a \LaTeX UCC thesis document

```
\documentclass[german,phd]{uccthesis}
\begin{document}
\title{Goethe's political involvement in Italy}
\subtitle{Sturm und Drang in Malcesine}
\author{Wilhelm Werther}
\qualifications{bb}
\date{May 2011}
\professor{Prof NE One}
\supervisors{Dr AN Dere\\Mr AN Other}
\sponsor{The Goethe Institut, Dublin}
\maketitle
...
\end{document}
```

See the output in Figure 2 on the next page.

```
\professor{Dr F Händel}
\supervisor{Dr PDQ Bach}
\supervisors{Dr WA Mozart\\Mr L van Beethoven}
```

If you have more than one Supervisor, use the command `\supervisors` (plural) instead, and separate their names with a double backslash (`\\`).

2.2.2 Qualifications

If you have prior postgraduate qualifications or membership of relevant professional bodies, you can specify them with the `\qualifications` command.

```
\qualifications{msc mieee}
```

Always use lowercase for qualifications, as they will be typeset in small capitals (which are the lowercase equivalent of all-capitals). A space is better than a comma for separating qualifications, as in the example above.

2.2.3 Subtitle

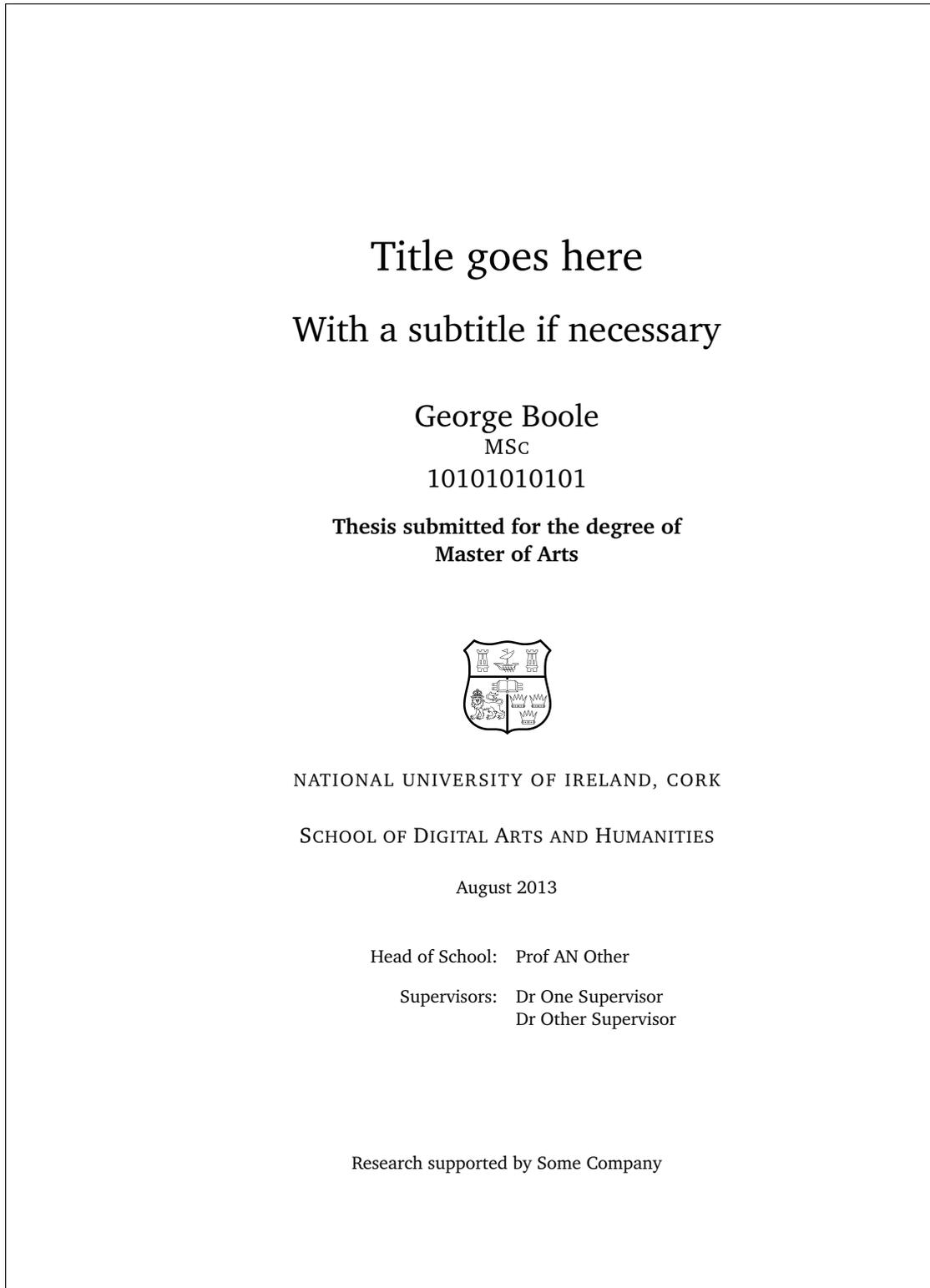
If your thesis has a subtitle, use the `\subtitle` command: you MUST NOT embed the subtitle in the `\title` with a colon.

2.2.4 Multi-volume theses

If your thesis runs to two or more volumes, you MUST specify this with the `\volume` command. This has a special format:

```
\volume n of m
```

Figure 2: Result of the title block in Figure 1 on the preceding page



where n and m are the number of the volume and the total number of volumes respectively, for example `\volume 3 of 5`

2.2.5 Subsidiary affiliations

In addition to the College, Faculty, School, or Department in which you conducted your research, you MAY also specify your Institute, Research Centre (Group), Unit, or Hospital with the commands `\institute`, `\centre`, `\unit`, and `\hospital`.

These four commands automatically add the suffix 'Institute', 'Centre', 'Unit', or 'Hospital' respectively, so you MUST not include it in the curly braces. For example:

```
\institute{Tyndall National}
\centre{Macrobiotic Research}
\unit{Linguistic Synthesis}
\hospital{Mercy University}
```

In some special circumstances this can be circumvented, where the syntax of the name requires it. Details are in section 2.2.7

2.2.6 Sponsorship

Where your research has been sponsored by an external organisation, you MAY be required under the terms of your contract to add their name. Use the `\sponsor` command to do this, for example:

```
\sponsor{Silmaril Consultants}
```

2.2.7 Modifying the format of affiliations

Need may occasionally arise for the inclusion of variant forms of names of the affiliations `\institute`, `\hospital`, `\centre`, and `\unit`. These commands therefore all have an optional argument which can be used for three purposes:

Specifying a full name: Supplying the square brackets but *without* a value (ie the optional argument is present but null), will suppress the automatic prefix or suffix that is otherwise added to the name, letting you specify a name that does not fit the conventional pattern, for example:

```
\institute[] {Institute for Advanced Studies}
\centre[] {Centre of Excellence in Executive Education}
\unit[] {Isolation Unit for Nervous Diseases}
```

Specifying an acronym: Where an Institute, Hospital, Centre, or Unit (*only*) is normally known by an acronym, this can be given in the optional argument, and the name given in full in the main argument (no prefix or suffix will be added); for example:

Table 1: Summary of title block commands

\command{...}	Usage
Compulsory	
<code>\title{...}</code>	Title of your thesis
<code>\author{...}</code>	Your name
<code>\date{...}</code>	Date of submission
<code>\professor{...}</code>	Name of your Professor or Head of Department
<code>\supervisor{...}</code>	} Supervisor's name[s]. With the plural form, separate the names with \\
<code>\supervisors{...}</code>	
<code>\\maketitle</code>	Finishes the title block: must come last
Optional	
<code>\subtitle{...}</code>	Subtitle
<code>\qualifications{...}</code>	Your existing qualifications
<code>\institute[...]{...}</code>	} Your institute, hospital, centre, or unit, if relevant (section 2.2.5 on the preceding page for details)
<code>\hospital[...]{...}</code>	
<code>\centre[...]{...}</code>	
<code>\unit[...]{...}</code>	
<code>\\vol <i>n</i> of <i>m</i></code>	For multi-volume theses
<code>\sponsor{...}</code>	Sponsor or funding agency name, if relevant
Pre-specified	
<code>\school{...}</code>	} Not normally used: these are automatically specified by using the relevant class options (see section 2.1 on page 15)
<code>\department{...}</code>	
<code>\degree{...}</code>	

```

\institute[IMI]{Irish Management Institute}
\hospital[CUH]{Cork University Hospital}
\centre[APC]{Alimentary Pharmabiotic Centre}
\unit[HFRG]{Human Factors Research Group}

```

This method will print the full name followed by the acronym in parentheses. Note that this only works with the `\institute`, `\hospital`, `\centre`, and `\unit` commands.

Specifying an alternative prefix: Where a School or Department name requires a different prefix from ‘School of’ or ‘Department of’, this can be given in the optional argument, for example:

```

\school[Summer School in]{Irish Studies}
\department[Roinn an]{Ontolaioachta}

```

This method will print the full name preceded by the new prefix, and is useful for the Irish forms of names pending the integration of an Irish-language option for titling. Note that this only works with the `\school` and `\department` commands.

2.2.8 Specifying your degree manually

In very rare circumstances you may need to specify your degree manually. Details are in the commented code in section 9 on page 42, and the usage may be examined in the `.dtx` and `.cls` files.

2.3 Additional class options

There are some additional options that can be specified in the `\documentclass` command at the start of the document. These are all optional: use them if you need them.

CJK: As indicated in a footnote to Table 3 on page 30, this option loads the CJK package for typesetting Chinese, Japanese, and Korean. You MUST ensure that you have suitable fonts installed (eg wadalab for Japanese: consult with the local users group for the relevant language or culture — there is a list of these at <http://www.tug.org/lugs>). The CJK environment can then be used for blocks of text, and the `\cjktex` command can be used for words and short phrases.

The babel package enables culture-specific typesetting options, including hyphenation, and SHOULD be used in any document where another language is used for more than the odd word or phrase. Read the package documentation for more information.

Because it is not possible to know which of the many language[s] provided you need to use, you MUST add them as options to the babel package yourself, in your Preamble, with the main language of the document as the last option, eg

```
\documentclass[msc,zeps,CJK]{uccthesis}
\usepackage[japanese,english]{babel}
```

draft: Draft mode is the default: this allows a draft to be printed with a frame replacing the images, saving toner or ink, and speeding up the printout. It also highlights hyphenation and justification problems like overlong lines and unbreakable words with a black rectangle in the right margin. ■

In draft mode, the running head shows the current section on the left and the current subsection on the right. The running foot shows the name of the file on the left and the date and time on the right.

final: Final mode prints all images and removes the black rectangles (it doesn't solve the hyphenation and justification problems: you have to fix those yourself).

In final mode, the running head is the same as in draft mode, but the running foot shows the title of the thesis on the left and the author's name on the right.

gaelge: This option does for Irish what the **CJK** option does for CJK languages: it loads the Irish-language options for a thesis written in Irish, and adds the **eiad** package for typesetting with a `pean-cló` typeface (you will still need to install the **eiad** font package yourself, if it is not already on your computer). Unlike **CJK**, however, the **gaelge** option *does* preload the **babel** package, with `[english,irish]` as the options.

noLot: Disables the automatic List of Tables.

noLoF: Disables the automatic List of Figures.

justified: Text in this document class is set *unjustified* (ragged right margin) by default. This option turns justification back on. See section 3.2.1 on page 24. This option does *not* restore indentation and remove paragraph-spacing: use the **indented** option for that.

indented: Text in this document class is set *unindented* by default. This option turns indentation back on. See section 3.2.1 on page 24. This option does *not* restore justification: use the **justified** option for that.

termpaper: This is an experimental option for typesetting term papers. Feedback on useful features would be welcomed.

essay: This is an experimental option for typesetting undergraduate essays. Feedback on useful features would be welcomed.

wp: This is an experimental option for making the document look as if it was done with a wordprocessor. This may be useful for drafts if your supervisor is accustomed to seeing theses done with systems such as *OpenOffice*, *Libre Office*, or *Microsoft Word*.

plainheaders: This disables the automated running headers described in section 3.2.2 on page 25 and reverts to \LaTeX 's defaults.

3 Document structure

After the title page, which is created by the `\maketitle` command at the end of the title block, the UCC rules specify that there must be a Table of Contents, followed by the formal statement that this research is your own work. Both of these are inserted automatically: you do not need to add anything.

If you have used tables or figures, a List of Tables and List of Figures will also be printed automatically after the Table of Contents. If you have only a very small number of tables or figures, you can disable the List of Tables or List of Figures independently with the `no1ot` and `no1of` class options (see ‘`no1ot`’, the fifth item in the list in section 2.3 on the previous page).

Addition in 1.11: self-controlled lists or tables of ancillary matter

For glossaries, lists of symbols or acronyms, and similar terminological lists, you SHOULD use the relevant packages, and include the `\ListOf...` command (provided by the package) *after* the `\maketitle` and *before* the preliminaries.

If you create these lists by hand, you MUST include them in the same place using the starred form of the preliminaries command `\prelim*`. This is necessary to avoid the Declaration being triggered prematurely.

3.1 Preliminaries (front matter)

Before the text begins, there are usually some preliminary sections together referred to as ‘front matter’ or ‘prelims’. This class provides the following environments and commands for these:

dedication: The `dedication` environment is for you to add a dedication.

```
\begin{dedication}
...
\end{dedication}
```

acknowledgements: The `acknowledgements` environment is for you to add your acknowledgements.

```
\begin{acknowledgements}
...
\end{acknowledgements}
```

abstract: This is the normal `LATEX` `abstract` environment except that the heading starts a new page and is in the same format as all the other preliminary sections.

```
\begin{abstract}  
...  
\end{abstract}
```

The UCC thesis rules state that an Abstract must be limited to 300 words.

\prelim: The `\prelim{<title>}` command is available for starting any other preliminary sections you may need, such as explanations of terminology or lists of equipment. It works exactly like an unnumbered section heading, but it starts a new page, and *is* included in the Table of Contents (see the example on page 10).

There is a special starred form of this command, `\prelim*` which can be used before any of the above commands or environments to create preliminary sections that do not trigger the Declaration prematurely. Use with caution!

Declaration

The UCC Declaration (that this is your own work) is automatically inserted by the *first use* of any of the following:

- a `dedication` environment;
- an `acknowledgements` environment;
- a `\prelim` *without* the star;
- a `\part`;
- a `\chapter`.

The `\prelim*` command can be used to add material *before* these without triggering the Declaration.

3.2 Text body (main matter)

For the body of your text, a thesis is usually divided into chapters, containing sections and subsections (and perhaps subsections). For a very long thesis you may use the standard L^AT_EX `\part` command to divide the chapters into parts.

Some changes, listed below, have been made to the default appearance to improve readability and consistency.

3.2.1 Size, spacing, justification, indentation, and paragraph spacing

The default typesetting in this class is

- 12pt type;
- 1½ line spacing;

- unjustified (ragged-right margin);
- no indentation;
- white-space between paragraphs.

This makes it easier for your supervisor and Extern to read, and avoids most problems with hyphenation and justification, which are more frequent in technical and academic work because of the high incidence of specialist terms.

Unless you are very skilled at typographic production, it is probably better not to try to typeset a thesis as if it were a book for publication.

However, there are two class options available if you want to return to the book-style with indented paragraphs and no space between them:

justified: this option sets the text justified. It does not affect the indentation or the space between paragraphs.

indented: this option indents paragraphs *and* removes the space between paragraphs. It does not affect justification.

Be aware that justified text in the rather long lines used in theses makes your work harder to read.

3.2.2 Running headers and footers

Running headers and footers are printed on all pages except chapter openings. This is so that photocopies or page-extracts of your thesis will show what it is and who wrote it; otherwise the eventual reader of a fragment would not know whose work it was. Details of what appears in draft and final mode are in ‘**draft**’, the second item in the list in section 2.3 on page 21.

If you want the original (L^AT_EX) default of page number at the bottom, you can use the **plainheaders** class option, and you can then use L^AT_EX’s own headings commands.

3.2.3 Page numbering

The title page is not numbered (internally it is numbered zero).

All the preliminary pages from the Table of Contents up to (but not including) the first page of the first Part or Chapter are numbered in lowercase Roman numerals.

All remaining pages are numbered in Arabic numerals, starting at 1 for the first page of the first Part or Chapter.

You should use the standard L^AT_EX `\label` and `\pageref` commands for making cross-references to pages. For more complex cross-referencing, use the `varioref` package.

3.2.4 Typefaces and fonts

The default typeface is Computer Modern (based on Monotype Series 8), using the updated version from the `lmodern` package. The default boldface font has been changed to normal bold from bold extended, but you can still use the `\textbf` and `\bfseries` commands normally.

The default type size is 12pt, but the `11pt` option can be used if you need smaller type and less space. The 10pt option is not recommended, as it makes the lines harder to read.

You MAY use additional font or typeface packages, but you MUST NOT use display (decorative) fonts for the text of a thesis.

3.2.5 Structure

The basic structure is handled by the standard \LaTeX commands `\part`, `\chapter`, `\section`, `\subsection`, and `\subsubsection`.

\LaTeX also provides the commands `\paragraph` and `\subparagraph` for numbered, headed paragraphs and subparagraphs, but you should avoid them if possible because they make it harder for your readers (your Professor and your External Examiner).

Within the sectional divisions, separate your paragraphs by a blank line in the normal way. All the standard \LaTeX environments can be used for tables and figures, lists, quotations, equations, theorems, etc.

A few small changes have been made to the formatting and features of the following environments:

epigraph: The `epigraph{<citekey>}` environment is a specialised format of short quotation that comes immediately after a chapter or section title. It typesets the contents centred and italicised, with the source cited underneath, right-aligned. The one (compulsory) argument SHOULD contain a \BibTeX citation key for the source of the quotation.

(This is the same principle as for the `quotation` environment described in ‘quotation’, the second item in the list in section 3.2.5, except that this argument in `epigraph` is compulsory, so it goes in curly braces.)

However, if you want an indirect citation to your epigraph, as at the start of this section, you MAY put it in an optional argument in square brackets, and leave the normal argument empty: `\begin{epigraph}[GBS, writing in 1940]{}`

quotation: There is a new, optional, argument to the `quotation[<citekey>]` environment which is for the \BibTeX citation key of the source, eg `\begin{quotation}[shaw]`.

When used, the quotation is followed by a right-aligned short-form citation. The quotation is set in the `\small` type size and the first line is *not* indented.

The argument is optional because quotations may also be cited indirectly in the preceding or following text, and may therefore not always need direct citation.

If you need to give a page number or other qualifier to such a reference (as the page range in the example above), which would usually go in square brackets before a normal `\cite` command, you **MUST** embed the whole thing in curly braces inside the optional argument, otherwise \LaTeX will not be able to distinguish the square brackets of the citation modifier from those which surround the argument. For example: `\begin{quotation}[[pp.80--81]{shaw}]`

table and figure: The standard parameters in \LaTeX for the proportions of a page which can be occupied by tables and figures are too small for theses, which typically have many floats. In this class, they have been increased to the value suggested in the \TeX FAQ at

<http://www.tex.ac.uk/cgi-bin/texfaq2html?label=floats>; and additionally, the overall proportion of the page that can be occupied by floats has been increased from 66% to 75%. See the detailed code description at section 9.10.1 on page 116 for the exact values used.

3.3 Back matter

The final sections are your Appendices, References, and possibly an Index or Glossary.

3.3.1 Appendices

Appendices are done in the standard way, using the `\appendix` command to signal the change from chapters to appendices, and continuing to use the `\chapter` command to create the appendix headings.

3.3.2 References (Bibliography)

Until the new `biblatex` package is fully implemented, you should continue to use `BibTeX` for your references and citations. The correct package[s] and styles for citation in your discipline are pre-loaded on the basis of the package option for your College, Faculty, School, or Department that you selected in the `\documentclass` line. The format which is pre-loaded is listed in the final column of Table 2 to Table 6 on pages 29–32. You should read the documentation on the reference style package used, because many of them provide useful and time-saving commands for citing your references correctly.

To get your References section printed, you **MUST** give the `\bibliography{<bibdbname>}` command at the place where you want the references printed (usually near the end of your thesis). The argument is the name of your `BibTeX` database file, *without* the `.bib` on the end, eg

`\bibliography{myrefs}`

Citation and Reference formats

In the current version, not all Schools and Departments have provided information on their preferred format. These have been set to a default by guesswork, usually the Kluwer variant of Harvard.

If you have concrete information about the preferred format for your discipline, please let me know.

Peter Flynn
pflynn@ucc.ie

The pre-loaded formats were specified by staff in your College, Faculty, School, or Department, and are presumed to be correct. If you have been asked to use a different format (for example, by your Extern, or because you are doing multidisciplinary research), you should add the special command `\resetbibstyle{<stylename>}` to your Preamble, followed by the name of the alternate Bib_TE_X style name *without* the `.bst` on the end.³ If your replacement Bib_TE_X style file also requires an accompanying L^AT_EX style, you must provide this in an optional first argument. For example, to use MLA formatting, you would use:

```
\resetbibstyle[mla]{mla}
```

because the MLA Bib_TE_X style (`mla.bst`) requires their companion L^AT_EX package (`mla.sty`).⁴

3.3.3 Indexes and Glossaries

If you need to produce an Index or Glossary, you can use the normal L^AT_EX commands and procedures.

For Glossaries, note that you **MUST** use the `glossaries` package (the old `glossary` package has been superseded).

³One reason for varying the style is that the popular American Psychological Association (`apacite`) style affixes an author's initials to citations where there is more than one author by the same name; and some Externs may require this to be elided. There is a web page describing the problem, and providing a solution at <http://tex.stackexchange.com/questions/18954/apacite-suppress-initials-intext>, but it involves hand-editing a Bib_TE_X style file. To avoid this, a copy of the suggested file `bpacite.bst` is available for download at <http://epu.ucc.ie/latex/> (put it your Personal T_EX directory at `~/texmf/bibtex/bst/`) and then use the command `\resetbibstyle{bpacite}` in your Preamble.

⁴If you *do* use the MLA style this way, you may also need to add the command `\PassOptionsToPackage{pdftex}{graphicx}` at the top of your `.tex` file, *above* (yes, really above) the first line (`\documentclass...`). This prevents the MLA style prejudging the options for the `graphicx` package.

4 Options for college, department, and school affiliation

Table 2: Class options for the College of Science, Engineering and Food Science

Option	School / Department / Institute	Reference Format
appmaths	Department of Applied Mathematics	Default
bees	School of Biological, Earth and Environmental Sciences	Oxford
chem	Faculty of Science; Department of Chemistry	ACS
chemeng	Department of Process and Chemical Engineering	Harvard
civil	School of Engineering; Department of Civil and Environmental Engineering	Harvard
cs	Faculty of Science; Department of Computer Science	Default
elec	School of Engineering; Department of Electrical and Electronic Engineering	Harvard
engineering	School of Engineering	Harvard
food	School of Food and Nutritional Sciences	Default
foodbus	School of Food and Nutritional Sciences; Department of Food Business and Development	Harvard
geol	Faculty of Science; Department of Geology	Default
maths	School of Mathematical Sciences; Department of Mathematics	Default
microbio	Department of Microbiology	Default
microelec	School of Engineering; Department of Microelectronic Engineering	Harvard
physics	Faculty of Science; Department of Physics	Transactions of the IEEE
physio	Department of Physiology	Vancouver
scifac	Faculty of Science	Default
stats	Department of Statistics	Harvard
zeps	School of Zoology, Ecology and Plant Science	Oxford

Table 3: Class options for the College of Arts, Celtic Studies and Social Sciences

Option	School / Department / Institute	Reference Format
apsoc	School of Applied Social Studies	Harvard
apsych	School of Applied Psychology	APA
arch	Department of Archaeology	Harvard
arthist	School of History; Department of History of Art	Oxford
^{a)} asian	School of Asian Studies	Harvard
bealoideas	Béaloideas / Folklore	Harvard
classics	Department of Classics	Oxford
dah	School of Digital Arts and Humanities	Harvard
educ	School of Education	Harvard
emi	Department of Early and Medieval Irish	Harvard
eng	School of English	Harvard
folketh	Department of Folklore and Ethnology	Harvard
french	School of Languages, Literatures and Cultures; Department of French	Harvard
geog	Department of Geography	Harvard
german	School of Languages, Literatures and Cultures; Department of German	MLA
hisp	School of Languages, Literatures and Cultures; Department of Hispanic Studies	Harvard
hist	School of History	Harvard
italian	School of Languages, Literatures and Cultures; Department of Italian	Harvard
llc	School of Languages, Literatures and Cultures	Harvard
^{b)} lnag	School of Scoil Léann na Gaeilge / School of Irish Learning	Harvard
modirish	Department of Modern Irish	Harvard
music	School of Music and Theatre; Department of Music	Harvard
nuag	Department of Nua-Ghaeilge	Harvard
phil	Department of Philosophy	Harvard
planning	School of Geography and Archaeology: The Human Environment	Harvard
politics	Department of Politics	Harvard
relig	Department of Study of Religions	Harvard
smg	Department of Sean- agus Meán-Ghaeilge	Harvard
socio	Department of Sociology	Harvard
sociophil	School of Sociology and Philosophy	Harvard
theatre	School of Music and Theatre; Department of Drama and Theatre Studies	Harvard

a) The `asian` option preloads the CJK package (Chinese/Japanese/Korean)

b) The `lnag` option may require the `gaeilge` option

Table 4: Class options for the College of Medicine and Health

Option	School / Department / Institute	Reference Format
anat	Department of Anatomy	Vancouver
biochem	Department of Biochemistry	Vancouver
clinther	School of Clinical Therapies	Harvard
cuh	Hospital Cork University	Vancouver
denthosp	University Dental School and Hospital	Vancouver
dentrest	University Dental School and Hospital; School of Dental Hygiene; Department of Restorative Dentistry	Vancouver
dentsurg	University Dental School and Hospital; Department of Dental Surgery	Vancouver
epipub	School of Medicine; Department of Epidemiology and Public Health	Vancouver
gp	School of Medicine; Department of General Practice	Vancouver
hearing	School of Clinical Therapies; Department of Speech and Hearing Sciences	APA
life	School of Life Sciences	Harvard
medicine	School of Medicine; Department of Medicine	Vancouver
medsch	School of Medicine	Vancouver
mercy	Hospital Mercy University	Vancouver
midwifery	School of Nursing and Midwifery	Harvard
nursing	School of Nursing and Midwifery	Harvard
obsgyn	School of Medicine; Department of Obstetrics and Gynaecology	Vancouver
occther	School of Clinical Therapies; Department of Occupational Therapy	Harvard
oralhealth	University Dental School and Hospital; Department of Oral Health and Development	Vancouver
path	School of Medicine; Department of Pathology	Vancouver
pch	School of Medicine; Department of Paediatrics and Child Health	Vancouver
pharm	School of Pharmacy	Harvard
pharmthera	School of Medicine; Department of Pharmacology and Therapeutics	Vancouver
physio	Department of Physiology	Vancouver
psychiatry	School of Medicine; Department of Psychiatry	Vancouver
radio	School of Medicine; Department of Radiology	Harvard
speech	School of Clinical Therapies; Department of Speech and Hearing Sciences	APA
surg	School of Medicine; Department of Surgery	Vancouver

Table 5: Class options for the College of Business and Law

Option	School / Department / Institute	Reference Format
afis	Faculty of Commerce; Department of Accounting and Finance	Harvard
bis	Faculty of Commerce; Department of Business Information Systems	Harvard
commerce	Faculty of Commerce	Harvard
coop	Faculty of Commerce; Centre for Co-operative Studies	Harvard
cps	Faculty of Commerce; Centre for Policy Studies	Harvard
econ	Faculty of Commerce; Department of Economics	Harvard
foodbus	School of Food and Nutritional Sciences; Department of Food Business and Development	Harvard
govt	Faculty of Commerce; Department of Government	Harvard
law	Faculty of Law	Legal
mgt	Faculty of Commerce; Department of Management and Marketing	Harvard
^{a)} mktg	Faculty of Commerce; Department of Management and Marketing	Harvard
stats	Department of Statistics	Harvard

a) The mktg option is an alternative for mgt.

Table 6: Class options for selecting Institutes

Option	School / Department / Institute	Reference Format
imi	Irish Management Institute	Harvard
tyndall	Tyndall National Institute	Alpha

5 Options for class of degree

Table 7: Degree options for the College of Arts, Celtic Studies and Social Sciences

Option	Degree
dlitt	Doctor of Literature
dlittcelt	Doctor of Celtic Literature
dmus	Doctor of Music
dsocsci	Doctor of Social Science
ma	Master of Arts
mbsasian	Master of Business Systems (Asian Business)
med	Master of Education
mphil	Master of Philosophy
mplan	Master of Planning and Sustainable Development
msocsc	Master of Social Science
msw	Master of Social Work
phd	Doctor of Philosophy
phded	Doctor of Philosophy in Education — Structured
phdss	Doctor of Philosophy in Social Sciences
phdtcc	Doctor of Philosophy in Texts, Contexts and Cultures

Table 8: Degree options for the College of Medicine and Health

Option	Degree
dclindent	Doctor of Clinical Dentistry
dmed	Doctor of Medicine
dnp	Doctor of Nursing Practice
docct	Doctor of Occupational Therapy
mao	Master of Obstetrics
mch	Master of Surgery
md	Doctor of Medicine
mdph	Master in Dental Public Health
mds	Master of Dental Science
mmedsc	Master in Sport and Exercise Medicine
mph	Master in Public Health
msccp	Master of Science (Clinical Pharmacy)
mscebtpr	Master of Science (Evidence-Based Therapy Practice)
mscm	Master of Science (Midwifery)
mscog	Master of Science (Obstetrics and Gynaecology)
mscoh	Master of Science (Occupational Health)
mscptqs	Master of Science (Pharmaceutical Technology and Quality Systems)
phd	Doctor of Philosophy
phdcb	Doctor of Philosophy in Cancer Biology
phdhsr	Doctor of Philosophy in Health Services Research

Table 9: Degree options for the College of Business and Law

Option	Degree
dbe	Doctor of Business Economics
deconsc	Doctor of Economic Science
lld	Doctor of Law
llm	Master of Law
llmcj	Master of Law (Criminal Justice)
llme	Master of Law (e-Law)
llmp	Master of Law (Practitioner)
mba	Master of Business Administration
mbs	Master of Business Systems
mbsasian	Master of Business Systems (Asian Business)
mbsbe	Master of Business Systems (Business Economics)
mbsbis	Master of Business Systems (Business Information Systems)
mbsbp	Master of Business Systems (Economics of Business Practice)
mbscse	Master of Business Systems (Co-operative and Social Enterprise)
mbseb	Master of Business Systems (Electronic Business)
mbsfm	Master of Business Systems (Food Marketing)
mbsg	Master of Business Systems (Government)
mbshsm	Master of Business Systems (Health Services Management)
mbsieb	Master of Business Systems (Innovation in European Business)
mbsippd	Master of Business Systems (International Public Policy and Diplomacy)
mbsisbp	Master of Business Systems (Information Systems for Business Performance)
mbsmimas	Master of Business Systems (Management Information and Managerial Accounting Systems)
mbsmm	Master of Business Systems (Management and Marketing)
mcomm	Master of Commerce
mcommbb	Master of Commerce (Supply Chain Management — Lean SCM Black Belt)
mcommbe	Master of Commerce (Business Economics)
mcommgpp	Master of Commerce (Government and Public Policy)
mcommscm	Master of Commerce (Supply Chain Management)
meconsc	Master of Economic Science
msccf	Master of Science (Corporate Finance)
mscfe	Master of Science (Financial Economics)
msche	Master of Science (Health Economics)
phd	Doctor of Philosophy
phdbis	Doctor of Philosophy in Business Information Systems

Table 10: Degree options for the College of Science, Engineering and Food Science

Option	Degree
dsc	Doctor of Science
me	Master of Engineering
mengsc	Master of Engineering Science
mengscit	Master of Engineering Science (Information Technology in Architecture, Engineering and Construction)
mengscm	Master of Engineering Science (Microelectronics)
mengscmd	Master of Engineering Science (Microelectronic Design)
mengscme	Master of Engineering Science in Mechanical Engineering (Manufacturing, Process and Automation Systems)
mengscpbe	Master of Engineering Science (Pharmaceutical and Biopharmaceutical Engineering)
mengscse	Master of Engineering Science (Sustainable Energy)
mplan	Master of Planning and Sustainable Development
msc	Master of Science
mscac	Master of Applied Science (Analytical Chemistry)
mscapc	Master of Applied Science (Analysis of Pharmaceutical Compounds)
mscb	Master of Applied Science (Biotechnology)
mschsb	Master of Applied Science (Bioinformatics with Systems Biology)
msccoop	Master of Science (Co-operative Organisation/Food Marketing/Rural Development)
mscea	Master of Applied Science (Ecological Assessment)
msceac	Master of Applied Science (Environmental Analytical Chemistry)
mscfb	Master of Science (Food Business)
mscfm	Master of Applied Science (Food Microbiology)
mscfs	Master of Applied Science (Food Science)
mscgis	Master of Applied Science (Geographical Information Systems and Remote Sensing)
mscmb	Master of Applied Science (Marine Biology)
mscmmsc	Master of Applied Science (Mathematical Modelling and Scientific Computing)
mscns	Master of Applied Science (Nutritional Sciences)
mscrd	Master of Science (Rural Development)
mscssmn	Master of Applied Science (Software and Systems for Mobile Networks)
msctm	Master of Science (Technology Management)
phd	Doctor of Philosophy

6 Packages preloaded

To make this document class work, several packages are preloaded. If your own work needs one of these, you **MUST NOT** use the `\usepackage` command for it, as it is already defined. These preloaded packages are listed in Table 11 on the next page.

Be aware that some packages may influence others. In particular, if you use the `hyperref` package that implements hyperlinks in PDF output, it **MUST** be loaded last, after all other packages.

Table 11: Standard packages preloaded

Package	Options used	Usage
Packages active in all cases		
* CJK		enables Chinese, Japanese, and Korean texts
array		allows paragraph formatting within table cells
calc		dimension arguments accepted in infix notation
ccaption		restyle captions (used to get <code>\raggedright</code>)
fancyhdr		adds running headers and footers
float		allows H ('here') position for non-floating floats
fontenc	T1	use the T1 font encoding for Unicode
footmisc		ensure footnotes stay at the bottom of short pages
geometry		set the margins (see section 9.6 on page 102)
graphicx		enable graphics
ifthen		used for if...then...else internally
inputenc	utf8x	specify UTF-8 (Unicode) to allow all languages
lmodern		extended Computer Modern (default) typeface
parskip		no indentation, paragraph gap is one line-space
setspace		set 1½ line-spacing
soul		enable letterspacing for title page
† textcomp		support for special characters including <code>\texteuro</code> (€)
‡ ucccrest		UCC crest
ulem		Support for underlining
url		Improved line-breaking of long web addresses
xcolor		Colour
Packages active only with the <code>gaelige</code> class option		
babel	english, irish	Irish-language typesetting options
eiad		rean-ctó typeface
Packages active only with the <code>wp</code> class option		
pslatex		Times, Helvetica, and Courier only
ragged2e		hyphenation even in ragged right setting
Packages and BibT_EX .bst files loaded for bibliographic support		
apacite	apacite	} Loaded according to your School or Department settings.
natbib		
har2nat	dcu, agsm, kluwer	
jurabib	jurabib	
mla	chicago	
oxford	oxford_en	
-	vancouver	

* only with the `CJK` class option

† support for the official € symbol requires the `marvosym` package (`\EUR`)

‡ you must ensure that the `ucccrest` package is installed if you work in UCC.

7 Thesis Regulations

These rules were taken from the Graduate Studies web site at <http://www.ucc.ie/en/graduatestudies/thesis/> on 29 June 2014.

7.1 Layout of Thesis

7.1.1 Title Page

There must be a title page which shall give the following information:

1. The full title⁵ of the thesis and the subtitle, if any.
2. The total number of volumes if more than one, and the number of the particular volume.
3. The full name of the author, followed, if desired, by any qualifications and distinctions.
4. The qualification for which the thesis is submitted.
5. The name of the institution to which the thesis is submitted — National University of Ireland, Cork.
6. The department, Faculty or organisation in which research was conducted.
7. The Month and Year of submission.
8. Name of the head of the department concerned.
9. Name of the supervisor of the research.

7.1.2 Table of Contents

The table of contents shall immediately follow the title page.

7.2 Style

The text must be either, printed, typewritten or otherwise reproduced on good quality size A4 paper, with a left-hand margin 4 cm. Double or one and a half spacing is recommended. Copies must be bound or otherwise securely fastened and numbered consecutively, page numbers to be located centrally at the bottom of the page.

⁵The title should describe the content of the thesis accurately and concisely.

References

- Bradner, S. (1997, Mar). *Key words for use in RFCs to Indicate Requirement Levels* (Tech. Rep. No. RFC 2119). Fremont, CA: Internet Engineering Task Force. Retrieved 21 August 2011, from <http://www.ietf.org/rfc/rfc2119.txt>
- Flynn, P. (2011). *Formatting Information* (5th ed.). Cork: Silmaril Consultants. Retrieved 21 August 2011, from <http://latex.silmaril.ie/formattinginformation>

8 Auto-initialisation

This section is added automatically by *ClassPack* as a preamble to all classes and packages. See the documentation to the `fixltx2e` package for details of why these have to be loaded *before* anything else.

`fixltx2e` Additional L^AT_EX features omitted from the kernel for backward compatibility.

```
1 \RequirePackage{fixltx2e}
```

`fix-cm` Preloaded functions to overcome the default L^AT_EX step-size font sizes (which can still be used, but are no longer restrictions).

```
2 \RequirePackage{fix-cm}
```

`svgnames` Pass the option **svgnames** to the `hyperref` package if that gets loaded later. This avoids a conflict with whatever `hyperref`'s own default is.

```
3 \PassOptionsToPackage{hyperref}{svgnames}
```

9 Implementation

The uccthes document class is based on the standard \LaTeX report class, with additions to handle the title page and some extra formatting options, in particular the automation of selecting discipline (affiliation) and class of degree with the relevant \BibTeX style.

9.1 Preliminary declarations

The `ifthen` package is required to make the options work.

```
4 \RequirePackage{ifthen}
```

9.2 Option management for affiliations and classes of degrees

The current design provides an option for every degree-granting discipline (aka College, Faculty, School, or Department); for identifying Institutes, Hospitals, Centres, and Units where relevant; and for every class of degree.⁶

The data for the affiliations, disciplines, and degrees is held in a structure in the master XML document for this class, where it can be updated annually with changes as determined by UCC. All related options are then generated directly from this data.

9.2.1 Preliminary setup for affiliations and disciplines

To manage the specification of the options, for each division, we create three control sequences:

1. a 'handle' which acts as a way to standardise the prefix or suffix applied to each division;
2. a default value of `\relax` to enable recognition of the specified value of each division's name;
3. a command to allow the assignment of each name.

⁶It would probably be better for a future version to use the `keyval` package to minimise the number of options declared.

Each command that identifies a division takes one optional argument and one compulsory argument: the compulsory argument is the value to assign, subject to the three rules:

1. if there is no optional argument, then the value is assigned with the declared handle prefixed or suffixed:
`\centre{Computer}` produces ‘Computer Centre’;
2. if the optional argument brackets are present but with no value supplied, the compulsory value is assigned *without* the handle: `\centre[]{Centre for Excellence in Design}` produces ‘Centre for Excellence in Design’;
3. if an optional argument is supplied, then its value is assigned as-is (no handle), and the compulsory argument is taken to be an acronym: `\centre[Alimentary Pharmabiotic Centre]{APC}` produces ‘Alimentary Pharmabiotic Centre (APC)’.

The last rule applies only to Institutes, Hospitals, Centres, and Units, where acronyms are common. For Schools and Departments, the third format currently ignores any specified optional argument.

UCC organisation

The UCC organisational model is currently non-functional. Colleges have not yet fully replaced Faculties, as was planned, but added to them; and Schools have likewise not replaced Departments. There is no longer a strict hierarchy, as some Schools and Departments belong to more than one College or Faculty, so there is no clear identity. Arguably some of the present Departments are really Disciplines, where the oversight role has been taken over by their School or Department.

`\@schoolhandle` The handles (prefixes/suffixes) all follow this pattern.

```
5 \def\@schoolhandle{School of}
```

`\@unittype` Define a value for school or department

```
6 \def\@unittype{\relax}
```

`\@school` Define the default-value macro for Schools. The others follow the same pattern.

```
7 \def\@school{\relax}
```

`\school` Define the user-level command to handle Schools.

```
8 \newcommand{\school}[2][\relax]{%
```

If the optional argument is present but null, use the main argument as given.

```
9 \ifthenelse{\equal{#1}{}}{%  
10   {\gdef\@school{#2}}%
```

If the optional argument absent, prepend the handle to the main argument. In the case of Institutes, Hospitals, Centres, and Units below, the handle is appended instead.

```
11   {\if#1\relax\gdef\@school{\@schoolhandle\ #2}}%
```

Otherwise (optional argument supplied) treat the optional argument as a replacement handle.

```
12   \else\gdef\@school{#1 #2}%  
13   \fi  
14 }%  
15 \gdef\@unittype{School}%  
16 }%
```

`\@departmenthandle` Departments...

```
17 \def\@departmenthandle{Department of}
```

`\@department`

```
18 \def\@department{\relax}
```

`\department`

```
19 \newcommand{\department}[2][\relax]{%  
20 \ifthenelse{\equal{#1}{}}{\gdef\@department{#2}}{%  
21   \if#1\relax  
22     \gdef\@department{\@departmenthandle\ #2}%  
23   \else\gdef\@department{#1 #2}\fi  
24 }%  
25 \def\@unittype{Department}%  
26 }%
```

`\@institutehandle` **Institutes...**

```
27 \def\@institutehandle{Institute}
```

`\@institute`

```
28 \def\@institute{\relax}
```

`\institute` **In this case the handle is appended, not prepended, and an optional argument is taken to be an acronym in parentheses.**

```
29 \newcommand{\institute}[2][\relax]{%
30   \ifthenelse{\equal{#1}{}}{\gdef\@institute{#2}}{%
31     \if#1\relax
32       \gdef\@institute{#2 \@institutehandle}%
33     \else\gdef\@institute{#2 (#1)}\fi}}
```

`\@hospitalhandle` **Hospitals...**

```
34 \def\@hospitalhandle{Hospital}
```

`\@hospital`

```
35 \def\@hospital{\relax}
```

`\hospital` **In this case the handle is appended, not prepended, and an optional argument is taken to be an acronym in parentheses.**

```
36 \newcommand{\hospital}[2][\relax]{%
37   \ifthenelse{\equal{#1}{}}{\gdef\@hospital{#2}}{%
38     \if#1\relax
39       \gdef\@hospital{#2 \@hospitalhandle}%
40     \else\gdef\@hospital{#2 (#1)}\fi}}
```

`\@centrehandle` **Centres...**

```
41 \def\@centrehandle{Centre}
```

`\@centre`

```
42 \def\@centre{\relax}
```

`\centre` **In this case the handle is appended, not prepended, and an optional argument is taken to be an acronym in parentheses.**

```
43 \newcommand{\centre}[2][\relax]{%
```

```

44 \ifthenelse{\equal{#1}{}}{\gdef\@centre{#2}}{%
45   \if#1\relax
46     \gdef\@centre{#2 \@centrehandle}%
47   \else\gdef\@centre{#2 (#1)}\fi}}

```

\@unithandle Units...

```
48 \def\@unithandle{Unit}
```

\@unit

```
49 \def\@unit{\relax}
```

\unit In this case the handle is appended, not prepended, and an optional argument is taken to be an acronym in parentheses.

```

50 \newcommand{\unit}[2][\relax]{%
51   \ifthenelse{\equal{#1}{}}{\gdef\@unit{#2}}{%
52     \if#1\relax
53       \gdef\@unit{#2 \@unithandle}%
54     \else\gdef\@unit{#2 (#1)}\fi}}

```

\@usebib Before doing the actual divisional options, we create a command to record the bibliographic reference format that will be required for each College/Faculty/School/Department option. This holds the name of the .bst file appropriate for each discipline and [optional argument] the package name[s] needed to implement it. The bibliographic style is not issued directly, but uses the value of the \@userbibstyle command set by \@usebib. This allows the use of the \resetbibstyle user command to vary the bibliographic style from the default.

The fourth argument, which was unused, is now taken over by a flag which indicates if the related style packages need to be deferred until after the use of hyperref. This is currently the case for only one style apacite.

```

55 \def\@userbibstyle{plain}
56 \newcommand{\@usebib}[4][\relax]{%
57   \if#1\relax\else

```

The \ifthenelse command should detect a fourth argument and use it to defer the package loading until the beginning of the document environment. Otherwise it can load at the end of the package.

```

58 \ifthenelse{\equal{#4}{}}{\%null#4
59 \AtEndOfClass{\% ie maybe before user customisations
60 \message{Loading #1 package for #2 citations}%
61 \RequirePackage{#1}}{\%live#4
62 \AtBeginDocument{\% ie after *everything*
63 \message{Loading #1 package for #2 citations}%
64 \RequirePackage{#1}}}%
65 \fi
66 \gdef\@userbibstyle{#2}%
67 \AtEndDocument{\%
68 \message{Setting bibliography style to \@userbibstyle}%
69 \bibliographystyle{\@userbibstyle}}%
70 }
71 \newcommand{\resetbibstyle}[2][\relax]{%
72 \gdef\@userbibstyle{#2}%
73 \ifx\relax#1\else
74 \message{Loading #1 package for #2 citations}%
75 \usepackage{#1}\fi
76 }
77 \newcommand{\@usebabel}[2][\relax]{%
78 \ifx\relax#1
79 \RequirePackage{#2}
80 \else
81 \RequirePackage{#1}[#2]
82 \fi
83 }

```

The third argument holds the human-readable name of the bibliographic style, and the fourth argument is reserved to hold the command required for a full citation in a block quotation. These arguments are currently unused.

9.3 Divisional options

These are the class options for the various academic divisions within UCC. They are sorted alphabetically.

9.3.1 ACSSS

9.3.1.1 Applied Social Studies

`apsoc` Applied Social Studies (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

84 \DeclareOption{apsoc}{%
85   \school{Applied Social Studies}
86   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
87 }

```

9.3.1.2 Applied Psychology

apsych Applied Psychology (school); using the APA citation format from the `apacite.bst` Bib_TE_X style with the `apacite` package (confirmed by `pflynn@ucc.ie`).

```

88 \DeclareOption{apsych}{%
89   \school{Applied Psychology}
90   \@usebib[apacite]{apacite}{APA}{}
91 }

```

9.3.1.3 Archaeology

arch Archaeology (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

92 \DeclareOption{arch}{%
93   \department{Archaeology}
94   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
95 }

```

9.3.1.4 History of Art

arthist History of Art (department) in History (school); using the Oxford citation format from the `oxford_en.bst` Bib_TE_X style with the `oxford` package (confirmed by `F.Boggi@ucc.ie`).

```

96 \DeclareOption{arthist}{%
97   \school{History}
98   \department{History of Art}
99   \@usebib[oxford]{oxford_en}{Oxford}{}
100 }

```

9.3.1.5 Digital Arts and Humanities

dah Digital Arts and Humanities (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (confirmed by 113143743@umail.ucc.ie).

```
101 \DeclareOption{dah}{%
102   \school{Digital Arts and Humanities}
103   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
104 }
```

9.3.1.6 Asian Studies

asian Asian Studies (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
105 \DeclareOption{asian}{%
106   \school{Asian Studies}
107   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
108 }
```

9.3.1.7 Béaloideas / Folklore

bealoideas Béaloideas / Folklore (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
109 \DeclareOption{bealoideas}{%
110   \department[] {Béaloideas~/ Folklore}
111   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
112 }
```

9.3.1.8 Classics

classics Classics (department); using the Oxford citation format from the `oxford_en.bst` Bib_TE_X style with the `oxford` package (confirmed by D.Woods@ucc.ie).

```
113 \DeclareOption{classics}{%
114   \department{Classics}
115   \@usebib[oxford]{oxford_en}{Oxford}{}
116 }
```

9.3.1.9 Education

educ Education (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
117 \DeclareOption{educ}{%
118   \school{Education}
119   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}}
120 }
```

9.3.1.10 Early and Medieval Irish

emi Early and Medieval Irish (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
121 \DeclareOption{emi}{%
122   \department{Early and Medieval Irish}
123   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}}
124 }
```

9.3.1.11 English

eng English (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
125 \DeclareOption{eng}{%
126   \school{English}
127   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}}
128 }
```

9.3.1.12 Folklore and Ethnology

folketh Folklore and Ethnology (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
129 \DeclareOption{folketh}{%
130   \department{Folklore and Ethnology}
131   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}}
132 }
```

9.3.1.13 French

french French (department) in Languages, Literatures and Cultures (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
133 \DeclareOption{french}{%
134   \school{Languages, Literatures and Cultures}
135   \department{French}
136   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
137 }
```

9.3.1.14 Geography

geog Geography (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
138 \DeclareOption{geog}{%
139   \department{Geography}
140   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
141 }
```

9.3.1.15 German

german German (department) in Languages, Literatures and Cultures (school); using the MLA citation format from the `mlaa.bst` Bib_TE_X style with the `chicago` package (confirmed by G.Hofmann@ucc.ie).

```
142 \DeclareOption{german}{%
143   \school{Languages, Literatures and Cultures}
144   \department{German}
145   \@usebib[chicago]{mlaa}{MLA}{}
146 }
```

9.3.1.16 Hispanic Studies

hisp Hispanic Studies (department) in Languages, Literatures and Cultures (school); using the Harvard citation format from the `agsm-mod.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
147 \DeclareOption{hisp}{%
```

```

148 \school{Languages, Literatures and Cultures}
149 \department{Hispanic Studies}
150 \@usebib[natbib,har2nat]{agsm-mod}{Harvard}{}
151 }

```

9.3.1.17 History

hist History (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

152 \DeclareOption{hist}{%
153 \school{History}
154 \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
155 }

```

9.3.1.18 Italian

italian Italian (department) in Languages, Literatures and Cultures (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

156 \DeclareOption{italian}{%
157 \school{Languages, Literatures and Cultures}
158 \department{Italian}
159 \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
160 }

```

9.3.1.19 Languages, Literatures and Cultures

llc Languages, Literatures and Cultures (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

161 \DeclareOption{llc}{%
162 \school{Languages, Literatures and Cultures}
163 \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
164 }

```

9.3.1.20 Scoil Léann na Gaeilge / School of Irish Learning

`lnag` Scoil Léann na Gaeilge / School of Irish Learning (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
165 \DeclareOption{lnag}{%
166   \school{Scoil Léann na Gaeilge~/ School of Irish Learning}
167   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
168 }
```

9.3.1.21 Modern Irish

`modirish` Modern Irish (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
169 \DeclareOption{modirish}{%
170   \department{Modern Irish}
171   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
172 }
```

9.3.1.22 Music

`music` Music (department) in Music and Theatre (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
173 \DeclareOption{music}{%
174   \school{Music and Theatre}
175   \department{Music}
176   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
177 }
```

9.3.1.23 Nua-Ghaeilge

`nuag` Nua-Ghaeilge (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
178 \DeclareOption{nuag}{%
179   \department{Nua-Ghaeilge}
180   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
181 }
```

9.3.1.24 Philosophy

`phil` Philosophy (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
182 \DeclareOption{phil}{%
183   \department{Philosophy}
184   \@usebib[natbib,har2nat]{kluwer}{Harvard}{ }
185 }
```

9.3.1.25 Geography and Archaeology: The Human Environment

`planning` Geography and Archaeology: The Human Environment (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
186 \DeclareOption{planning}{%
187   \school{Geography and Archaeology: The Human Environment}
188   \@usebib[natbib,har2nat]{kluwer}{Harvard}{ }
189 }
```

9.3.1.26 Politics

`politics` Politics (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
190 \DeclareOption{politics}{%
191   \department{Politics}
192   \@usebib[natbib,har2nat]{kluwer}{Harvard}{ }
193 }
```

9.3.1.27 Study of Religions

`relig` Study of Religions (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
194 \DeclareOption{relig}{%
195   \department{Study of Religions}
196   \@usebib[natbib,har2nat]{kluwer}{Harvard}{ }
197 }
```

9.3.1.28 Sean- agus Meán-Ghaeilge

smg Sean- agus Meán-Ghaeilge (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
198 \DeclareOption{smg}{%
199   \department{Sean- agus Meán-Ghaeilge}
200   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
201 }
```

9.3.1.29 Sociology

socio Sociology (department); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
202 \DeclareOption{socio}{%
203   \department{Sociology}
204   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
205 }
```

9.3.1.30 Sociology and Philosophy

sociophil Sociology and Philosophy (school); using the Harvard citation format from the `dcu.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (confirmed by `a.szakolczai@ucc.ie`).

```
206 \DeclareOption{sociophil}{%
207   \school{Sociology and Philosophy}
208   \@usebib[natbib,har2nat]{dcu}{Harvard}{}
209 }
```

9.3.1.31 Drama and Theatre Studies

theatre Drama and Theatre Studies (department) in Music and Theatre (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
210 \DeclareOption{theatre}{%
211   \school{Music and Theatre}
212   \department{Drama and Theatre Studies}
213   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
214 }
```

9.3.2 BUSLAW

9.3.2.1 Accounting and Finance

afis Accounting and Finance (department) in Faculty of Commerce (school); using the Harvard citation format from the `apsr.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
215 \DeclareOption{afis}{%
216   \school[] {Faculty of Commerce}
217   \department {Accounting and Finance}
218   \@usebib[natbib,har2nat] {apsr} {Harvard} {}
219 }
```

9.3.2.2 Business Information Systems

bis Business Information Systems (department) in Faculty of Commerce (school); using the Harvard citation format from the `apsr.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
220 \DeclareOption{bis}{%
221   \school[] {Faculty of Commerce}
222   \department {Business Information Systems}
223   \@usebib[natbib,har2nat] {apsr} {Harvard} {}
224 }
```

9.3.2.3 Faculty of Commerce

commerce Faculty of Commerce (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
225 \DeclareOption{commerce}{%
226   \school[] {Faculty of Commerce}
227   \@usebib[natbib,har2nat] {kluwer} {Harvard} {}
228 }
```

9.3.2.4 Centre for Co-operative Studies

coop Centre for Co-operative Studies (centre) in Faculty of Commerce (school); using the Harvard citation format from the `apsr.bst` Bib_T_EX style with the `natbib` and `har2nat` packages (unconfirmed).

```
229 \DeclareOption{coop}{%
230   \school[] {Faculty of Commerce}
231   \centre[] {Centre for Co-operative Studies}
232   \@usebib[natbib,har2nat]{apsr}{Harvard}{}
233 }
```

9.3.2.5 Centre for Policy Studies

cps Centre for Policy Studies (centre) in Faculty of Commerce (school); using the Harvard citation format from the `apsr.bst` Bib_T_EX style with the `natbib` and `har2nat` packages (unconfirmed).

```
234 \DeclareOption{cps}{%
235   \school[] {Faculty of Commerce}
236   \centre[] {Centre for Policy Studies}
237   \@usebib[natbib,har2nat]{apsr}{Harvard}{}
238 }
```

9.3.2.6 Economics

econ Economics (department) in Faculty of Commerce (school); using the Harvard citation format from the `apsr.bst` Bib_T_EX style with the `natbib` and `har2nat` packages (confirmed by `niall.osullivan@ucc.ie`).

```
239 \DeclareOption{econ}{%
240   \school[] {Faculty of Commerce}
241   \department {Economics}
242   \@usebib[natbib,har2nat]{apsr}{Harvard}{}
243 }
```

9.3.2.7 Food Business and Development

foodbus Food Business and Development (department) in Food and Nutritional Sciences (school); using the Harvard citation format from the `agsm.bst` Bib_T_EX style with the `natbib` and `har2nat` packages (unconfirmed).

```
244 \DeclareOption{foodbus}{%
```

```

245 \school{Food and Nutritional Sciences}
246 \department{Food Business and Development}
247 \@usebib[natbib,har2nat]{agsm}{Harvard}{}
248 }

```

9.3.2.8 Government

govt Government (department) in Faculty of Commerce (school); using the Harvard citation format from the `apsr.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

249 \DeclareOption{govt}{%
250 \school[] {Faculty of Commerce}
251 \department{Government}
252 \@usebib[natbib,har2nat]{apsr}{Harvard}{}
253 }

```

9.3.2.9 Faculty of Law

law Faculty of Law (school); using the Legal citation format from the `jurabib.bst` Bib_TE_X style with the `jurabib` package (confirmed by `pflynn@ucc.ie`).

```

254 \DeclareOption{law}{%
255 \school[] {Faculty of Law}
256 \@usebib[jurabib]{jurabib}{Legal}{}
257 }

```

9.3.2.10 Management and Marketing

mgt Management and Marketing (department) in Faculty of Commerce (school); using the Harvard citation format from the `apsr.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

258 \DeclareOption{mgt}{%
259 \school[] {Faculty of Commerce}
260 \department{Management and Marketing}
261 \@usebib[natbib,har2nat]{apsr}{Harvard}{}
262 }

```

9.3.2.11 Management and Marketing

mktg Management and Marketing (department) in Faculty of Commerce (school); using the Harvard citation format from the `apsr.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
263 \DeclareOption{mktg}{%
264   \school[] {Faculty of Commerce}
265   \department {Management and Marketing}
266   \@usebib[natbib,har2nat]{apsr}{Harvard}{}
267 }
```

9.3.2.12 Statistics

stats Statistics (department); using the Harvard citation format from the `apsr.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
268 \DeclareOption{stats}{%
269   \department {Statistics}
270   \@usebib[natbib,har2nat]{apsr}{Harvard}{}
271 }
```

9.3.3 MED

9.3.3.1 Anatomy

anat Anatomy (department); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `siun.oflynn@ucc.ie`).

```
272 \DeclareOption{anat}{%
273   \department {Anatomy}
274   \@usebib{vancouver}{Vancouver}{}
275 }
```

9.3.3.2 Biochemistry

biochem Biochemistry (department); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `siun.oflynn@ucc.ie`).

```
276 \DeclareOption{biochem}{%
```

```

277 \department{Biochemistry}
278 \@usebib{vancouver}{Vancouver}{}
279 }

```

9.3.3.3 Clinical Therapies

clinther Clinical Therapies (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

280 \DeclareOption{clinther}{%
281 \school{Clinical Therapies}
282 \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
283 }

```

9.3.3.4 Cork University

cuh Cork University (hospital); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (unconfirmed).

```

284 \DeclareOption{cuh}{%
285 \hospital{Cork University}
286 \@usebib{vancouver}{Vancouver}{}
287 }

```

9.3.3.5 University Dental School and Hospital

denthosp University Dental School and Hospital (hospital); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `f.allen@ucc.ie`).

```

288 \DeclareOption{denthosp}{%
289 \hospital[] {University Dental School and Hospital}
290 \@usebib{vancouver}{Vancouver}{}
291 }

```

9.3.3.6 Restorative Dentistry

dentrest Restorative Dentistry (department) in Dental Hygiene (school) in University Dental School and Hospital (hospital); using the

Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `f.allen@ucc.ie`).

```
292 \DeclareOption{dentrest}{%
293   \hospital[] {University Dental School and Hospital}
294   \school{Dental Hygiene}
295   \department{Restorative Dentistry}
296   \@usebib{vancouver}{Vancouver}{}
297 }
```

9.3.3.7 Dental Surgery

`dentsurg` Dental Surgery (department) in University Dental School and Hospital (hospital); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `f.allen@ucc.ie`).

```
298 \DeclareOption{dentsurg}{%
299   \hospital[] {University Dental School and Hospital}
300   \department{Dental Surgery}
301   \@usebib{vancouver}{Vancouver}{}
302 }
```

9.3.3.8 Epidemiology and Public Health

`epipub` Epidemiology and Public Health (department) in Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `i.perry@ucc.ie`).

```
303 \DeclareOption{epipub}{%
304   \school{Medicine}
305   \department{Epidemiology and Public Health}
306   \@usebib{vancouver}{Vancouver}{}
307 }
```

9.3.3.9 General Practice

`gp` General Practice (department) in Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `siun.oflynn@ucc.ie`).

```
308 \DeclareOption{gp}{%
309   \school{Medicine}
310   \department{General Practice}
311   \@usebib{vancouver}{Vancouver}{}

```

312 }

9.3.3.10 Speech and Hearing Sciences

hearing Speech and Hearing Sciences (department) in Clinical Therapies (school); using the APA citation format from the `apacite.bst` Bib_T_E_X style with the `apacite` package (confirmed by `F.Gibbon@ucc.ie`).

```
313 \DeclareOption{hearing}{%
314   \school{Clinical Therapies}
315   \department{Speech and Hearing Sciences}
316   \@usebib[apacite]{apacite}{APA}{}
317 }
```

9.3.3.11 Life Sciences

life Life Sciences (school); using the Harvard citation format from the `agsm.bst` Bib_T_E_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
318 \DeclareOption{life}{%
319   \school{Life Sciences}
320   \@usebib[natbib,har2nat]{agsm}{Harvard}{}
321 }
```

9.3.3.12 Medicine

medsch Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_T_E_X style (confirmed by `siun.oflynn@ucc.ie`).

```
322 \DeclareOption{medsch}{%
323   \school{Medicine}
324   \@usebib{vancouver}{Vancouver}{}
325 }
```

9.3.3.13 Medicine

medicine Medicine (department) in Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_T_E_X style (confirmed by `siun.oflynn@ucc.ie`).

```
326 \DeclareOption{medicine}{%
```

```

327 \school{Medicine}
328 \department{Medicine}
329 \@usebib{vancouver}{Vancouver}{}
330 }

```

9.3.3.14 Mercy University

mercy Mercy University (hospital); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (unconfirmed).

```

331 \DeclareOption{mercy}{%
332 \hospital{Mercy University}
333 \@usebib{vancouver}{Vancouver}{}
334 }

```

9.3.3.15 Nursing and Midwifery

midwifery Nursing and Midwifery (school); using the Harvard citation format from the `dcu.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (confirmed by J.Hegarty@ucc.ie).

```

335 \DeclareOption{midwifery}{%
336 \school{Nursing and Midwifery}
337 \@usebib[natbib,har2nat]{dcu}{Harvard}{}
338 }

```

9.3.3.16 Nursing and Midwifery

nursing Nursing and Midwifery (school); using the Harvard citation format from the `dcu.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (confirmed by J.Hegarty@ucc.ie).

```

339 \DeclareOption{nursing}{%
340 \school{Nursing and Midwifery}
341 \@usebib[natbib,har2nat]{dcu}{Harvard}{}
342 }

```

9.3.3.17 Obstetrics and Gynaecology

obsgyn Obstetrics and Gynaecology (department) in Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by siun.oflynn@ucc.ie).

```

343 \DeclareOption{obsgyn}{%
344   \school{Medicine}
345   \department{Obstetrics and Gynaecology}
346   \@usebib{vancouver}{Vancouver}{}
347 }

```

9.3.3.18 Occupational Therapy

occther Occupational Therapy (department) in Clinical Therapies (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

348 \DeclareOption{occther}{%
349   \school{Clinical Therapies}
350   \department{Occupational Therapy}
351   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
352 }

```

9.3.3.19 Oral Health and Development

oralhealth Oral Health and Development (department) in University Dental School and Hospital (hospital); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `f.allen@ucc.ie`).

```

353 \DeclareOption{oralhealth}{%
354   \hospital[] {University Dental School and Hospital}
355   \department{Oral Health and Development}
356   \@usebib{vancouver}{Vancouver}{}
357 }

```

9.3.3.20 Pathology

path Pathology (department) in Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `siun.oflynn@ucc.ie`).

```

358 \DeclareOption{path}{%
359   \school{Medicine}
360   \department{Pathology}
361   \@usebib{vancouver}{Vancouver}{}
362 }

```

9.3.3.21 Paediatrics and Child Health

pch Paediatrics and Child Health (department) in Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `siun.oflynn@ucc.ie`).

```
363 \DeclareOption{pch}{%
364   \school{Medicine}
365   \department{Paediatrics and Child Health}
366   \@usebib{vancouver}{Vancouver}{}
367 }
```

9.3.3.22 Pharmacy

pharm Pharmacy (school); using the Harvard citation format from the `kluwer.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
368 \DeclareOption{pharm}{%
369   \school{Pharmacy}
370   \@usebib[natbib,har2nat]{kluwer}{Harvard}{}
371 }
```

9.3.3.23 Pharmacology and Therapeutics

pharmthera Pharmacology and Therapeutics (department) in Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `siun.oflynn@ucc.ie`).

```
372 \DeclareOption{pharmthera}{%
373   \school{Medicine}
374   \department{Pharmacology and Therapeutics}
375   \@usebib{vancouver}{Vancouver}{}
376 }
```

9.3.3.24 Physiology

physio Physiology (department); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `siun.oflynn@ucc.ie`).

```
377 \DeclareOption{physio}{%
378   \department{Physiology}
```

```
379 \@usebib{vancouver}{Vancouver}{}
380 }
```

9.3.3.25 Psychiatry

psychiatry Psychiatry (department) in Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by T.Dinan@ucc.ie).

```
381 \DeclareOption{psychiatry}{%
382   \school{Medicine}
383   \department{Psychiatry}
384   \@usebib{vancouver}{Vancouver}{}
385 }
```

9.3.3.26 Radiology

radio Radiology (department) in Medicine (school); using the Harvard citation format from the `agsm.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
386 \DeclareOption{radio}{%
387   \school{Medicine}
388   \department{Radiology}
389   \@usebib[natbib,har2nat]{agsm}{Harvard}{}
390 }
```

9.3.3.27 Speech and Hearing Sciences

speech Speech and Hearing Sciences (department) in Clinical Therapies (school); using the APA citation format from the `apacite.bst` Bib_TE_X style with the `apacite` package (confirmed by F.Gibbon@ucc.ie).

```
391 \DeclareOption{speech}{%
392   \school{Clinical Therapies}
393   \department{Speech and Hearing Sciences}
394   \@usebib[apacite]{apacite}{APA}{}
395 }
```

9.3.3.28 Surgery

surg Surgery (department) in Medicine (school); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `siun.oflynn@ucc.ie`).

```
396 \DeclareOption{surg}{%
397   \school{Medicine}
398   \department{Surgery}
399   \@usebib{vancouver}{Vancouver}{}
400 }
```

9.3.4 SEFS

9.3.4.1 Food Business and Development

foodbus Food Business and Development (department) in Food and Nutritional Sciences (school); using the Harvard citation format from the `agsm.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
401 \DeclareOption{foodbus}{%
402   \school{Food and Nutritional Sciences}
403   \department{Food Business and Development}
404   \@usebib[natbib,har2nat]{agsm}{Harvard}{}
405 }
```

9.3.4.2 Statistics

stats Statistics (department); using the Harvard citation format from the `apsr.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
406 \DeclareOption{stats}{%
407   \department{Statistics}
408   \@usebib[natbib,har2nat]{apsr}{Harvard}{}
409 }
```

9.3.4.3 Physiology

physio Physiology (department); using the Vancouver citation format from the `vancouver.bst` Bib_TE_X style (confirmed by `siun.oflynn@ucc.ie`).

```
410 \DeclareOption{physio}{%
411   \department{Physiology}
412   \@usebib{vancouver}{Vancouver}{}
413 }
```

9.3.4.4 Applied Mathematics

appmaths Applied Mathematics (department); using the Default citation format from the `alpha.bst` Bib_TE_X style (unconfirmed).

```
414 \DeclareOption{appmaths}{%
415   \department{Applied Mathematics}
416   \@usebib{alpha}{Default}{}
417 }
```

9.3.4.5 Biological, Earth and Environmental Sciences

bees Biological, Earth and Environmental Sciences (school); using the Oxford citation format from the `apsr.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (confirmed by `108117781@umail.ucc.ie`).

```
418 \DeclareOption{bees}{%
419   \school{Biological, Earth and Environmental Sciences}
420   \@usebib[natbib,har2nat]{apsr}{Oxford}{}
421 }
```

9.3.4.6 Chemistry

chem Chemistry (department) in Faculty of Science (school); using the ACS citation format from the `achemso.bst` Bib_TE_X style with the `natbib` package (confirmed by `j.sodeau@ucc.ie`).

```
422 \DeclareOption{chem}{%
423   \school[] {Faculty of Science}
424   \department{Chemistry}
425   \@usebib[natbib]{achemso}{ACS}{}
426 }
```

9.3.4.7 Process and Chemical Engineering

chemeng Process and Chemical Engineering (department); using the Harvard citation format from the `agsm.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
427 \DeclareOption{chemeng}{%
428   \department{Process and Chemical Engineering}
429   \@usebib[natbib,har2nat]{agsm}{Harvard}{}
430 }
```

9.3.4.8 Civil and Environmental Engineering

civil Civil and Environmental Engineering (department) in Engineering (school); using the Harvard citation format from the `agsm.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
431 \DeclareOption{civil}{%
432   \school{Engineering}
433   \department{Civil and Environmental Engineering}
434   \@usebib[natbib,har2nat]{agsm}{Harvard}{}
435 }
```

9.3.4.9 Computer Science

cs Computer Science (department) in Faculty of Science (school); using the Default citation format from the `alpha.bst` Bib_TE_X style (unconfirmed).

```
436 \DeclareOption{cs}{%
437   \school[] {Faculty of Science}
438   \department{Computer Science}
439   \@usebib{alpha}{Default}{}
440 }
```

9.3.4.10 Electrical and Electronic Engineering

elec Electrical and Electronic Engineering (department) in Engineering (school); using the Harvard citation format from the `agsm.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
441 \DeclareOption{elec}{%
```

```

442 \school{Engineering}
443 \department{Electrical and Electronic Engineering}
444 \@usebib[natbib,har2nat]{agsm}{Harvard}{}
445 }

```

9.3.4.11 Engineering

engineering Engineering (school); using the Harvard citation format from the `agsm.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```

446 \DeclareOption{engineering}{%
447 \school{Engineering}
448 \@usebib[natbib,har2nat]{agsm}{Harvard}{}
449 }

```

9.3.4.12 Food and Nutritional Sciences

food Food and Nutritional Sciences (school); using the Default citation format from the `alpha.bst` Bib_TE_X style (unconfirmed).

```

450 \DeclareOption{food}{%
451 \school{Food and Nutritional Sciences}
452 \@usebib{alpha}{Default}{}
453 }

```

9.3.4.13 Geology

geol Geology (department) in Faculty of Science (school); using the Default citation format from the `alpha.bst` Bib_TE_X style (unconfirmed).

```

454 \DeclareOption{geol}{%
455 \school[] {Faculty of Science}
456 \department{Geology}
457 \@usebib{alpha}{Default}{}
458 }

```

9.3.4.14 Mathematics

maths Mathematics (department) in Mathematical Sciences (school); using the Default citation format from the `alpha.bst` Bib_T_EX style (unconfirmed).

```
459 \DeclareOption{maths}{%
460   \school{Mathematical Sciences}
461   \department{Mathematics}
462   \@usebib{alpha}{Default}{}
463 }
```

9.3.4.15 Microbiology

microbio Microbiology (department); using the Default citation format from the `alpha.bst` Bib_T_EX style (unconfirmed).

```
464 \DeclareOption{microbio}{%
465   \department{Microbiology}
466   \@usebib{alpha}{Default}{}
467 }
```

9.3.4.16 Microelectronic Engineering

microelec Microelectronic Engineering (department) in Engineering (school); using the Harvard citation format from the `agsm.bst` Bib_T_EX style with the `natbib` and `har2nat` packages (unconfirmed).

```
468 \DeclareOption{microelec}{%
469   \school{Engineering}
470   \department{Microelectronic Engineering}
471   \@usebib[natbib,har2nat]{agsm}{Harvard}{}
472 }
```

9.3.4.17 Physics

physics Physics (department) in Science (school); using the Transactions of the IEEE citation format from the `ieeetr.bst` Bib_T_EX style (confirmed by `pjm@ucc.ie`).

```
473 \DeclareOption{physics}{%
474   \school{Science}
475   \department{Physics}
476   \@usebib{ieeetr}{Transactions of the IEEE}{}
477 }
```

9.3.4.18 Faculty of Science

scifac Faculty of Science (school); using the Default citation format from the `alpha.bst` Bib_TE_X style (unconfirmed).

```
478 \DeclareOption{scifac}{%
479   \school[] {Faculty of Science}
480   \@usebib{alpha}{Default}{}
481 }
```

9.3.4.19 Zoology, Ecology and Plant Science

zeps Zoology, Ecology and Plant Science (school); using the Oxford citation format from the `oxford_en.bst` Bib_TE_X style with the `oxford` package (confirmed by `j.ohalloran@ucc.ie`).

```
482 \DeclareOption{zeps}{%
483   \school{Zoology, Ecology and Plant Science}
484   \@usebib[oxford]{oxford_en}{Oxford}{}
485 }
```

9.3.5 INST

9.3.5.1 Irish Management

imi Irish Management (institute); using the Harvard citation format from the `dcu.bst` Bib_TE_X style with the `natbib` and `har2nat` packages (unconfirmed).

```
486 \DeclareOption{imi}{%
487   \institute{Irish Management}
488   \@usebib[natbib,har2nat]{dcu}{Harvard}{}
489 }
```

9.3.5.2 Tyndall National

tyndall Tyndall National (institute); using the Alpha citation format from the `alpha.bst` Bib_TE_X style (unconfirmed).

```
490 \DeclareOption{tyndall}{%
491   \institute{Tyndall National}
492   \@usebib{alpha}{Alpha}{}
493 }
```

9.4 Degree options

These are the degree options: these are static and require three ancillary commands to define them in a similar manner to those for the divisions. These declarations are generated from an XML structure in the master document.

`\@degreehandle` A handle for the degree title.

```
494 \def\@degreehandle{Degree of \@degree}
```

`\@degree` A default value.

```
495 \def\@degree{[Unspecified]}
```

`\degree` The switch `\ifthesis` is used to detect non-thesis use (for example when the document class is used for its own documentation, or for a term paper or essay).

```
496 \newif\ifthesis
```

```
497 \newcommand{\degree}[1]{\gdef\@degree{#1}\thesistrue}
```

9.4.1 ACSSS

9.4.1.1 Doctor of Literature

`dlitt` Doctor of Literature; .

```
498 \DeclareOption{dlitt}{%
499   \degree{Doctor of Literature}
500 }
```

9.4.1.2 Doctor of Celtic Literature

`dlittcelt` Doctor of Celtic Literature; .

```
501 \DeclareOption{dlittcelt}{%
502   \degree{Doctor of Celtic Literature}
503 }
```

9.4.1.3 Doctor of Music

`dmus` Doctor of Music; .

```
504 \DeclareOption{dmus}{%
505   \degree{Doctor of Music}
506 }
```

9.4.1.4 Doctor of Social Science

`dsocsci` Doctor of Social Science; .

```
507 \DeclareOption{dsocsci}{%
508   \degree{Doctor of Social Science}
509 }
```

9.4.1.5 Doctor of Philosophy

`phd` Doctor of Philosophy; .

```
510 \DeclareOption{phd}{%
511   \degree{Doctor of Philosophy}
512 }
```

9.4.1.6 Doctor of Philosophy in Education — Structured

`phded` Doctor of Philosophy in Education — Structured; .

```
513 \DeclareOption{phded}{%
514   \degree{Doctor of Philosophy in Education~--- Structured}
515 }
```

9.4.1.7 Doctor of Philosophy in Social Sciences

`phdss` Doctor of Philosophy in Social Sciences; .

```
516 \DeclareOption{phdss}{%
517   \degree{Doctor of Philosophy in Social Sciences}
518 }
```

9.4.1.8 Doctor of Philosophy in Texts, Contexts and Cultures

`phdtcc` Doctor of Philosophy in Texts, Contexts and Cultures; .

```
519 \DeclareOption{phdtcc}{%
520   \degree{Doctor of Philosophy in Texts, Contexts and Cultures}
521 }
```

9.4.1.9 Master of Arts

`ma` Master of Arts; .

```
522 \DeclareOption{ma}{%
523   \degree{Master of Arts}
524 }
```

9.4.1.10 Master of Business Systems (Asian Business)

`mbsasian` Master of Business Systems (Asian Business); .

```
525 \DeclareOption{mbsasian}{%
526   \degree{Master of Business Systems
527           (Asian Business)}
528 }
```

9.4.1.11 Master of Education

`med` Master of Education; .

```
529 \DeclareOption{med}{%
530   \degree{Master of Education}
531 }
```

9.4.1.12 Master of Philosophy

`mphil` Master of Philosophy; .

```
532 \DeclareOption{mphil}{%
533   \degree{Master of Philosophy}
534 }
```

9.4.1.13 Master of Planning and Sustainable Development

`mplan` Master of Planning and Sustainable Development; .

```
535 \DeclareOption{mplan}{%
536   \degree{Master of Planning and Sustainable Development}
537 }
```

9.4.1.14 Master of Social Science

`msocsc` Master of Social Science; .

```
538 \DeclareOption{msocsc}{%
539   \degree{Master of Social Science}
540 }
```

9.4.1.15 Master of Social Work

`msw` Master of Social Work; .

```
541 \DeclareOption{msw}{%
542   \degree{Master of Social Work}
543 }
```

9.4.2 BUSLAW

9.4.2.1 Doctor of Philosophy

`phd` Doctor of Philosophy; .

```
544 \DeclareOption{phd}{%
545   \degree{Doctor of Philosophy}
546 }
```

9.4.2.2 Master of Business Systems (Asian Business)

`mbsasian` Master of Business Systems (Asian Business); .

```
547 \DeclareOption{mbsasian}{%
548   \degree{Master of Business Systems
549           (Asian Business)}
550 }
```

9.4.2.3 Doctor of Business Economics

dbe Doctor of Business Economics; .

```
551 \DeclareOption{dbe}{%
552   \degree{Doctor of Business Economics}
553 }
```

9.4.2.4 Doctor of Economic Science

deconsc Doctor of Economic Science; .

```
554 \DeclareOption{deconsc}{%
555   \degree{Doctor of Economic Science}
556 }
```

9.4.2.5 Doctor of Law

lld Doctor of Law; .

```
557 \DeclareOption{lld}{%
558   \degree{Doctor of Law}
559 }
```

9.4.2.6 Doctor of Philosophy in Business Information Systems

phdbis Doctor of Philosophy in Business Information Systems; .

```
560 \DeclareOption{phdbis}{%
561   \degree{Doctor of Philosophy in Business Information Systems}
562 }
```

9.4.2.7 Master of Law

llm Master of Law; .

```
563 \DeclareOption{llm}{%
564   \degree{Master of Law}
565 }
```

9.4.2.8 Master of Law (Criminal Justice)

llmcj Master of Law (Criminal Justice); .

```
566 \DeclareOption{llmcj}{%
567   \degree{Master of Law
568             (Criminal Justice)}
569 }
```

9.4.2.9 Master of Law (e-Law)

llme Master of Law (e-Law); .

```
570 \DeclareOption{llme}{%
571   \degree{Master of Law
572             (e-Law)}
573 }
```

9.4.2.10 Master of Law (Practitioner)

llmp Master of Law (Practitioner); .

```
574 \DeclareOption{llmp}{%
575   \degree{Master of Law
576             (Practitioner)}
577 }
```

9.4.2.11 Master of Business Administration

mba Master of Business Administration; .

```
578 \DeclareOption{mba}{%
579   \degree{Master of Business Administration}
580 }
```

9.4.2.12 Master of Business Systems

mbs Master of Business Systems; .

```
581 \DeclareOption{mbs}{%
582   \degree{Master of Business Systems}
583 }
```

9.4.2.13 Master of Business Systems (Business Economics)

mbsbe Master of Business Systems (Business Economics); .

```
584 \DeclareOption{mbsbe}{%
585   \degree{Master of Business Systems
586           (Business Economics)}
587 }
```

9.4.2.14 Master of Business Systems (Business Information Systems)

mbsbis Master of Business Systems (Business Information Systems); .

```
588 \DeclareOption{mbsbis}{%
589   \degree{Master of Business Systems
590           (Business Information Systems)}
591 }
```

9.4.2.15 Master of Business Systems (Economics of Business Practice)

mbsbp Master of Business Systems (Economics of Business Practice); .

```
592 \DeclareOption{mbsbp}{%
593   \degree{Master of Business Systems
594           (Economics of Business Practice)}
595 }
```

9.4.2.16 Master of Business Systems (Co-operative and Social Enterprise)

mbscse Master of Business Systems (Co-operative and Social Enterprise); .

```
596 \DeclareOption{mbscse}{%
597   \degree{Master of Business Systems
598           (Co-operative and Social Enterprise)}
599 }
```

9.4.2.17 Master of Business Systems (Electronic Business)

`mbseb` Master of Business Systems (Electronic Business); .

```
600 \DeclareOption{mbseb}{%
601   \degree{Master of Business Systems
602     (Electronic Business)}
603 }
```

9.4.2.18 Master of Business Systems (Food Marketing)

`mbsfm` Master of Business Systems (Food Marketing); .

```
604 \DeclareOption{mbsfm}{%
605   \degree{Master of Business Systems
606     (Food Marketing)}
607 }
```

9.4.2.19 Master of Business Systems (Government)

`mbsg` Master of Business Systems (Government); .

```
608 \DeclareOption{mbsg}{%
609   \degree{Master of Business Systems
610     (Government)}
611 }
```

9.4.2.20 Master of Business Systems (Health Services Management)

`mbshsm` Master of Business Systems (Health Services Management); .

```
612 \DeclareOption{mbshsm}{%
613   \degree{Master of Business Systems
614     (Health Services Management)}
615 }
```

9.4.2.21 Master of Business Systems (Innovation in European Business)

mbsieb Master of Business Systems (Innovation in European Business); .

```
616 \DeclareOption{mbsieb}{%
617   \degree{Master of Business Systems
618     (Innovation in European Business)}
619 }
```

9.4.2.22 Master of Business Systems (International Public Policy and Diplomacy)

mbsippd Master of Business Systems (International Public Policy and Diplomacy); .

```
620 \DeclareOption{mbsippd}{%
621   \degree{Master of Business Systems
622     (International Public Policy and Diplomacy)}
623 }
```

9.4.2.23 Master of Business Systems (Information Systems for Business Performance)

mbsisbp Master of Business Systems (Information Systems for Business Performance); .

```
624 \DeclareOption{mbsisbp}{%
625   \degree{Master of Business Systems
626     (Information Systems for Business Performance)}
627 }
```

9.4.2.24 Master of Business Systems (Management Information and Managerial Accounting Systems)

mbsmimas Master of Business Systems (Management Information and Managerial Accounting Systems); .

```
628 \DeclareOption{mbsmimas}{%
629   \degree{Master of Business Systems
630     (Management Information and Managerial Accounting Systems)}
631 }
```

9.4.2.25 Master of Business Systems (Management and Marketing)

mbsmm Master of Business Systems (Management and Marketing); .

```
632 \DeclareOption{mbsmm}{%
633 \degree{Master of Business Systems
634         (Management and Marketing)}
635 }
```

9.4.2.26 Master of Commerce

mcomm Master of Commerce; .

```
636 \DeclareOption{mcomm}{%
637 \degree{Master of Commerce}
638 }
```

9.4.2.27 Master of Commerce (Supply Chain Management — Lean SCM Black Belt)

mcommbb Master of Commerce (Supply Chain Management — Lean SCM Black Belt); .

```
639 \DeclareOption{mcommbb}{%
640 \degree{Master of Commerce
641         (Supply Chain Management~--- Lean SCM Black Belt)}
642 }
```

9.4.2.28 Master of Commerce (Business Economics)

mcommbe Master of Commerce (Business Economics); .

```
643 \DeclareOption{mcommbe}{%
644 \degree{Master of Commerce
645         (Business Economics)}
646 }
```

9.4.2.29 Master of Commerce (Government and Public Policy)

mcommgpp Master of Commerce (Government and Public Policy); .

```
647 \DeclareOption{mcommgpp}{%
648   \degree{Master of Commerce
649     (Government and Public Policy)}
650 }
```

9.4.2.30 Master of Commerce (Supply Chain Management)

mcommscm Master of Commerce (Supply Chain Management); .

```
651 \DeclareOption{mcommscm}{%
652   \degree{Master of Commerce
653     (Supply Chain Management)}
654 }
```

9.4.2.31 Master of Economic Science

meconsc Master of Economic Science; .

```
655 \DeclareOption{meconsc}{%
656   \degree{Master of Economic Science}
657 }
```

9.4.2.32 Master of Science (Corporate Finance)

mscf Master of Science (Corporate Finance); .

```
658 \DeclareOption{mscf}{%
659   \degree{Master of Science
660     (Corporate Finance)}
661 }
```

9.4.2.33 Master of Science (Financial Economics)

mscfe Master of Science (Financial Economics); .

```
662 \DeclareOption{mscfe}{%
663   \degree{Master of Science
664     (Financial Economics)}
665 }
```

9.4.2.34 Master of Science (Health Economics)

`msche` Master of Science (Health Economics); .

```
666 \DeclareOption{msche}{%
667   \degree{Master of Science
668     (Health Economics)}
669 }
```

9.4.3 MED

9.4.3.1 Doctor of Philosophy

`phd` Doctor of Philosophy; .

```
670 \DeclareOption{phd}{%
671   \degree{Doctor of Philosophy}
672 }
```

9.4.3.2 Doctor of Clinical Dentistry

`dclindent` Doctor of Clinical Dentistry; .

```
673 \DeclareOption{dclindent}{%
674   \degree{Doctor of Clinical Dentistry}
675 }
```

9.4.3.3 Doctor of Medicine

`dmed` Doctor of Medicine; .

```
676 \DeclareOption{dmed}{%
677   \degree{Doctor of Medicine}
678 }
```

9.4.3.4 Doctor of Nursing Practice

`dnp` Doctor of Nursing Practice; .

```
679 \DeclareOption{dnp}{%
680   \degree{Doctor of Nursing Practice}
681 }
```

9.4.3.5 Doctor of Occupational Therapy

`docct` Doctor of Occupational Therapy; .

```
682 \DeclareOption{docct}{%
683   \degree{Doctor of Occupational Therapy}
684 }
```

9.4.3.6 Doctor of Medicine

`md` Doctor of Medicine; .

```
685 \DeclareOption{md}{%
686   \degree{Doctor of Medicine}
687 }
```

9.4.3.7 Doctor of Philosophy in Cancer Biology

`phdcb` Doctor of Philosophy in Cancer Biology; .

```
688 \DeclareOption{phdcb}{%
689   \degree{Doctor of Philosophy in Cancer Biology}
690 }
```

9.4.3.8 Doctor of Philosophy in Health Services Research

`phdhsr` Doctor of Philosophy in Health Services Research; .

```
691 \DeclareOption{phdhsr}{%
692   \degree{Doctor of Philosophy in Health Services Research}
693 }
```

9.4.3.9 Master of Obstetrics

`mao` Master of Obstetrics; .

```
694 \DeclareOption{mao}{%
695   \degree{Master of Obstetrics}
696 }
```

9.4.3.10 Master of Surgery

mch Master of Surgery; .

```
697 \DeclareOption{mch}{%  
698   \degree{Master of Surgery}  
699 }
```

9.4.3.11 Master in Dental Public Health

mdph Master in Dental Public Health; .

```
700 \DeclareOption{mdph}{%  
701   \degree{Master in Dental Public Health}  
702 }
```

9.4.3.12 Master of Dental Science

mds Master of Dental Science; .

```
703 \DeclareOption{mds}{%  
704   \degree{Master of Dental Science}  
705 }
```

9.4.3.13 Master in Sport and Exercise Medicine

mmedsc Master in Sport and Exercise Medicine; .

```
706 \DeclareOption{mmedsc}{%  
707   \degree{Master in Sport and Exercise Medicine}  
708 }
```

9.4.3.14 Master in Public Health

mph Master in Public Health; .

```
709 \DeclareOption{mph}{%  
710   \degree{Master in Public Health}  
711 }
```

9.4.3.15 Master of Science (Clinical Pharmacy)

`mscopy` Master of Science (Clinical Pharmacy); .

```
712 \DeclareOption{mscopy}{%
713   \degree{Master of Science
714     (Clinical Pharmacy)}
715 }
```

9.4.3.16 Master of Science (Evidence-Based Therapy Practice)

`mscebtpr` Master of Science (Evidence-Based Therapy Practice); .

```
716 \DeclareOption{mscebtpr}{%
717   \degree{Master of Science
718     (Evidence-Based Therapy Practice)}
719 }
```

9.4.3.17 Master of Science (Midwifery)

`mscm` Master of Science (Midwifery); .

```
720 \DeclareOption{mscm}{%
721   \degree{Master of Science
722     (Midwifery)}
723 }
```

9.4.3.18 Master of Science (Obstetrics and Gynaecology)

`mscog` Master of Science (Obstetrics and Gynaecology); .

```
724 \DeclareOption{mscog}{%
725   \degree{Master of Science
726     (Obstetrics and Gynaecology)}
727 }
```

9.4.3.19 Master of Science (Occupational Health)

`mscoh` Master of Science (Occupational Health); .

```
728 \DeclareOption{mscoh}{%
729   \degree{Master of Science
```

```
730         (Occupational Health)}
731 }
```

9.4.3.20 Master of Science (Pharmaceutical Technology and Quality Systems)

`mcsptqs` Master of Science (Pharmaceutical Technology and Quality Systems); .

```
732 \DeclareOption{mcsptqs}{%
733   \degree{Master of Science
734     (Pharmaceutical Technology and Quality Systems)}
735 }
```

9.4.4 SEFS

9.4.4.1 Doctor of Philosophy

`phd` Doctor of Philosophy; .

```
736 \DeclareOption{phd}{%
737   \degree{Doctor of Philosophy}
738 }
```

9.4.4.2 Master of Planning and Sustainable Development

`mplan` Master of Planning and Sustainable Development; .

```
739 \DeclareOption{mplan}{%
740   \degree{Master of Planning and Sustainable Development}
741 }
```

9.4.4.3 Doctor of Science

`dsc` Doctor of Science; .

```
742 \DeclareOption{dsc}{%
743   \degree{Doctor of Science}
744 }
```

9.4.4.4 Master of Engineering

`me` Master of Engineering; .

```
745 \DeclareOption{me}{%
746   \degree{Master of Engineering}
747 }
```

9.4.4.5 Master of Engineering Science

`mengsc` Master of Engineering Science; .

```
748 \DeclareOption{mengsc}{%
749   \degree{Master of Engineering Science}
750 }
```

9.4.4.6 Master of Engineering Science (Information Technology in Architecture, Engineering and Construction)

`mengscit` Master of Engineering Science (Information Technology in Architecture, Engineering and Construction); .

```
751 \DeclareOption{mengscit}{%
752   \degree{Master of Engineering Science
753           (Information Technology in Architecture, Engineering and Construction)}
754 }
```

9.4.4.7 Master of Engineering Science (Microelectronics)

`mengscm` Master of Engineering Science (Microelectronics); .

```
755 \DeclareOption{mengscm}{%
756   \degree{Master of Engineering Science
757           (Microelectronics)}
758 }
```

9.4.4.8 Master of Engineering Science (Microelectronic Design)

`mengscmd` Master of Engineering Science (Microelectronic Design); .

```
759 \DeclareOption{mengscmd}{%
```

```
760 \degree{Master of Engineering Science
761         (Microelectronic Design)}
762 }
```

9.4.4.9 Master of Engineering Science in Mechanical Engineering (Manufacturing, Process and Automation Systems)

mengscme Master of Engineering Science in Mechanical Engineering (Manufacturing, Process and Automation Systems); .

```
763 \DeclareOption{mengscme}{%
764 \degree{Master of Engineering Science in Mechanical Engineering
765         (Manufacturing, Process and Automation Systems)}
766 }
```

9.4.4.10 Master of Engineering Science (Pharmaceutical and Biopharmaceutical Engineering)

mengscpbe Master of Engineering Science (Pharmaceutical and Biopharmaceutical Engineering); .

```
767 \DeclareOption{mengscpbe}{%
768 \degree{Master of Engineering Science
769         (Pharmaceutical and Biopharmaceutical Engineering)}
770 }
```

9.4.4.11 Master of Engineering Science (Sustainable Energy)

mengscse Master of Engineering Science (Sustainable Energy); .

```
771 \DeclareOption{mengscse}{%
772 \degree{Master of Engineering Science
773         (Sustainable Energy)}
774 }
```

9.4.4.12 Master of Science

msc Master of Science; .

```
775 \DeclareOption{msc}{%
```

```
776 \degree{Master of Science}
777 }
```

9.4.4.13 Master of Applied Science (Analytical Chemistry)

`mscac` Master of Applied Science (Analytical Chemistry); .

```
778 \DeclareOption{mscac}{%
779 \degree{Master of Applied Science
780 (Analytical Chemistry)}
781 }
```

9.4.4.14 Master of Applied Science (Analysis of Pharmaceutical Compounds)

`mscapc` Master of Applied Science (Analysis of Pharmaceutical Compounds); .

```
782 \DeclareOption{mscapc}{%
783 \degree{Master of Applied Science
784 (Analysis of Pharmaceutical Compounds)}
785 }
```

9.4.4.15 Master of Applied Science (Biotechnology)

`mscb` Master of Applied Science (Biotechnology); .

```
786 \DeclareOption{mscb}{%
787 \degree{Master of Applied Science
788 (Biotechnology)}
789 }
```

9.4.4.16 Master of Applied Science (Bioinformatics with Systems Biology)

`mscbsb` Master of Applied Science (Bioinformatics with Systems Biology); .

```
790 \DeclareOption{mscbsb}{%
791 \degree{Master of Applied Science
792 (Bioinformatics with Systems Biology)}
793 }
```

9.4.4.17 Master of Science (Co-operative Organisation/Food Marketing/Rural Development)

`msscoop` Master of Science (Co-operative Organisation/Food Marketing/Rural Development); .

```
794 \DeclareOption{msscoop}{%
795   \degree{Master of Science
796     (Co-operative Organisation/Food Marketing/Rural Development)}
797 }
```

9.4.4.18 Master of Applied Science (Ecological Assessment)

`mscea` Master of Applied Science (Ecological Assessment); .

```
798 \DeclareOption{mscea}{%
799   \degree{Master of Applied Science
800     (Ecological Assessment)}
801 }
```

9.4.4.19 Master of Applied Science (Environmental Analytical Chemistry)

`msceac` Master of Applied Science (Environmental Analytical Chemistry); .

```
802 \DeclareOption{msceac}{%
803   \degree{Master of Applied Science
804     (Environmental Analytical Chemistry)}
805 }
```

9.4.4.20 Master of Science (Food Business)

`mscfb` Master of Science (Food Business); .

```
806 \DeclareOption{mscfb}{%
807   \degree{Master of Science
808     (Food Business)}
809 }
```

9.4.4.21 Master of Applied Science (Food Microbiology)

`mscfm` Master of Applied Science (Food Microbiology); .

```
810 \DeclareOption{mscfm}{%
811   \degree{Master of Applied Science
812     (Food Microbiology)}
813 }
```

9.4.4.22 Master of Applied Science (Food Science)

`mscfs` Master of Applied Science (Food Science); .

```
814 \DeclareOption{mscfs}{%
815   \degree{Master of Applied Science
816     (Food Science)}
817 }
```

9.4.4.23 Master of Applied Science (Geographical Information Systems and Remote Sensing)

`mscgis` Master of Applied Science (Geographical Information Systems and Remote Sensing); .

```
818 \DeclareOption{mscgis}{%
819   \degree{Master of Applied Science
820     (Geographical Information Systems and Remote Sensing)}
821 }
```

9.4.4.24 Master of Applied Science (Marine Biology)

`mscmb` Master of Applied Science (Marine Biology); .

```
822 \DeclareOption{mscmb}{%
823   \degree{Master of Applied Science
824     (Marine Biology)}
825 }
```

9.4.4.25 Master of Applied Science (Mathematical Modelling and Scientific Computing)

mscmmsc Master of Applied Science (Mathematical Modelling and Scientific Computing); .

```
826 \DeclareOption{mscmmsc}{%
827   \degree{Master of Applied Science
828     (Mathematical Modelling and Scientific Computing)}
829 }
```

9.4.4.26 Master of Applied Science (Nutritional Sciences)

mscns Master of Applied Science (Nutritional Sciences); .

```
830 \DeclareOption{mscns}{%
831   \degree{Master of Applied Science
832     (Nutritional Sciences)}
833 }
```

9.4.4.27 Master of Science (Rural Development)

mscrd Master of Science (Rural Development); .

```
834 \DeclareOption{mscrd}{%
835   \degree{Master of Science
836     (Rural Development)}
837 }
```

9.4.4.28 Master of Applied Science (Software and Systems for Mobile Networks)

mscssmn Master of Applied Science (Software and Systems for Mobile Networks); .

```
838 \DeclareOption{mscssmn}{%
839   \degree{Master of Applied Science
840     (Software and Systems for Mobile Networks)}
841 }
```

9.4.4.29 Master of Science (Technology Management)

msctm Master of Science (Technology Management); .

```
842 \DeclareOption{msctm}{%
843   \degree{Master of Science
```

```
844         (Technology Management)}
845 }
```

9.5 Other options

The remaining options mainly affect formatting.

9.5.1 Draft and final modes

`\class@mode` Draft mode is the default, but we define a macro to allow it to be passed through to the report class as a default.

```
846 \def\class@mode{draft}
```

`draft` We set the overfull rule as normal for draft mode, and set the running footer to indicate draft mode for activation at the end of processing, once the fancyhdr package has been loaded. It also sets `\sloppy` and `\raggedbottom`, as these are likely to prove useful in complex texts with substantial amounts of mixed formatting (mathematics, figures, tables, long words, etc).

```
847 \def\@revdate{\relax}
848 \DeclareOption{draft}{\setlength\overfullrule{5pt}%
849   \def\class@mode{draft}%
850   \sloppy\raggedbottom
851   \AtEndOfClass{%
852     \lfoot{\scriptsize\ttfamily Draft: \jobname}%
853     \rfoot{\scriptsize\ttfamily
854       \if\relax\@revdate
855         \TODAY T\now:00\else\@revdate\fi}}%
856   \typeout{DRAFT MODE}}
857 \newcommand{\revdate}[1]{\gdef\@revdate{#1}}
```

`final` The final-mode setting sets the overfull rule to nothing, records the status in `\class@mode`, and sets the same tolerances as for draft mode.

```
858 \DeclareOption{final}{\setlength\overfullrule{0pt}%
859   \def\class@mode{final}%
860   \sloppy\raggedbottom
861   \typeout{Final mode}}
```

9.5.2 Type size and paper size

`\class@size` Provide a similar recording feature to pass the size option through to the report class. The default is 12pt.

```
862 \def\class@size{12pt}
863 \DeclareOption{10pt}{\def\class@size{10pt}}
864 \DeclareOption{11pt}{\def\class@size{11pt}}
865 \DeclareOption{12pt}{\def\class@size{12pt}}
```

`\class@paper` The same applies to passing the paper size. Only A4 and Letter are relevant here.

```
866 \def\class@paper{a4paper}
867 \DeclareOption{a4paper}{\def\class@paper{a4paper}}
868 \DeclareOption{letterpaper}{\def\class@paper{letterpaper}}
```

9.5.3 Turning off the Lists of Tables and Figures

Production of a List of Tables and a List of Figures is automated: if no figure or table is used, then no list is produced.

`no1ot` Allow thesis not to have any List of Tables with the `no1ot` option and the `\if1ot` switch.

```
869 \newif\if1ot\lottrue
870 \DeclareOption{no1ot}{\lotfalse}
```

`no1of` Allow thesis not to have any List of Figures with the `no1of` option and the `\if1of` switch.

```
871 \newif\if1of\loftrue
872 \DeclareOption{no1of}{\loffalse}
```

At the end of the document, the counters for figures and tables are tested, and the false value written to the auxiliary file, where it will be detected on the next pass.

```
873 \newcounter{UCC@totfig}
874 \newcounter{UCC@tottab}
875 \AtBeginDocument{%
876   \let\UCC@end@figure\endfigure
877   \newcommand{\UCC@endfigure}{\UCC@endfigure\global\advance\c@UCC@totfig by1}
878   \let\endfigure\UCC@endfigure
879   \let\UCC@end@table\endtable}
```

```

880 \newcommand{\UCC@endtable}{\UCC@end@table\global\advance\c@UCC@tottab by1}
881 \let\endtable\UCC@endtable
882 }
883 \AtEndDocument{%
884 \ifnum\c@UCC@totfig=0 \write\@mainaux{%
885 \string\global\string\loffalse}\fi
886 \ifnum\c@UCC@tottab=0 \write\@mainaux{%
887 \string\global\string\lotfalse}\fi
888 }

```

shorttoc Allow the Table of Contents to be limited to subsections

```

889 \newif\ifshorttoc\shorttocfalse
890 \DeclareOption{shorttoc}{\shorttoctrue}

```

9.5.4 Irish-language theses

gaeilge Provide for theses in Irish. This option loads the babel package with the **english** and **irish** options, with **irish** in the last place as the default language for the document. It also loads the eiad font package for sean-chló type.

```

891 \DeclareOption{gaeilge}{%

```

At the end of the package processing, it makes some changes to tokens which are not handled by the babel package (`\institution` [defined in this package], `\ackname` [defined in the package], and `\today` [defined by L^AT_EX]).

```

892 \AtEndOfClass{%
893 \RequirePackage[english,irish]{babel}%
894 \RequirePackage{eiad}%
895 \institution{\textsc{\large
896 Col\'aiste Naisi\'unta na h'Eireann, Corcaigh}}
897 \renewcommand\ackname{Bu\'i ochas}
898 \def\today{\number\day\space\ifcase\month\or
899 Ean\'a\i r\or Feabhra\or M\'arta\or A\i bre\'an\or
900 Bealta\i ne\or Me\i theamh\or U\'u\i l\or L\'unasa\or
901 Me\'an F\'omha\i r\or De\i readh F\'omha\i r\or
902 Samha\i n\or M\'i\ na Nollag\fi\space
903 \number\year}%

```

Finally, we change the tokens for the handles previously defined for the division and degree options above; and we preset `\raggedright` because the hyphenation of Irish is widely regarded as problematic.

```

904 \def\@schoolhandle{Scoil an}
905 \def\@departmenthandle{Roinn an}
906 \def\@institutehandle{Institúid }
907 \def\@hospitalhandle{Spidéal }
908 \def\@centrehandle{Lárionad}
909 \def\@unithandle{???}
910 \def\@degreehandle{???}
911 \raggedright
912 }}

```

9.5.5 Chinese, Japanese, and Korean

`CJK` setting needs the CJK package preloaded, so we flag it with an option in order to activate it later via the `\ifCJK` switch.

```

913 \newif\ifCJK\CJKfalse
914 \DeclareOption{CJK}{\CJKtrue}

```

9.5.6 Wordprocessor emulation

`WP` This enables the formatting to resemble the *Word* defaults. This too is experimental.

```

915 \DeclareOption{WP}{%
916 \AtBeginDocument{%
917 \everypar{\vrule depth.2ex width0pt}%
918 \RequirePackage{pslatex,ragged2e}%
919 \RaggedRight
920 \hyphenpenalty=99999 \exhyphenpenalty=99999
921 \def\@makechapterhead#1{%
922 \begin{center}\normalfont
923 \ifnum \c@secnumdepth >\m@ne
924 \if@mainmatter
925 \LARGE{\sffamily{\@chapapp}\space
926 \LARGE\thechapter}%
927 \par\nobreak
928 \vspace*{2\baselineskip}%
929 \fi
930 \fi
931 \interlinepenalty\@M
932 \Huge\sffamily #1\par\nobreak
933 \vspace*{3\baselineskip}%
934 \end{center}}%
935 \renewcommand\section{%
936 \@startsection{section}{1}{\z@}%

```

```

937     {-2\baselineskip}%
938     {\baselineskip}%
939     {\normalfont\sffamily\LARGE\bfseries}}}%
940 \renewcommand\subsection{%
941   \@startsection{subsection}{2}{\z@}%
942   {-2\baselineskip}%
943   {\baselineskip}%
944   {\normalfont\sffamily\Large\bfseries}}}%
945 \renewcommand\subsubsection{%
946   \@startsection{subsubsection}{3}{\z@}%
947   {-\baselineskip}%
948   {\baselineskip}%
949   {\normalfont\sffamily\large\bfseries}}}%
950 \renewcommand\paragraph{%
951   \@startsection{paragraph}{4}{\z@}%
952   {\baselineskip}%
953   {-.5\baselineskip}%
954   {\normalfont\sffamily\normalsize}}}%
955 \let\subsubsubsection\paragraph
956 \renewcommand\subparagraph{%
957   \@startsection{subparagraph}{5}{\parindent}%
958   {\baselineskip}%
959   {-.1pt}%
960   {\normalfont\sffamily\normalsize\itshape}}}%
961 \let\subsubsubsubsection\subparagraph
962 \setcounter{secnumdepth}{-1}
963 \let\@makefntext\oldfntext
964 \renewcommand{\footnoterule}{\par\vspace*{1pc}}}%
965 \pagestyle{fancy}%
966 \lhead{}\rhead{}\chead{}%
967 \lfoot{}\cfoot{\thepage}\rfoot{}%
968 \renewcommand{\headrulewidth}{0pt}%
969 \def\TeX{TeX}\def\LaTeX{LaTeX}\def\BIBTeX{BibTeX}
970 \doublespacing\raggedbottom
971 \typeout{Wordprocessor-style formatting}}}%

```

9.5.7 Justification, indentation, and paragraph-spacing

This is a much-argued area.

\ifjustified Documents printed on office-size paper do not read easily when justified with long line-lengths such as those effective when the Registrar's Rules are applied to A4 or Letter paper. The default is therefore for justification to be turned off, but the **justified** option is provided to allow it to be turned back on by setting the \ifjustified switch.

```
972 \newif\ifjustified
973 \DeclareOption{justified}{\justifiedtrue}
```

`\ifindented` However, it is also easier to read long structured documents when the paragraphs are *not* set snug with indentation, like a book, but spaced out (and therefore unindented, as you never use indentation when using paragraph-space in Anglo-American printing). We therefore flag indentation in an option which sets the `\ifindented` switch, so that it can be set or unset later, along with paragraph-spacing using the `parskip` package.

```
974 \newif\ifindented\indentedfalse
975 \DeclareOption{indented}{\indentedtrue}
```

9.5.8 Running headers and footers

`\iffancy` Because theses are long documents, and because parts or all of them are likely to be reprinted or even photocopied at some stage, it is important that every page should be identifiable in isolation. The `fancyhdr` package is used to do this, but some users were insistent that they did not want running headers and footers, so the `plainheaders` allows it to be turned off via the `\iffancy` switch.

```
976 \newif\iffancy
977 \fancytrue
978 \DeclareOption{plainheaders}{\fancyfalse}
```

9.5.9 Dissertations, term papers, and essays

WARNING: EXPERIMENTAL

`mdiss` This is for minor dissertations.

```
979 \newif\ifdiss
980 \DeclareOption{mdiss}{%
981   \disstrue
982   \fancyfalse
983 }
```

`termpaper` This is for term papers.

```
984 \newif\iftermpaper
```

```

985 \DeclareOption{termpaper}{%
986   \AtEndOfClass{%
987     \degree{}%
988     \def\@degree{\relax}%
989     \degreefalse}%
990   \typeout{Term paper}}

```

essay This is for undergraduate essays.

```

991 \newif\ifessay
992 \DeclareOption{essay}{%
993   \AtEndOfClass{%
994     \degree{}%
995     \def\@degree{\relax}%
996     \degreefalse}%
997   \typeout{Essay}}

```

9.5.10 Two-sided output

These are normally printed on one side of the paper for submission, especially for externs to read.

The **twoside** is available for when a very long thesis needs to economise on paper, or when the thesis is being bound as a book.

```

998 \newif\ifUCC@oneside
999 \UCC@onesidetrue
1000 \def\UCC@sided{oneside}
1001 \DeclareOption{oneside}{
1002   \UCC@onesidetrue
1003   \gdef\UCC@sided{oneside}
1004 }
1005 \DeclareOption{twoside}{
1006   \UCC@onesidefalse
1007   \gdef\UCC@sided{twoside,openright}
1008 }
1009 %% added openright for Ethan Soudi (untested)

```

9.5.11 Applying the options

At last, issue an error message for any bogus or unsupported options:

```

1010 \DeclareOption*{%
1011   \PackageWarning{uccthis}{Unknown option '\CurrentOption'};

```

```
1012     please Read The Fine Manual}%
1013 }
```

and process those we support, and then load the report document class with the values we have gathered above.

```
1014 \ProcessOptions\relax
1015 \LoadClass[\class@mode,titlepage,\UCC@sided,\class@size,
1016           \class@paper]{report}
```

9.6 Packages required for the class

`inputenc` UTF-8 is the default character set, to allow for use of any character in any writing system. Some characters are not specified for all fonts, so may have to be specified manually.

```
1017 \RequirePackage[utf8x]{inputenc}[2008/03/30]
1018 \PrerenderUnicode{-}
1019 \PrerenderUnicode{š}
1020 \PrerenderUnicode{ć}
1021 \PrerenderUnicode{Å}
```

`fontenc` Extended font encoding to handle UTF-8.

```
1022 \RequirePackage[T1]{fontenc}
```

`geometry` Package for establishing margins and text area. Sets the page size to values within the Registrar's specification. This has the effect of making the textwidth 6¼" (16cm) and the textheight 9" (23cm) on an A4 page. The headheight is set to accommodate the default running headers.

```
1023 \RequirePackage[right=2.5cm,top=3cm,bottom=3cm,
1024 left=4cm,headheight=22pt]{geometry}
```

`lmodern` The updated Computer Modern typeface as the default.

```
1025 \RequirePackage{lmodern}
```

`url` Handling of URI formatting. This is required in some bibliographic formats.

```
1026 \RequirePackage[obeyspaces,hyphens,spaces,
1027 lowtilde]{url}
```

graphicx Provide for graphics (PNG, JPG, or PDF format (only) for pdf_latex; EPS format (only) for standard L^AT_EX).

```
1028 \RequirePackage{graphicx}
```

array Additional column formatting for tables.

```
1029 \RequirePackage{array}
```

calc Required for the calculation of extra widths for margin adjustment.

```
1030 \RequirePackage{calc}
```

soul Provides letter-spacing, ~~strikeout~~, and underlining. Used for letter-spacing in the title page.

```
1031 \RequirePackage{soul}
```

textcomp Additional commands for common symbols and punctuation.

```
1032 \RequirePackage{textcomp}
```

ucccrest University College Cork crest (restricted). Required for the title page.

```
1033 \RequirePackage{ucccrest}
```

setspace Provide 1½ or double line spacing.

```
1034 \RequirePackage{setspace}
```

float Allows redesigning of floats and creation of new float types.

```
1035 \RequirePackage{float}
```

9.7 Modifications to the report class and packages

Now that the report class and the packages are loaded, we can start making the necessary changes.

`\geometry` **Fix the geometry for two-sided work.**

```
1036 \ifUCC@oneside
1037   \newgeometry{left=4cm,right=2.5cm,top=3cm,bottom=3cm,
1038     headheight=22pt}
1039 \else
1040   \newgeometry{inner=4cm,outer=2.5cm,top=3cm,bottom=3cm,
1041     headheight=22pt,twoside}
1042 \fi
```

`\cjktex` **Here we use the flagged setting specified earlier to ensure UTF-8 character encoding is used to invoke the CJK package and the `cjk` option with the `\ifcjk` switch.**

```
1043 \ifcjk
1044   \RequirePackage[encapsulated]{CJK}
1045   \newcommand{\cjktex}[1]{\begin{CJK}{UTF8}{min}#1\end{CJK}}
1046 \fi
```

`\bibname` **Call the references References, not Bibliography.**

```
1047 \renewcommand{\bibname}{References}
```

`natbib` **Test dissertations with natbib.**

```
1048 \ifdiss
1049   \RequirePackage{natbib}
1050   \renewcommand{\thesection}{\arabic{section}}
1051   \bibpunct[: ]{()}{;}{a}{,}{,}
1052   \setlength{\parskip}{.666\baselineskip pluslex minuslex}
1053   \renewenvironment{thebibliography}[1]
1054     {\ifUCC@oneside\clearpage\else\cleardoublepage\fi
1055     \section*{References}%
1056     \list{\@biblabel{\@arabic\c@enumiv}}%
1057       {\settowidth\labelwidth{\@biblabel{#1}}%
1058        \leftmargin\labelwidth
1059        \advance\leftmargin\labelsep
1060        \@openbib@code
1061        \usecounter{enumiv}%
1062        \let\p@enumiv\@empty
1063        \renewcommand\theenumiv{\@arabic\c@enumiv}}%
1064     \sloppy
1065     \clubpenalty4000
1066     \@clubpenalty \clubpenalty
1067     \widowpenalty4000%
1068     \sfcode\.\@m}
1069   {\def\@noitemerr
1070     {\@latex@warning{Empty 'thebibliography' environment}}%}
```

```
1071     \endlist}
1072 \fi
```

`\ifjustified` The flags implementing [re-]justification and [re-]indentation explained above are used here to control loading of the `parskip`, `ccaption`, and `footmisc` packages.

Justified text, signalled with `\ifjustified` requires only `footmisc`, and only with the **bottom**, **stable** options, because L^AT_EX's default is to justify everything.

```
1073 \ifjustified
1074   \RequirePackage[bottom,stable]{footmisc}
```

On the other hand, unjustified text (the default) requires the `ccaption` package and its re-setting of the captioning to be **unjustified**; and the **ragged** option to the `footmisc` package.

```
1075 \else
1076   \RequirePackage{ccaption}
1077   \captionstyle{\raggedright}%
1078   \RequirePackage[bottom,ragged,stable]{footmisc}
1079   \raggedright
1080 \fi
```

`\ifindented` Unindented text is the default, so it gets turned on here, along with paragraph-spacing, unless the **indented** option has been specified, which sets the `\ifindented`.

```
1081 \ifindented
1082   \parindent1.5em
1083 \else
1084   \RequirePackage{parskip}
1085 \fi
```

`\UCC@textbodywidth` The default running headers and footers can be defeated by using the **plainheaders** option, so the loading of the `fancyhdr` package is controlled by the `\iffancy` switch.

```
1086 \newlength{\UCC@textbodywidth}
1087 \setlength{\UCC@textbodywidth}{\textwidth}
1088 \iffancy
1089   \message{Fancy mode }%
1090   \RequirePackage{fancyhdr}
1091   \pagestyle{fancy}
```

We set the default page style to fancy. Bear in mind here that although we are using the `report` class as our basis, it is

single-sided by default, but we need to accommodate twosided usage.

```

1092 \ifUCC@oneside
1093   \message{One-sided plain}%
1094   \fancypagestyle{plain}{%
1095     \fancyhf{}
1096     \cfoot{\thepage}%
1097     \renewcommand{\headrulewidth}{0pt}
1098     \renewcommand{\footrulewidth}{0pt}}
1099 \else
1100   \message{Two-sided plain}%
1101   \fancypagestyle{plain}{%
1102     \fancyhf{}
1103     \fancyfoot[CO,CE]{\thepage}%
1104     \renewcommand{\headrulewidth}{0pt}
1105     \renewcommand{\footrulewidth}{0pt}}
1106 \fi

```

The left-hand running header checks to see if the right and left marks are the same: if so, do nothing (ie, leave the header as it is); otherwise, use the left mark (the chapter title). As chapter titles can be quite long, we set them in a `\parbox` just under half a page-width wide, so they will wrap and not interfere with the right-hand running header...

```

1107 \fancyhf{}
1108 \newlength{\rheadhang}
1109 \settowidth{\rheadhang}{\footnotesize\thechapter.\space}
1110 \ifUCC@oneside
1111   \message{One-sided fancy headers}%
1112   \lhead{\ifthenelse{\equal{\leftmark}{\rightmark}}{\rightmark}}{\leftmark}}{\footnotesize\scshape\parbox[b]{.475\UCC@textbodywidth}{%
1113     \hangindent\rheadhang\hangafter1\raggedright
1114     {\let\space\leftmark}}}}

```

... which contains the section title in the right mark, which we typeset exactly the same way, except that it is made flush right for symmetry. There is no centre running header.

```

1116   \rhead{\footnotesize\itshape\parbox[b]{.475\UCC@textbodywidth}{%
1117     \flushright{\let\space\rightmark}}}
1118   \chead{}
1119 \else
1120   \message{Two-sided fancy headers}%
1121   \fancyhead[LE]{\ifthenelse{\equal{\leftmark}{\rightmark}}{\rightmark}}{\leftmark}}{\footnotesize\scshape\parbox[b]{\UCC@textbodywidth}{%
1122     \hangindent\rheadhang\hangafter1\raggedright
1123     {\let\space\leftmark}}}}

```

```

1125 \fancyhead[RO]{\footnotesize\itshape
1126 \parbox[b]{\UCC@textbodywidth}{%
1127 \flushright{\let\\\space\rightmark}}}
1128 \fi

```

The running footers are different on fancy and plain pages: on the left goes the title; on the right goes the author; but on plain pages they are left empty. The centre running footer always contains the page number, as required by the Registrar's Rules.

```

1129 \ifUCC@oneside
1130 \message{One-sided fancy footers}%
1131 \lfoot{\fancyplain{}{\footnotesize
1132 \parbox[t]{.475\UCC@textbodywidth}{%
1133 \itshape\raggedright{\@@@title}}}}%
1134 \rfoot{\fancyplain{}{\footnotesize@author}}
1135 \cfoot{\fancyplain{\small\thepage}{\small\thepage}}
1136 \else
1137 \message{Two-sided fancy footers}%
1138 \fancyfoot[LE]{\fancyplain{}{\footnotesize
1139 \parbox[t]{.475\UCC@textbodywidth}{%
1140 \itshape\raggedright{\@@@title}}}}
1141 \fancyfoot[RO]{\fancyplain{}{\footnotesize@author}}
1142 \fancyfoot[CE,CO]{\fancyplain{\small\thepage}{\small\thepage}}
1143 \fi

```

Finally, we set the header and footer rules to null, and we implement the chapter and section marking to gather the current titling in `\chaptermark` and `\sectionmark`, and ensure that the default headers do not perform any uppercasing by setting the `\ps@headings` command to null.

```

1144 \addtolength{\headheight}{10pt}
1145 \renewcommand{\headrulewidth}{0pt}
1146 \else
1147 \message{^MPlain (non-fancy) mode }%
1148 \fi
1149 \renewcommand{\chaptermark}[1]{\markboth{\thechapter.\ #1}{}}
1150 \renewcommand{\sectionmark}[1]{\markright{\thesection\ #1}{}}
1151 \def\ps@headings{}

```

`\now` Calculate the time of day and provide for a timestamp to identify draft versions.

```

1152 \newcounter{hours}
1153 \newcounter{minutes}
1154 \newcounter{temp}
1155 \setcounter{hours}{\time}%

```

```

1156 \setcounter{minutes}{\value{hours}}%
1157 \divide\c@hours by60 % hours is now right
1158 \setcounter{temp}{\value{hours}}%
1159 \multiply\c@temp by60 % integer part to deduct
1160 \addtocounter{minutes}{-\value{temp}}% make deduction
1161 \newcommand{\now}{% \time is in minutes since midnight
1162   \ifnum\c@hours>9\else0\fi\thehours:%
1163   \ifnum\c@minutes>9\else0\fi\theminutes}
1164 \def\adobedate{D:\number\year
1165   \ifnum\month>9\else0\fi\number\month
1166   \ifnum\day>9\else0\fi\number\day\now00}

```

`\TODAY` **Redefine today the European way round, and provide an ISO-format version for the footers.**

```

1167 \def\today{\number\day\space\ifcase\month\or
1168   January\or February\or March\or
1169   April\or May\or June\or
1170   July\or August\or September\or
1171   October\or November\or December\fi
1172   \space\number\year}
1173 \def\TODAY{\number\year{-}%
1174   \ifnum\month<10 0\fi\number\month{-}%
1175   \ifnum\day<10 0\fi\number\day}

```

9.8 Metadata

Define the metadata (title, author, and date are already given by \LaTeX in the report class). These are all done the same way, with a default value that gets overridden when an authorial value is given.

`\institution` **Institution (nominally still the NUI?).**

```

1176 \def\@institution{\so{NATIONAL UNIVERSITY OF IRELAND, CORK}}
1177 \newcommand{\institution}[1]{\gdef\@institution{\so{#1}}}

```

`\author` **Provide an optional first argument on the `\author` command for giving the student number.**

```

1178 \def\@studno{\relax}
1179 \renewcommand{\author}[2][\relax]{%
1180   \gdef\@author{#2}
1181   \if\relax#1 \else\gdef\@studno{#1}\fi}

```

`\subtitle` **Optional subtitle.**

```
1182 \def\@subtitle{\relax}
1183 \newcommand{\subtitle}[1]{\gdef\@subtitle{#1}}
```

`\sponsor` **Sponsor or funding agency.**

```
1184 \def\@sponsor{\relax}
1185 \newcommand{\sponsor}[1]{\gdef\@sponsor{#1}}
```

`\supervisor` **Supervisor, but syntactically this needed a plural value for the string label used in formatting, so we define `\supervisors` as well.**

```
1186 \def\@supervisor{[Name not supplied]}
1187 \def\@supervisorname{Supervisor}
1188 \newcommand{\supervisor}[1]{\gdef\@supervisor{#1}}
1189 \newcommand{\supervisors}[1]{\gdef\@supervisor{#1}}
1190 \def\@supervisorname{Supervisors}}
```

`\module` **Only for dissertations and essays.**

```
1191 \def\@module{\relax}
1192 \newcommand{\module}[1]{\gdef\@module{#1}}
```

`\professor` **Professor. There is some debate about identifying the Discipline instead...**

```
1193 \def\@prof{\relax}
1194 \newcommand{\professor}[1]{\gdef\@prof{#1}}
```

`\quals` **Prior qualifications.**

```
1195 \def\@quals{\relax}
1196 \newcommand{\qualifications}[1]{\gdef\@quals{#1}}
```

`\volume` **Optional volume number.**

```
1197 \def\@volume{\relax}
1198 \def\@maxvolumes{\relax}
1199 \def\volume #1 of #2 {\gdef\@volume{#1}}
1200 \gdef\@maxvolumes{#2}}
```

`\@submission` **This is the formal prioritising of the order in which the various divisional identifiers are given, if used: each one is enclosed in a test to ensure it is only used if it has been specified.**

```

1201 \def\@submission{%
1202   \if\@hospital\relax
1203   \else\par\textsc{\@hospital}%
1204   \fi
1205   \if\@school\relax
1206   \else\par\textsc{\@school}%
1207   \fi
1208   \if\@department\relax
1209   \else\par\textsc{\@department}%
1210   \fi
1211   \if\@institute\relax
1212   \else\par\textsc{\@institute}%
1213   \fi
1214   \if\@centre\relax
1215   \else\par\textsc{\@centre}%
1216   \fi
1217   \if\@unit\relax
1218   \else\par\textsc{\@unit}%
1219   \fi
1220 }

```

`\availability` If the document is available online the `\availability` command can be used to provide a short paragraph with links.

```

1221 \def\@annot{\relax}
1222 \newcommand{\annotation}[1]{\gdef\@annot{#1}}

```

Two final commands record the metadata needed to complete the PDF Properties, which is needed for electronic submission.

`\subject` This specifies the subject of the thesis.

```

1223 \def\@subject{Unspecified}
1224 \newcommand{\subject}[1]{\gdef\@subject{#1}}

```

`\keywords` This specifies a comma-separated list of keywords for use when indexing your thesis.

```

1225 \def\@keywords{Unspecified}
1226 \newcommand{\keywords}[1]{\gdef\@keywords{#1}}

```

9.9 Title page

Create the title page as per Registrar's Rules. This includes the Table of Contents, List of Figures, List of Tables, and the Declaration.

`\ifmadetitle` First, define a switch that can be used if `\maketitle` is forgotten.

```
1227 \newif\ifmadetitle
```

`\title` Allow for an optional short (or unformatted) title

```
1228 \def\@title{\relax}
1229 \renewcommand{\title}[2][\relax]{%
1230   \gdef\@title{#2}%
1231   \ifthenelse{\equal{#1}{\relax}}{%
1232     \gdef\@title{#2}%
1233     \message{No short title}%
1234   }{%
1235     \gdef\@title{#1}%
1236     \message{Short title: #1}%
1237   }%
1238 }
```

`\maketitle` The order is: title, subtitle, volume, author, qualifications, institution, college, faculty, department, degree, date, professor, supervisor, sponsor.

```
1239 \renewcommand\maketitle{%
```

We want this on a page by itself, centered both vertically and horizontally.

```
1240 \begin{titlepage}%
1241   \null
1242   \ifthesis\vfill\fi
1243   \begin{center}%
```

Title is compulsory: subtitle is optional.

```
1244   {\ifthesis\fontsize{28}{32}\selectfont
1245     \else\LARGE\bfseries\fi\@title \par}%
1246   \if\@subtitle\relax\else\bigskip
1247     {\ifthesis\fontsize{24}{28}\selectfont
1248       \else\Large\bfseries\fi\@subtitle\par}%
1249   \fi
```

Volume number is compulsory if the thesis is multi-volume.

```
1250   \ifthesis
1251     \if\@volume\relax\else
1252       \vspace{2pc}{\large Volume \@volume\ of
1253         \@maxvolumes\par}%
1254     \fi
1255   \fi
1256   \vspace*{2pc}%
```

Author is compulsory; qualifications are optional.

```
1257      {\LARGE \@author%
1258 \if\relax \@quals\else
1259         \\ \large\scshape \@quals
1260         \fi
1261 \if\relax \@studno\else
1262         \\ \Large\upshape \@studno
1263         \fi
1264 \par}%
```

Grade of degree is compulsory. Phrasing for some degrees ‘in part fulfilment’ needs investigating.

```
1265      \ifthesis
1266         \medskip
1267         {\large\bfseries Thesis submitted for the degree of
1268          \\ \@degree\par}%
1269      \else
1270         {\large \@module~--- Minor Dissertation\par}%
1271      \fi
1272      \vspace*{1.5pc}%
```

Any free space can also go here, above the UCC crest and below the date.

```
1273      \vfill
1274      \ifthesis{\Large\UCCcrest}\fi
1275      \par\smallskip
```

The name of the institution is required.

```
1276      \ifthesis
1277         \@institution\par
1278         \vspace*{1pc}%
1279      \fi
```

Use the preformed \@submission which reproduces those divisional elements which have been specified.

```
1280      \ifthesis
1281         {\large \@submission\par}
1282         \vspace*{1pc}%
1283      \fi
```

Date of submission is required here for theses.

```
1284      \ifthesis
1285         {\@date \par}%
1286         \vfill
1287      \fi
```

If this is a thesis, give the Professor and Supervisor(s) as a tabular alignment.

```
1288     \ifthesis
1289     \begin{tabular}{%
1290 >{\raggedleft\arraybackslash}p{.45\UCC@textbodywidth}%
1291 >{\raggedright\arraybackslash}p{.45\UCC@textbodywidth}}
```

Professor is actually optional here for some reason.

```
1292         \if\@prof\relax\else
1293             Head of \@unitttype:&\@prof\\[1pc]
1294         \fi
1295     \@supervisorname:&
```

Multiple supervisors must have been separated by double backslashes, so we can use a 1-column table to make them format vertically.

```
1296         \begin{tabular}[t]{@{}l@{}}\@supervisor\end{tabular}
1297     \end{tabular}\par\vfill%
```

If this was not a thesis, just give the supervisor. This should probably be collapsed into the above formatting.

```
1298     \else
1299         Supervisor:\quad\@supervisor\par
1300     \fi
1301     \vspace*{2pc}%
```

Date of submission is required here for dissertations.

```
1302     \ifthesis\else
1303         {\@date \par}%
1304     \fi
```

Sponsor, if there is one.

```
1305     \if\@sponsor\relax\else
1306         \vfill
1307     Research supported by \@sponsor\par
1308     \fi
1309     \end{center}%
```

Set the title page number to one and make sure it has no running header or footer.

```
1310     \setcounter{page}{1}%
1311     \pagestyle{empty}%
1312     \end{titlepage}%
```

Now reset the commands used to create the title page so that they can't accidentally be used again. Note that the stored values in the \@ remain unaffected for re-use in running headers, etc.

```

1313 \global\let\@thanks\@empty
1314 \global\let\and\relax
1315 \global\let\author\relax
1316 \global\let\centre\relax
1317 \global\let\college\relax
1318 \global\let\date\relax
1319 \global\let\degree\relax
1320 \global\let\department\relax
1321 \global\let\faculty\relax
1322 \global\let\institute\relax
1323 \global\let\keywords\relax
1324 \global\let\maketitle\relax
1325 \global\let\professor\relax
1326 \global\let\qualifications\relax
1327 \global\let\school\relax
1328 \global\let\sponsor\relax
1329 \global\let\subject\relax
1330 \global\let\subtitle\relax
1331 \global\let\supervisor\relax
1332 \global\let\thanks\relax
1333 \global\let\title\relax
1334 \global\let\unit\relax
1335 \global\let\volume\relax

```

Set the footnote counter (back) to zero, establish Roman (lowercase) page numbering for the front matter, and set the numbering depth down to the subparagraph level, and the ToC depth down to the subsubsection.

```

1336 \setcounter{footnote}{0}%
1337 \pagestyle{empty}
1338 \ifUCC@oneside\clearpage
1339   \if\relax{\small\@annot\par}
1340   \else\null\vfill{\small\@annot\par}\clearpage\fi
1341 \else
1342   \if\relax{\small\@annot\par}\cleardoublepage
1343   \else\clearpage\null\vfill{\small\@annot\par}\clearpage\fi
1344 \fi
1345 \ifthesis
1346   \setcounter{secnumdepth}{5}
1347   \pagenumbering{roman}%
1348 \else
1349   \setcounter{secnumdepth}{0}
1350   \pagenumbering{arabic}
1351 \fi

```

```

1352 \ifshorttoc\setcounter{tocdepth}{2}%
1353 \else\setcounter{tocdepth}{3}\fi
1354 \iffancy
1355   \pagestyle{fancy}
1356 \else
1357   \pagestyle{plain}
1358 \fi

```

As an integral part of the `\maketitle` command, do the Table of Contents immediately after the title page, as required by the Registrar's rules; then do the List of Figures and List of Tables if they are needed.

The built-in internal command `\@ifpackageloaded` is used to detect the use of the glossaries package, and print the Glossary if appropriate.

```

1359 \ifthesis
1360   \tableofcontents
1361   \iflof\listoffigures\fi
1362   \iflot\listoftables\fi
1363   %% \@ifpackageloaded{glossaries}{\printglossary}{\relax}
1364 \fi

```

Flag the title as having been done.

```

1365 \madetitletrue

```

Finally, add the PDF metadata. Temporarily redefine the double backslash in case it gets used in the title, as `\pdfinfo` will gag on it and undefine `\maketitle` in the process.

```

1366 \renewcommand{\}{ }
1367 \pdfinfo{%
1368 /Title (\@title)
1369 /Author (\@author)
1370 /CreationDate (\adobedate)
1371 /Subject (\@subject)
1372 /Keywords (\@keywords)
1373 }

```

`\madedecl` If this is a thesis (ie not a term paper or essay), start a new page, set both marks to null, and output the Declaration.

```

1374 \newif\ifmadedecl
1375 \newcommand{\makedecl}{%
1376 \ifthesis
1377   \ifUCC@oneside\clearpage\else\cleardoublepage\fi
1378   \null\vfill\markboth{}{}%

```

```

1379 \begingroup
1380 I, \@author, certify that this thesis is my own work
1381 and has not been submitted for another degree at University
1382 College Cork or elsewhere.
1383 \par\flushright\bigskip\bigskip\bigskip\leavevmode
1384 \hbox to2in{\hrulefill}\par\medskip\textit{\@author}\par\endgroup
1385 \vfill
1386 \fi
1387 \global\madedecltrue
1388 \global\UCC@delaydeclfalse}

```

9.10 General settings and redefinitions

This is a collection of changes (usually small) and additions (for convenience).

9.10.1 Floats

Reset the proportions of the page used for floats. This is taken from <http://www.tex.ac.uk/cgi-bin/texfaq2html?label=floats>.

```

1389 \renewcommand{\topfraction}{.85}
1390 \renewcommand{\bottomfraction}{.7}
1391 \renewcommand{\textfraction}{.15}
1392 \renewcommand{\floatpagefraction}{.75}
1393 \renewcommand{\dbltopfraction}{.75}
1394 \renewcommand{\dblfloatpagefraction}{.75}
1395 \setcounter{topnumber}{9}
1396 \setcounter{bottomnumber}{9}
1397 \setcounter{totalnumber}{20}
1398 \setcounter{dbltopnumber}{9}

```

9.10.2 New front and back matter macros and environments

Firstly, a consistent way to provide a Dedication, Acknowledgements, and other preliminaries.

`dedication` The `dedication` environment is for dedicating a thesis. It creates a page on its own and does not make a ToC entry. If the title page has not yet been done, this will trigger it first.

```

1399 \newenvironment{dedication}{%

```

```

1400 \ifmadetitle\else\maketitle\fi
1401 \ifmadedecl\else\makedecl\fi
1402 \clearpage\null\vfill
1403 \thispagestyle{empty}%
1404 \begin{center}}{%
1405 \end{center}\vfill}

```

`\prelim` **The `\prelim` command creates a minor frontmatter (unnumbered) section.**

```

1406 \newif\ifUCC@delaydecl
1407 \newcommand{\prelim}{%
1408   \@ifnextchar *
1409     {\UCC@delaydecltrue\UCC@prelim}
1410     {\UCC@delaydeclfalse\UCC@prelim{*}}}
1411 \newcommand{\UCC@prelim}[2]{% dummy first arg
1412   \ifmadetitle\else\maketitle\fi
1413   \ifmadedecl\else
1414     \ifUCC@delaydecl\else\makedecl\fi
1415   \fi
1416   \ifUCC@oneside\clearpage\else\cleardoublepage\fi
1417   \section*{#2}\@mkboth{#2}{#2}%
1418   \addcontentsline{toc}{section}{#2}%
1419   \onehalfspacing}

```

`\refsec` **A `\refsec` is a special form of `\prelim` that does not trigger the Declaration, and is typeset single-spaced.**

```

1420 \newcommand{\refsec}[1]{%
1421   \ifUCC@oneside\clearpage\else\cleardoublepage\fi
1422   \section*{#1}\@mkboth{#1}{#1}%
1423   \addcontentsline{toc}{section}{#1}%
1424   \singlespacing}

```

`\ackname` **Define a string for the titling of the Acknowledgements section, so that it can be redefined in the `gaeilge` option.**

```

1425 \newcommand{\ackname}{Acknowledgements}

```

`acknowledgements` **The `acknowledgements` environment uses the `\prelim` format.**

```

1426 \newenvironment{acknowledgements}{%
1427   \ifmadetitle\else\maketitle\fi
1428   \ifmadedecl\else\makedecl\fi
1429   \prelim{\ackname}\singlespacing
1430 }{}%

```

Redefine the Table of Contents as a section, and the same for the List of Figures and List of Tables.

`\tableofcontents` **The ToC is just a section, otherwise unchanged.**

```
1431 \renewcommand\tableofcontents{%
1432   \section*\contentsname
1433   \@mkboth{\contentsname}{\contentsname}}%
1434   \@starttoc{toc}%
1435 }
```

`\listoffigures` **LoF works the same as ToC**

```
1436 \renewcommand\listoffigures{%
1437   \ifUCC@oneside\clearpage\else\cleardoublepage\fi
1438   \section*\listfigurename
1439   \@mkboth{\listfigurename}{\listfigurename}}%
1440   \addcontentsline{toc}{section}{\listfigurename}%
1441   \@starttoc{lof}%
1442 }
```

`\listoftables` **And so does LoT**

```
1443 \renewcommand\listoftables{%
1444   \ifUCC@oneside\clearpage\else\cleardoublepage\fi
1445   \section*\listtablename
1446   \@mkboth{\listtablename}{\listtablename}}%
1447   \addcontentsline{toc}{section}{\listtablename}%
1448   \@starttoc{lot}%
1449 }
```

The Abstract is done slightly differently to normal for a page by itself.

`\maketitle` **We can't use the `titlepage` environment, because it resets the page number, so we do it like all the other Prelims.**

```
1450 \renewenvironment{abstract}{%
1451   \ifmadetitle\else\maketitle\fi
1452   \ifmadedecl\else\makedecl\fi
1453   \ifUCC@oneside\clearpage\else\cleardoublepage\fi
1454   \@beginparpenalty\@lowpenalty
1455   \section*\abstractname}%
1456   \addcontentsline{toc}{section}{\abstractname}%
1457   \markboth{\abstractname}{\abstractname}%
1458   \onehalfspacing
1459 }{%
1460   \clearpage
1461 }
```

Lastly, the Index, if used.

`theindex` Again, this is a section-level start, otherwise it uses the same format as the default. Possibly this should use the `multicol` package if people wanted balanced columns; but indexes are rare.

```
1462 \renewenvironment{theindex}{%
1463   \ifUCC@oneside\clearpage\else\cleardoublepage\fi
1464   \columnseprule \z@
1465   \columnsep 35\p@
1466   \twocolumn[\section*{\indexname}]%
1467   \@mkboth{\indexname}{\indexname}%
1468   \parindent\z@
1469   \parskip\z@ \@plus .3\p@\relax
1470   \let\item\@idxitem}%
1471 {\clearpage}
```

We should have a closer look at the `glossaries` package to see if there is anything there needs redefining.

9.10.3 Sectioning commands

Make sure that `\parts` and `\chapters` switch to Arabic numbering and the appropriate stretch, because all the prelims are Roman.

`\part` Same as the default, but with a switch to Arabic page numbering and wide spacing if this is the first Part (resets the page number to 1).

```
1472 \renewcommand\part{%
1473   \ifmadetitle\else\maketitle\fi
1474   \ifmadedecl\else\madedecl\fi
1475   \if@openright
1476     \cleardoublepage
1477   \else
1478     \clearpage
1479   \fi
1480   \thispagestyle{plain}%
1481   \if@twocolumn
1482     \onecolumn
1483     \@tempwattrue
1484   \else
1485     \@tempwafalse
1486   \fi
1487   \null\vfil
1488   \ifnum\c@part=0
1489     \pagenumbering{arabic}%
```

```

1490 \onehalfspacing
1491 \fi
1492 \secdef\@part\@spart}

```

`\maketitle` Same switch as in `\part`, checking that this is the first chapter and that we have not started an Appendix, *but only* if the Part number is also zero (ie Parts are not in use).

```

1493 \renewcommand{\chapter}{%
1494 \ifmadetitle\else\maketitle\fi
1495 \ifmadedecl\else\makedecl\fi
1496 \if@openright\cleardoublepage\else\clearpage\fi
1497 \thispagestyle{plain}%
1498 \global\@topnum\z@
1499 \ifnum\c@chapter=0
1500 \ifnum\c@part=0
1501 \ifthenelse{\equal{\@chapapp}{\chaptername}}%
1502 {\pagenumbering{arabic}\onehalfspacing}%
1503 {}%
1504 \fi
1505 \fi
1506 \@afterindentfalse
1507 \secdef\@chapter\@schapter}

```

9.10.4 Epigraphs and quotations

`\@opttest` To enable optional argument testing for the null string in Epigraphs (and later, in Quotations), we define a Plain T_EX macro which sets the `\ifoptarg` switch.

```

1508 \newif\ifoptarg
1509 \def\@opttest#1#2\sentinel{\ifx[#1\optargtrue
1510 \else\optargfalse\fi}

```

`epigraph` Define an environment for Epigraphs. These would normally go immediate after the `\chapter` command. This is basically the quotation environment modified, but it has to allow for *either* manual *or* automated citation (because it may just be a phrase needing no citation), whereas a normal quotation *must* be cited. It therefore has *two* arguments, described below:

```

1511 \newenvironment{epigraph}[2][\relax]{%

```

Record the argument values now, because they are needed in the end of the environment, so they have to pass across the group

boundary. The compulsory argument is for a Bib_T_EX citation key, so that a proper citation can be formatted; the optional argument is for when a pre-formed, ‘full’ (actually often simpler, non-rigorous) citation is wanted.

```
1512 \gdef\@fullcite{#1}%
1513 \gdef\@quotcite{#2}%
```

Like the default Quotation, this is done with a dummy list environment, but we add small italic type and no indentation.

```
1514 \list{}{%
1515   \listparindent 1.5em%
1516   \itemindent \listparindent
1517   \rightmargin \leftmargin
1518   \parsep \z@ \@plus\p@}%
1519 \item\relax\noindent\small\itshape\ignorespaces
1520 }{%
```

Unlike the [redefined] quotation environment, a citation is compulsory here, even if it’s the default ‘Anon.’ The Bib_T_EX citation can be empty if there was a manual one, otherwise it ought to be there.

```
1521 {\unskip\nobreak\hfil\penalty50
1522 \hskip2em\hbox{} \nobreak\hfil\upshape\footnotesize
```

If there is a manual citation (optional argument), use it before any Bib_T_EX one:

```
1523 \if\@fullcite\relax\else\@fullcite\fi
```

If the compulsory argument (Bib_T_EX key) was empty (ie, just a pair of curly braces) *and* there was no optional argument, print ‘Anon.’

```
1524 \ifthenelse{\equal{\@quotcite}{}}{%
1525 \if\@fullcite\relax(Anon.)\fi}%
```

Otherwise (compulsory argument was provided), test it to see if it contains an optional argument of its own (for example, a page number for a citation key), and \cite it accordingly.

```
1526 \expandafter\@opttest\@quotcite\sentinel
1527 \ifoptarg\expandafter\cite\@quotcite
1528 \else\cite{\@quotcite}\fi%
```

Now terminate the paragraph so that the citation is fitted in, using the same code from the memoir class as used for the quotation environment below.

```

1529 \parfillskip\z@\finalhyphendemerits=0\par}%
1530 \medskip
1531 \endlist\@afterheading}%

```

See the user-level documentation for examples.

The Quotation environment is redefined similarly.

`\quotation` Here, however, a citation should be compulsory, so there is only one argument: we define it as optional so that we can test for it. Any optional component to the citation key must, as with Epigraph, rely on the entire argument being inside its own set of curly braces.

```

1532 \newlength{\mainparskip}
1533 \newlength{\mainparindent}
1534 \renewenvironment{quotation}[1][\relax]{%
1535 \setlength{\mainparskip}{\parskip}%
1536 \setlength{\mainparindent}{\parindent}%
1537 \gdef\@quotcite{#1}%
1538 \smallskip
1539 \list{}{%
1540 \listparindent 1.5em%
1541 \itemindent \listparindent
1542 \rightmargin \leftmargin
1543 \parsep \z@ \@plus\p@}%
1544 \item\relax\small
1545 \setlength{\parindent}{\mainparindent}%
1546 \setlength{\parskip}{\mainparskip}%
1547 \noindent\ignorespaces
1548 }{%
1549 \if\@quotcite\relax\else{%

```

This positional code is taken from the `\sourceatright` command of the memoir class (thanks to Lee Rudolph and Robin Fairbairns for identifying this).

```

1550 \unskip\nobreak\hfil\penalty50
1551 \parfillskip\z@\finalhyphendemerits=0
1552 \hskip2em\hbox{}\nobreak\hfill
1553 \expandafter\@opttest\@quotcite\sentinel
1554 \ifoptarg\expandafter\cite\@quotcite
1555 \else\cite{\@quotcite}\fi\par}%
1556 \fi\medskip\endlist
1557 \@afterheading\noindent\ignorespaces}%

```

9.10.5 Odds 'n' sods

This is mostly fixes and utilities.

`\so` Specify tighter letter-spacing for the title page.

```
1558 \sodef\so{{.1em}{.5em plus.5em}{1em plus1em}}
```

Add more space around captions with the `\abovecaptionskip` and `\belowcaptionskip` commands.

```
1559 \setlength{\abovecaptionskip}{.5\baselineskip}
```

```
1560 \setlength{\belowcaptionskip}{.5\baselineskip}
```

`table` Restyle the Table float to have the caption on top.

```
1561 \floatstyle{plaintop}
```

```
1562 \restylefloat{table}
```

`figure` Restyle the Figure float to have the caption below.

```
1563 \floatstyle{plain}
```

```
1564 \restylefloat{figure}
```

`\@pnumwidth` Make more space for the page number in the ToC, LoT, and LoF.

```
1565 \renewcommand\@pnumwidth{2em}%
```

Define a few experimental utilities.

```
1566 \def\inch{\ifmmode{}^{\prime\prime}\else$
```

```
1567           {}^{\prime\prime}$\fi}
```

```
1568 \newcommand{\me}{\@author}
```

```
1569 \newcommand{\signature}[1][\relax]{%
```

```
1570   \begin{flushright}\small\me\
```

```
1571     \if#1\relax\else#1, \fi\@date
```

```
1572   \end{flushright}}
```

```
1573 \newcommand{\tm}{\raisebox{2pt}{%
```

```
1574     \scriptsize\textsf{\texttrademark}}}
```

```
1575 \newcommand{\etc}{etc.\ }
```

```
1576 \newcommand{\eg}{e.g.\ }
```

```
1577 \newcommand{\ie}{i.e.\ }
```

`\hyphenation` Add a few bells and whistles to the hyphenation.

```
1578 \hyphenation{%
```

```
1579 Regi-strar
```

```
1580 Sebas-tian
```

```

1581 analy-sis
1582 Analy-sis
1583 analy-ses
1584 Analy-ses
1585 bre-vi-ty
1586 chan-ges
1587 de-fi-ning
1588 docu-ment
1589 epex-e-ge-sis
1590 epex-e-ge-ses
1591 exa-mined
1592 helico-pter
1593 hier-ar-chy
1594 inter-linea-ted
1595 lexi-cal
1596 manu-script
1597 re-fe-ren-ces
1598 re-prin-ted
1599 smal-ler
1600 spe-ci-fy
1601 sub-con-sci-ous-ly
1602 tech-no-logy
1603 typo-gra-phy
1604 no-men-cla-ture
1605 }

```

`\foreign` Enable semantic distinction of foreign words and phrases.

```
1606 \let\foreign\emph
```

`\marginal` Define a new command for marginal notes.

```

1607 \newcommand{\marginal}[1]{%
1608   \marginpar{\sffamily\tiny\raggedright#1\par}}

```

`\bibliography` Add a trace to the log file to help in cutting the PDF to separate sections.

```

1609 \def\bibliography#1{%
1610   \if@filesw
1611     \immediate\write\@auxout{\string\bibdata{#1}}%
1612   \fi
1613   \typeout{\bibname\space.}%
1614   \@input@{\jobname.bbl}}

```

The new `\vstrut` command which takes account of the surrounding font size has been moved to the documentation.

Last of all, establish 1¹/₂ line-spacing and a ragged page-bottom.

```
1615 \raggedbottom
```

```
1616 \message{UCC thesis class loaded}
```

A Revised UCC Crest

This is the METAFONT crest written by Jeremy Gibbons for UCC in 1989, with the scroll commented out (look for the commented line saying `banner(j)`).

```
1617 %% METAFONT program to draw University College, Cork coat of arms.
1618 %%
1619 %% Jeremy Gibbons, Oxford University, October 1989
1620 %% Modified by JG (now at University of Auckland; jeremy@cs.aukuni.ac.nz)
1621 %%     September 1994, December 1994.
1622 %%
1623 %% There are now two "knobs" to adjust the appearance. One is called
1624 %% "pen_knob", the other "banner_gap_knob". Search through this file
1625 %% for the second occurrences of these strings, and play with the
1626 %% settings as much as you like!
1627
1628 designsize:=10pt#;
1629
1630 def !! = scantokens ("input " & jobname); enddef;
1631
1632 mode_setup;
1633
1634 u# := .2pt#; define_pixels(u);
1635 if unknown sections: sections := 1; fi
1636
1637 banner_gap_knob := 8;
1638   % Adjusting this affects the width of the gap between the top
1639   % of the banner and the bottom of the shield. A setting of 0
1640   % has them touching; a setting of 8 gives a gap of about 1mm
1641   % when the whole shield is about 3cm high. You can set it to
1642   % a floating-point number (eg 7.5).
1643
1644 total_width# := 170u#; total_height# := 210u#;
1645 total_depth# := (banner_gap_knob+1)*u#;
1646 section_width# := total_width#;
1647
1648 if sections > 1: % round so sections whole no of pixels wide
1649   % SURPRISE: makes crests at different resolutions have different widths!
1650   section_width# := (round((total_width#/sections)*hPPP)/hPPP;
1651   % should be a whole no of pixels
1652   total_width# := section_width# * sections;
1653 fi
1654
1655 define_pixels(section_width, total_width, total_height, total_depth);
1656 w := section_width; h := total_height; d := total_depth;
1657
1658 pen_knob := 1.5;
```

```

1659 % Adjusting this affects the width of the "detailpen" (used for the
1660 % castles, ship, book, lion and crowns). A setting of 1 was too fine
1661 % at high resolutions; it was set at 2 for the 1989 version of the coat
1662 % of arms. You can set it to a floating-point number (eg 1.5).
1663
1664 thickpenwidth#:=4u#;
1665 thinpenwidth#:=u#;
1666 detailpenwidth#:=pen_knob * .5u#;
1667 calligraphicpenwidth#:=u#;
1668 calligraphicpenheight#:=0.1u#;
1669 define_whole_blacker_pixels(thickpenwidth, thinpenwidth, detailpenwidth,
1670                             calligraphicpenwidth, calligraphicpenheight);
1671
1672 pickup pencircle scaled thickpenwidth; thickpen := savepen;
1673 pickup pencircle scaled thinpenwidth; thinpen := savepen;
1674 pickup pencircle scaled detailpenwidth; detailpen := savepen;
1675
1676 pickup pensquare
1677   xscaled calligraphicpenwidth yscaled calligraphicpenheight
1678   rotated 40; % a 'calligraphic' nib
1679 calligraphicpen := savepen;
1680
1681 pickup pencircle; draftpen := savepen;
1682 %% thickpen := draftpen; thinpen := draftpen;
1683 %% detailpen := draftpen; calligraphicpen := draftpen;
1684
1685 def drawbothsides (expr p) =
1686   draw p;
1687   draw (p reflectedabout axis);
1688 enddef;
1689
1690 def fillbothsides (expr p) =
1691   fill p;
1692   fill (p reflectedabout axis);
1693 enddef;
1694
1695 def crown(suffix $) =
1696   % (0,0) is centre of bottom edge of crown
1697
1698   def axis = ((0,0),up) enddef;
1699
1700   z0$ = (-12u,0); % left end of bottom edge
1701   z1$ = z0$ + 6u*up; % left end of top of 'band' on crown
1702   z2$ = (-11u,0); % lower end of left edge of band
1703   z3$ = z2$ + 6u*up; % upper end ditto
1704   z4$ = (-16u, 23u); % point of lefthand spike
1705   z5$ = (-9u, 13u); % trough between left and centreleft spikes
1706   z6$ = (-7u, 25u); % point of centreleft spike
1707   z7$ = (-3u, 15u); % trough between centreleft and centre spikes

```

```

1708 z8$ = (0, 26u); % point of centre spike
1709
1710 pickup detailpen;
1711 drawbothsides(z3$--z4$--z5$--z6$--z7$--z8$); % spiky bit
1712
1713 draw z0$ -- (z0$ reflectedabout axis); % bottom of band
1714 draw z1$ -- (z1$ reflectedabout axis); % top of band
1715
1716 drawbothsides(z2$--(z2$+2u*up)); % lower halves of edges of band
1717 drawbothsides(z3$--(z3$-2u*up)); % ... and upper halves
1718
1719 drawbothsides(unitsquare scaled 2u xscaled 2 shifted (z2$+(-2u,2u)));
1720 draw unitsquare scaled 2u xscaled 2 shifted (-2u,2u);
1721 % three rectangular jewels
1722 drawbothsides(fullcircle scaled 2u shifted ((.5[(0,0),z2$])+3u*up));
1723 % and two circular jewels
1724
1725 enddef;
1726
1727 def shield(suffix $) =
1728 z0$ = (.5total_width, 30u); % centre bottom
1729 z1$ = (50u, 37.5u); % ...
1730 z2$ = (3u, 85u); % up the left hand side
1731 z3$ = (13u, 147u); % ...
1732 z4$ = (3u, 188u); % top left (sw of diagonal line)
1733 z5$ = (22u, 207u); % top left (ne of diagonal line)
1734 z6$ = (52u, 200u); % ... across top ...
1735 z7$ = (.5total_width, 205u); % centre top
1736
1737 def axis = (z0$,z0$+total_height*up) enddef; % axis of symmetry of shield
1738
1739 path shieldleft;
1740 shieldleft = z0${dir 135}..z1${left}..z2${up}..z3${up}..{dir 135}
1741 z4$--z5$
1742 {dir -30}..z6${right};
1743
1744 % y8$ = 138u; z8$ = shieldleft intersectionpoint ((0,y8$)--(total_width,y8$));
1745 z8$ = shieldleft intersectionpoint ((0,138u)--(total_width,138u));
1746 % left edge of horiz dividing line
1747 y9$ = 134u; x9$=x0$; % top of gap for book in vert dividing line
1748 y10$ = 103u; x10$=x0$; % bottom of gap ...
1749
1750 pickup thickpen;
1751 draw ( shieldleft .. z7$ .. (reverse shieldleft reflectedabout axis) );
1752
1753 draw z8$ -- (z8$ reflectedabout axis); % horiz dividing line
1754 draw (.5[z8$,z8$ reflectedabout axis]--z9$; % top of vert dividing line
1755 draw z10$ -- z0$; % ... and bottom
1756

```

```

1757 enddef;
1758
1759 def book(suffix $) =
1760   z0$ = (0,0); % centre of base of spine
1761
1762   def axis = (z0$, z0$ + up) enddef; % up the spine
1763
1764   z1$ = (-2.5u,0); % left edge of ellipse at base of spine
1765   z2$ = (-20u,0); % bottom left hand corner of cover
1766   z3$ = (-19u,19u); % top left corner of cover
1767   y5$ = 18u; z5$ = whatever[z2$,z3$];
1768   % top left corner of page 1
1769   z6$ = z2$ + (4u*(up+right)); % bottom left corner of lefthand open page
1770   z7$ = z5$ + (z6$-z2$); % ... and top left
1771   z8$ = (-6u, 4u); % centre of bottom edge of lh open page
1772   z9$ = (0, 1.5u); % bottom right of lh open page
1773
1774   path bottomleftofpages; bottomleftofpages = z2${dir 40}..z6${dir 60};
1775   y4$=y3$;
1776   z4$ = (bottomleftofpages shifted (z5$-z2$))
1777   intersectionpoint (z3$--(z3$ reflectedabout axis));
1778   % where top of book cover goes behind pages
1779
1780   y10$ = 4u; z10$ = whatever[z2$,z3$]; % lower left flap
1781   y11$ = y10$; x11$ = -29u;
1782   y12$ = y11$ + 4u; z12$=z11$+whatever*(z3$-z2$);
1783   y13$ = y12$; z13$ = whatever[z2$,z3$];
1784
1785   y14$ = 12u; z14$ = whatever[z2$,z3$]; % upper left flap
1786   y15$ = y14$; z15$ = whatever[z11$,z12$]; % z15--z16 in line with z11--z12
1787   y16$ = y15$+(y12$-y11$); z16$ = whatever[z11$,z12$];
1788   y17$ = y16$; z17$ = whatever[z2$,z3$];
1789
1790   z18$ = z11$ + 3u*right; z19$=z18$+(z12$-z11$);
1791   % vert line on lower flap
1792
1793   z21$ = z20$+(z8$-z9$); % middle of top of left open page
1794   z20$ = z9$+(0,y7$-y6$); % top of spine
1795
1796   pickup detailpen;
1797
1798   drawbothsides(z1$--z2$--z3$--z4$); % cover
1799   drawbothsides(bottomleftofpages);
1800   drawbothsides((bottomleftofpages shifted (z5$-z2$))); % top of pages
1801   drawbothsides(z9${dir 135}..z8${left}..z6${dir 150});
1802   drawbothsides(z20${dir 135}..z21${left}..z7${dir 150}); % top of open page
1803   drawbothsides(z6$--z7$); % outside edge of open page
1804   drawbothsides(z10$--z11$--z12$--z13$); % lower flap
1805   drawbothsides(z14$--z15$--z16$--z17$); % upper flap

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1806 fillbothsides(unitsquare scaled u shifted .5[z18$,z19$] shifted
1807 (u*left+.5u*down));
1808 % catch on lower flap
1809 fillbothsides(unitsquare scaled u shifted .5[z18$,z19$]
1810 shifted (u*left+.5u*down) shifted (z15$-z11$));
1811 % catch on upper flap
1812
1813 draw fullcircle xscaled 5u yscaled 3u; % ellipse at base of spine
1814 draw z9$--z20$; % spine
1815 draw z18$--z19$; % vert line on lower flap
1816 draw (z18$--z19$) shifted (z15$-z11$); % ... and on upper flap
1817
1818 enddef;
1819
1820 def castle (suffix $) =
1821 z0$ = (0,0);
1822
1823 def axis = (z0$, z0$ + up) enddef; % up the middle
1824
1825 z1$ = (0, 6u); % top of doorway
1826 z17$ = (-2u,4u); % bottom left of door archway
1827 z2$ = (-2u,0); % bottom left of doorway
1828 z3$ = (-9u, 0); % bottom left
1829 z4$ = z3$ + 7u*up; % left bottom of band round castle
1830 z5$ = z4$ + 6u*right; % end of band
1831 z7$ = z4$ + (-2u,2u); % left edge of band
1832 z8$ = z4$ + 4u*up; % left top of band
1833 z9$ = (-7u,33u); % top of body
1834 z10$ = z9$ + (-u,2u); % bottom of battlements
1835 z11$ = z10$ + u*left; % bottom left of battlements
1836 z12$ = z11$ + (-2u,6u); % top left
1837 z13$ = z12$ + 4u*right; % top right of lh battlement
1838 z14$ = z13$ + (u,-3u); % bottom left of lh gap
1839 z15$ = z14$ + 3u*right; % bottom right
1840 z16$ = z15$ + 3u*up; % top left of middle battlement
1841
1842 pickup detailpen;
1843
1844 drawbothsides(z1${left}..{down}z17$--z2$--z3$--z4$); % lower floor
1845 drawbothsides(z5$--z4$..z7$..z8${right});
1846 draw z8$--(z8$ reflectedabout axis); % band
1847 drawbothsides(z8$--z9$--z10$); % upper floor
1848 draw z9$--(z9$ reflectedabout axis); % top of top floor
1849 drawbothsides(z11$--z12$--z13$--z14$--z15$--z16$); % battlements
1850 draw z11$--(z11$ reflectedabout axis); % bottom of battlements
1851 draw z16$--(z16$ reflectedabout axis); % top of middle battlement
1852
1853 drawbothsides(unitsquare scaled 3u yscaled 2.5 shifted (-5u,14u));
1854 % lower windows

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1855 draw unitsquare scaled 3u yscaled 2.5 shifted (-1.5u,24u); % upper window
1856
1857 enddef;
1858
1859 def ship (suffix $) =
1860   z0$ = (0,0);
1861
1862   def axis = (z0$, z0$ + up) enddef; % up the middle
1863
1864   z1$ = (-22u,9u); % front of the hull
1865   z2$ = (-10u, 0); % front of the keel
1866   z3$ = (10u, 0); % back of the keel
1867   z4$ = (14u, u); % further back on the keel
1868   z5$ = (16u, 10u); % back of the hull
1869   z6$ = z1$ + 2u*right;
1870   z7$ = (-7u, 2u); % lower deck
1871   z8$ = (5u, 2u);
1872   x9$ = x1$; y9$ = y10$;
1873   z10$ = (-25u, 11u); % bottom of bowsprit
1874   z11$ = z10$ + 2u*up; % top deck...
1875   z12$ = z11$ + 15u*right;
1876   z13$ = z12$ + (4u,-3u);
1877   z14$ = z13$ + 13u*right;
1878   z15$ = z14$ + (4u,3u);
1879   z16$ = z15$ + 10u*right;
1880   x17$=x16$; y17$=y5$;
1881   z18$ = z17$ + (-13u,-2u);
1882   z19$ = z18$ + 15u*left;
1883   x20$ = x19$ - 9u; y20$=y10$;
1884
1885   z29$ = (-15u,23u);
1886   z30$ = z29$ + (28u,14u); % ``crossbar`` for sail
1887   z25$ = .05[z29$,z30$];
1888   z26$ = .15[z29$,z30$] + (2u,-2u);
1889   z27$ = .75[z29$,z30$] + (2u,-2u);
1890   z28$ = .95[z29$,z30$];
1891   path lsail, msail, rsail; % three parts of sail
1892   rsail = z27${dir -45}..{(z30$-z29$) rotated 90}z28$;
1893   msail = z26${dir -45}..tension 1.4..(point .25 of rsail);
1894   lsail = z25${(z30$-z29$) rotated -90}..(point .08 of msail);
1895
1896   x21$ = -u; y21$ = y13$; % bottom left of mast
1897   x23$ = u; y23$ = y21$; % bottom right
1898   x22$ = -.5u; z22$ = ((x22$,0)--(x22$,h)) intersectionpoint msail; % top left
1899   x24$ = .5u; z24$ = ((x24$,0)--(x24$,h)) intersectionpoint msail; % top right
1900
1901   x31$ = 0; z31$ = whatever[z29$,z30$];
1902   z32$ = z31$ + 10u*up; % flagpole
1903   z33$ = .7[z31$,z32$] + 10u*left; % tip of flag

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1904
1905 pickup detailpen;
1906
1907 draw z1${right}..{right}z2$--z3${right}..z4$; draw z4${up}..z5$; % keel
1908 draw z9$--z1$--z6${right}..{right}z7$--z8${right}..z5$; % lower deck
1909 draw z10$--z11$--z12${right}..{right}z13$--z14${right}..z15$--z16$--
1910     z17$--z5${left}..{left}z18$--z19${left}..{left}z20$-- cycle; % top deck
1911
1912 def oar (expr p) =
1913     draw (p+1.5u*left){dir 60}..{dir -60}(p+1.5u*right);
1914     draw p--(p+(5u,-9u));
1915 enddef;
1916
1917 oar((-8u,5u));
1918 oar((-3u,5u));
1919 oar((2u,5u));
1920 oar((7u,5u));
1921
1922 draw z21$--z22$; draw z23$--z24$; % mast
1923
1924 draw lsail; draw msail; draw rsail;
1925 draw z29$--z30$; % 'crossbar' for mast
1926
1927 draw z31$--z32$; % flagpole
1928 draw (.2[z31$,z32$]){dir 120}..z33${dir 120};
1929 draw (.8[z31$,z32$]){dir 135}..z33${dir 135}; % flag
1930 enddef;
1931
1932 def lion (suffix $) =
1933     path lowermanea, lowermaneb, lowermanec;
1934     lowermaneb = flex( (5u, 28u), (3u, 26u), (3u, 23u) ) &
1935         flex( (3u, 23u), (4u, 24u), (5u, 24u), (7u, 26u) ) &
1936         flex( (7u, 26u), (6u, 24u), (7u, 22u) ) &
1937         flex( (7u, 22u), (8u, 24u), (9u, 24u) ) &
1938         flex( (9u, 24u), (7.5u, 21u), (8u, 19u) ) &
1939         flex( (8u, 19u), (10u, 21u), (12u, 22u) );
1940     lowermanea = flex( (4u, 33u), (2u, 31u), (2u, 30u), (u, 29u) ) &
1941         flex( (u, 29u), (2u, 28u), (4u, 29u) ) &
1942         flex( (4u, 29u), (3u, 27u), (point .8 of lowermaneb) );
1943     lowermanec = flex( (14u, 23u), (13u, 20u), (14u, 17u) ) &
1944         flex( (14u, 17u), (15u, 19u), (18u, 21u), (18u, 23u) ) &
1945         flex( (18u, 23u), (19u, 21u), (20u, 21u), (21u, 20u) ) &
1946         flex( (21u, 20u), (20u, 22u), (22u, 24u), (20u, 26u) ) &
1947         flex( (20u, 26u), (21u, 25.5u), (23u, 26.5u), (25u, 26u) ) &
1948         flex( (25u, 26u), (24u, 27u), (23u, 29.5u), (22u, 30u) ) &
1949         flex( (22u, 30u), (23u, 30u), (24u, 31.5u), (25u, 31u) ) &
1950         flex( (25u, 31u), (24.5u, 31.5u), (24u, 33u), (22u, 33u) ) &
1951         flex( (22u, 33u), (24u, 34u), (26u, 36u), (27u, 36u) ) &
1952         flex( (27u, 36u), (24u, 36.5u), (23u, 38u) );

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1953
1954 path uppermane, rightear;
1955 rightear = (20u, 45u) -- (21.5u, 46.5u) --
1956     flex( (21u, 44u), (23u, 44.5u), (25u, 42.5u), (26u, 42.5u) ) &
1957     flex( (26u, 42.5u), (24u, 42u), (22u, 40u), (20u, 41u) );
1958 uppermane = (6u, 45u) -- (4u, 46u) --
1959     flex( (5u, 44u), (4u, 44u), (0, 43u) ) &
1960     flex( (0, 43u), (2u, 41u), (3u, 39u), (5u, 39u) ) &
1961     flex( (5u, 39u), (3u, 37u), (3u, 34u) ) &
1962     flex( (3u, 34u), (4.5u, 36u), (5u, 35.5u) ) &
1963     flex( (5u, 35.5u), (4u, 33u), (5u, 30u) ) &
1964     flex( (5u, 30u), (6u, 31.5u), (7u, 32u) ) &
1965     flex( (7u, 32u), (7u, 30u), (8u, 26u) ) &
1966     flex( (8u, 26u), (8.5u, 28u), (10u, 30u) ) &
1967     flex( (10u, 30u), (10u, 28u), (11u, 27u), (11u, 26u) ) &
1968     flex( (11u, 26u), (12u, 28u), (14u, 28u), (14u, 30u) ) &
1969     flex( (14u, 30u), (15u, 28.5u), (14u, 27u) ) &
1970     flex( (14u, 27u), (16u, 28.5u), (17u, 31u) ) &
1971     flex( (17u, 31u), (18u, 30u), (18u, 29u) ) &
1972     flex( (18u, 29u), (19u, 32u), (18u, 34u) ) &
1973     flex( (18u, 34u), (19.5u, 33u), (20u, 32u) ) &
1974     flex( (20u, 32u), (20u, 35u), (19u, 36u) ) &
1975     flex( (19u, 36u), (21u, 36u), (23u, 35u) ) &
1976     flex( (23u, 35u), (23u, 36u), (21u, 38u), point 7 of rightear );
1977
1978 path leftfrontleg;
1979 leftfrontleg =
1980     flex( point 2.8 of lowermanec, (19u, 12u), (20u, 6u) ) &
1981     flex( (20u, 6u), (18u, 4.5u), (14u, 4.5u), (16u, 3u) ) &
1982     flex( (16u, 3u), (16u, u), (19u, 3u) ) &
1983     flex( (19u, 3u), (20u, .5u), (22u, 2u), (24u, 2u), (24u, 6u), (26u, 7u) ) &
1984     flex( (26u, 7u), (25u, 7.5u), (24u, 7u) ) &
1985     flex( (24u, 7u), (24.5u, 8u), (26u, 9u) ) &
1986     flex( (26u, 9u), (25u, 10u), (23u, 11u) ) &
1987     flex( (23u, 11u), (25u, 11.5u), (26u, 11u) ) &
1988     flex( (26u, 11u), (23u, 15u), (25u, 18u) ) &
1989     flex( (25u, 18u), (23u, 19u), (23u, 21u) );
1990
1991 path rightfrontmidtoe;
1992 rightfrontmidtoe = flex( (5u, 4u), (3u, 5u), (2u, 2u) ) ... {right}(6u, 3u);
1993
1994 path rightfrontlega, rightfrontlegb;
1995 rightfrontlega =
1996     flex( point 12.5 of lowermaneb, (10u, 10u), (6u, 7u) ) &
1997     flex( (6u, 7u), (2u, 7u), point 1 of rightfrontmidtoe );
1998 rightfrontlegb =
1999     flex( (6u, 3u), (6u, 0), (9u, 3u), (11u, 2u), (12u, 6u), (13u, 5u) ) &
2000     flex( (13u, 5u), (13.5u, 6.5u), (13u, 8u) ) &
2001     flex( (13u, 8u), (14u, 8.5u), (16u, 7.5u) ) &

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2002     flex( (16u, 7.5u), (16u, 9u), (15u, 11u) ) &
2003     flex( (15u, 11u), (16u, 11u), (17u, 10u) ) &
2004     flex( (17u, 10u), (16.5u, 11.5u), point .6 of leftfrontleg );
2005
2006     path riba, ribb, ribc, ribd;
2007     riba = flex( point 21.7 of leftfrontleg, (26u, 18u), (27u, 21u) );
2008     ribb = flex( point .7 of riba, (28u, 18u), (30u, 21u) );
2009     ribc = flex( point .5 of ribb, (31u, 19u), (33u, 22u) );
2010     ribd = flex( point .7 of ribc, (33u, 18.5u), (36u, 21u), (39u, 22u) );
2011
2012     path leftrearlega, leftrearlegb;
2013     leftrearlegb =
2014         flex( (58u, 3u), (58u, u), (59u, 2u), (63u, 2u), (64u, 6u), (66u, 7u) ) &
2015         flex( (66u, 7u), (64u, 9u), (66u, 11u) ) &
2016         flex( (66u, 11u), (64u, 12u), (66u, 13u) ) &
2017         flex( (66u, 13u), (64u, 14u), (62u, 13u) ) &
2018         flex( (62u, 13u), (61u, 15u), (62u, 17u) ) &
2019         flex( (62u, 17u), (60.5u, 16u), (60u, 14u) ) &
2020         flex( (60u, 14u), (56.5u, 17u), (55u, 26u), (52u, 26u) );
2021     leftrearlega =
2022         flex( (38u, 24u), (45u, 18u), (43u, 14u) )
2023         --(47.5u, 16u)--(47u, 14u)--
2024         flex( (49u, 15u), (49u, 13u), (50u, 11u) ) --
2025         flex( (50u, 15u), (52u, 13u), (55u, 12u) ) ..
2026         flex( (60u, 8u), (59u, 7u), (55u, 7u), (56u, 5u) ) &
2027         flex( (56u, 5u), (54.5u, 3.5u), point .45 of leftrearlegb );
2028
2029     path rightrearleg;
2030     rightrearleg =
2031         (point 1.6 of ribd) --
2032         flex( (35u, 17u), (33.5u, 15u), (33.5u, 13.5u) ) &
2033         flex( (33.5u, 13.5u), (35u, 15.5u), (36u, 16u) ) &
2034         flex( (36u, 16u), (35u, 14u), (36u, 12u) ) &
2035         flex( (36u, 12u), (36u, 13u), (37u, 15u) ) &
2036         flex( (37u, 15u), (42u, 10u), (39u, 6u) ) ..
2037         flex( (36u, 7u), (34u, 6u), (36u, 4.5u) ) &
2038         flex( (36u, 4.5u), (33u, 4.5u), (35u, 3u) ) &
2039         flex( (35u, 3u), (35u, -.5u), (38u, 2u), (39u, u), (43u, 3u), (43u, u) )
2040     & flex( (43u, u), (44u, 2u), (45u, 5u) )
2041         -- (46u, 3u) -- (46u, 6u) --
2042         flex( (49u, 5u), (47u, 8u), (49u, 11u) ) &
2043         flex( (49u, 11u), (46u, 12u), point 2.6 of leftrearlega );
2044
2045     def axis = ((13u,0), (13u,1)) enddef;
2046
2047     pickup detailpen;
2048
2049     % Head:
2050     draw lowermanea; draw lowermaneb; draw lowermanec;

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2051 draw flex( (19u, 25u), (20u, 24.5u), (20.5u, 24u) );
2052 %
2053 draw uppermane; draw flex( (4u, 41u), (5u, 42u), (2u, 42u) );
2054 draw rightear; draw flex( (21u, 42u), (21u, 43u), (23u, 43u) );
2055 %
2056 draw flex( (6u, 41u), (6u, 39u), (7u, 38u), (7u, 36u) ); % cheeks
2057 draw flex( (19u, 40u), (19.5u, 39u), (18u, 37u), (18.5u, 36u) );
2058 %
2059 drawbothsides( flex( (6u, 43u), (8u, 42u), (10u, 42.5u), (12u, 41u) )
2060 & flex( (12u, 41u), (11u, 41u), (8u, 40.5u), (7u, 42u) ) );
2061 drawbothsides( fullcircle scaled u shifted (9.5u,41.25u) ); % eyes
2062 %
2063 draw (13u,42u)--(13u,43u); % line on forehead
2064 %
2065 draw (10u, 39u){dir -120}..(13u, 36u){right}..{dir 120}(16u, 39u);
2066 draw flex( (12u, 39u), (13u, 37.5u), (14u, 39u) ); % nose
2067 %
2068 path tongue; tongue = flex( (11.5u,36u), (11.5u, 35u), (13u, 31u) );
2069 drawbothsides( flex( (10u, 37u), (10.5u, 35u), point 1.5 of tongue ) );
2070 drawbothsides( tongue );
2071 draw (13u, 36u)--(13u, 35u); % mouth
2072 %
2073 % drawbothsides( (11u, 34u)--(8.5u, 35u) );
2074 % drawbothsides( (11u, 33u)--(9u, 32u) ); % whiskers?
2075
2076
2077 % Crown:
2078 draw (7u,44u)--((7u,44u) reflectedabout axis); % band
2079 drawbothsides (unitsquare scaled u xscaled 2 shifted (6.5u, 45u));
2080 drawbothsides (fullcircle scaled u shifted (10u, 45.5u));
2081 draw unitsquare scaled u xscaled 2 shifted (12u, 45u);
2082 draw (7u,47u)--((7u,47u) reflectedabout axis);
2083 %
2084 drawbothsides((7u,47u)--(4u,50u)--
2085 flex( (6u,49u), (5u,50.5u), (6u, 51u) ) &
2086 flex( (6u, 51u), (5.5u, 52.5u), (7u, 52u) ) &
2087 flex( (7u, 52u), (7.25u, 53.5u), (8.5u, 53u) ) &
2088 flex( (8.5u, 53u), (9.75u, 54u), (11u, 53u) ));
2089 drawbothsides(flex( (7u, 49u), (8u, 52u), (12u, 51u) ));
2090 %
2091 draw fullcircle scaled 2u shifted (13u, 52u);
2092 draw unitsquare scaled 2u yscaled .7 shifted (12u,49u);
2093 draw unitsquare scaled u xscaled 4 shifted (11u, 48u);
2094 path partofjewel;
2095 partofjewel = flex( (12.5u, 55u), (13u, 53u), (13.5u, 55u) );
2096 partofjewel := partofjewel--(partofjewel rotatedaround ((13u, 55.5u), 90));
2097 draw partofjewel--(partofjewel rotatedaround ((13u, 55.5u), 180));
2098 drawbothsides(unitsquare scaled u rotated 45 yscaled 1.5 shifted (9u,48u));
2099

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```

2100 % draw leftfrontleg;
2101 draw subpath (0,4+xpart ((subpath(4,5-eps) of leftfrontleg)
2102             intersectiontimes
2103             (subpath(5+eps,6) of leftfrontleg)))
2104     of leftfrontleg;
2105 draw subpath (5,6+xpart ((subpath(6,7-eps) of leftfrontleg)
2106             intersectiontimes
2107             (subpath(7+eps,8) of leftfrontleg)))
2108     of leftfrontleg;
2109 draw subpath (7,infinity) of leftfrontleg;
2110 draw flex( point 4.3 of leftfrontleg, (12u, 2u), (12.5u, .5u) ) &
2111     flex( (12.5u, .5u), (13u, 2u), point 4.6 of leftfrontleg );
2112 draw flex( point 5.5 of leftfrontleg, (14u, .5u), (15u, -.5u) ) &
2113     flex( (15u, -.5u), (15u, .5u), point 6 of leftfrontleg );
2114 draw flex( point 7.5 of leftfrontleg, (17u, 0u), (18u, -u) ) &
2115     flex( (18u, -u), (18u, -0u), point 7.8 of leftfrontleg );
2116
2117 draw rightfrontlega;
2118 draw subpath (0,xpart (rightfrontmidtoe intersectiontimes
2119             (subpath (eps,infinity) of rightfrontlegb)))
2120     of rightfrontmidtoe;
2121 draw rightfrontlegb;
2122 draw flex( point 3 of rightfrontlega, (.3u, 6u), (0,4u) ) &
2123     flex( (0,4u), (u, 5u), point 3.5 of rightfrontlega );
2124 draw flex( point 1.4 of rightfrontmidtoe, (0.3u, 2.2u), (0u, .5u) ) &
2125     flex( (0u, .5u), (.7u, 1.8u), point 2 of rightfrontmidtoe );
2126 draw flex( point .5 of rightfrontlegb, (3u, u), (3u, -u) ) &
2127     flex( (3u, -u), (4u, 0), point .8 of rightfrontlegb );
2128
2129 draw riba; draw ribb; draw ribc; draw ribd;
2130
2131 draw leftrearlega; draw leftrearlegb;
2132 draw flex( point 13 of leftrearlega, (53.5u, 7.5u), (52u, 6u) ) &
2133     flex( (52u, 6u), (53u, 6.5u), point 13.7 of leftrearlega );
2134 draw flex( point 14.7 of leftrearlega, (53u, 4u), (51u, 2u) ) &
2135     flex( (51u, 2u), (53u, 3u), point 15.3 of leftrearlega );
2136 draw flex( point .5 of leftrearlegb, (55u, 2u), (54u, -u) ) &
2137     flex( (54u, -u), (54.5u, 0), point .8 of leftrearlegb );
2138
2139 draw subpath (0,13+xpart ((subpath(13,14-eps) of rightrearleg)
2140             intersectiontimes
2141             (subpath(14+eps,15) of rightrearleg)))
2142     of rightrearleg;
2143 draw subpath (14,15+xpart ((subpath(15,16-eps) of rightrearleg)
2144             intersectiontimes
2145             (subpath(16+eps,17) of rightrearleg)))
2146     of rightrearleg;
2147 draw subpath (16,infinity) of rightrearleg;
2148

```

```

2149 draw flex( point 12.4 of rightrearleg, (33u, 8u), (32u, 6u) ) &
2150 flex( (32u, 6u), (33u, 7u), point 13.2 of rightrearleg );
2151 draw flex( point 14.9 of rightrearleg, (31u, 4u), (30u, 2u) ) &
2152 flex( (30u, 2u), (31u, 3u), point 15.4 of rightrearleg );
2153 draw flex( point 16.3 of rightrearleg, (32u, u), (31u, -u) ) &
2154 flex( (31u, -u), (32u, 0), point 16.6 of rightrearleg );
2155
2156 draw flex( (52u, 26u), (54u, 27u), (56u, 27.5u), (59u, 29u) ) ..
2157 flex( (59u, 38u), (51u, 39u), (49u, 42u) ) &
2158 flex( (49u, 42u), (48u, 40u), (49u, 38u) ) &
2159 flex( (49u, 38u), (46u, 40u), (45u, 43u) ) &
2160 flex( (45u, 43u), (43.5u, 40.5u), (45u, 39u) ) &
2161 (45u, 39u){left}..(33u, 43u){up}..{dir -45}(43u, 43u) &
2162 flex( (43u, 43u), (43u, 44u), (42u, 46u) ) &
2163 flex( (42u, 46u), (48u, 44u), (53u, 48u) ) &
2164 flex( (53u, 48u), (50u, 46.5u), (47u, 47.5u), (45u, 47u) ) &
2165 flex( (45u, 47u), (47u, 48u), (48u, 50u) ) &
2166 flex( (48u, 50u), (46u, 49u), (41u, 50u), (39u, 49u) ) &
2167 flex( (39u, 49u), (40u, 51u), (37u, 52u) ) &
2168 flex( (37u, 52u), (37u, 50u), (31u, 46u), (30u, 43u) )
2169 {down}..{right}(43u, 37u) &
2170 flex( (43u, 37u), (42.5u, 35.5u), (43u, 34u) ) &
2171 flex( (43u, 34u), (44u, 36u), (47u, 37u) ) &
2172 flex( (47u, 37u), (47u, 35u), (50u, 33u) ) &
2173 flex( (50u, 33u), (49u, 35u), (51u, 37u) ) &
2174 flex( (51u, 37u), (51u, 36u), (52u, 34u) ) &
2175 flex( (52u, 34u), (56u, 37u), (59u, 33u) )
2176 {down}..{left}(53u, 31u)..{left}(44u, 32u)..{left}(34u, 31u)..
2177 point 24.5 of lowermanec; % tail and back
2178 enddef;
2179
2180 def banner(suffix $) =
2181 def axis = ((.5total_width, 0), (.5total_width,0)+up) enddef;
2182
2183 path upperedge, loweredge;
2184 upperedge =
2185 ((15u, 49u){curl 0}..tension 2..(7u, 52u)..tension 4..(43u, 32u)
2186 ..tension 4..(10u, 30u)..tension 4 and 1..{right}(.5total_width, 15u))
2187 shifted (banner_gap_knob * u*down);
2188 loweredge =
2189 (( 9u, 39u){curl 0}..tension 2.. (u, 42u)..tension 4..(39u, 21u)
2190 ..tension 4..( 6u, 19u)..tension 4 and 1..{right}(.5total_width, u))
2191 shifted (banner_gap_knob * u*down);
2192
2193 pair intersectA, intersectB;
2194 intersectA = ((subpath (1,2) of loweredge) intersectiontimes
2195 (subpath (2,3) of upperedge)) + (1,2);
2196 intersectB = ((subpath (2,3) of loweredge) intersectiontimes
2197 (subpath (3,4) of upperedge)) + (2,3);

```

```

2198
2199 pickup thinpen;
2200 drawbothsides (((point 0 of loweredge)--(point 0 of upperedge))
2201   intersectionpoint (subpath (1,infinity) of upperedge))
2202   -- point 0 of upperedge);
2203 drawbothsides (subpath (0,2) of upperedge);
2204 drawbothsides (subpath (ypart intersectA,4) of upperedge);
2205 drawbothsides (subpath (1,xpart intersectB) of loweredge);
2206 drawbothsides (subpath (3.06,4) of loweredge);
2207
2208 def dent (expr za,zb,delta) =
2209   (.5[za,zb] + delta * (unitvector(zb-za) rotated 90))
2210 enddef;
2211
2212 def wiggle (expr p,q,delta) =
2213   (subpath (length p,2+length p) of
2214     (p...dent(point (length p) of p, point 0 of q,delta)...q))
2215 enddef;
2216
2217 drawbothsides
2218   (wiggle ((subpath (0,1) of upperedge),(subpath (1,2) of loweredge),.5u));
2219 drawbothsides
2220   (wiggle ((subpath (1,2) of upperedge),(subpath (2,3) of loweredge),-.5u));
2221 drawbothsides
2222   (wiggle ((subpath (2,3.06) of upperedge),(subpath (3.06,4) of loweredge),.5u));
2223
2224 def diagfoot(expr base, dirn) =
2225   draw base+u*left -- base+.5u*right;
2226   draw base+u*left{right}..{dirn}base+u*dir angle dirn;
2227 enddef;
2228
2229 def foot(expr base) =
2230   diagfoot(base, up);
2231 enddef;
2232
2233 def diaghook(expr topofstem, dirn) =
2234   draw topofstem-u*dir 30 -- topofstem;
2235   draw topofstem-u*dir 30{dir 30}..{dirn}topofstem+u*dir angle dirn;
2236 enddef;
2237
2238 def hook(expr topofstem) =
2239   diaghook(topofstem, down);
2240 enddef;
2241
2242 def vertstem(expr base) = % for F, I, H, R
2243   foot(base);
2244   draw base -- base+lh*up;
2245   hook(base+lh*up);
2246 enddef;

```

```

2247
2248 def crossbar(expr leftend, straightlength) =
2249     draw leftend -- leftend+straightlength*right {right}
2250     ..{dir 30}leftend+(straightlength+u)*right + .5u*dir 45;
2251 enddef;
2252
2253 def upperbowl(expr bl, midht) = % for B, R
2254     draw bl+.8lh*up{dir 30} .. bl+lh*up+2u*right ..
2255     bl+(midht+u)*up+3u*right..{left}bl+midht*up;
2256 enddef;
2257
2258 def SEdiagwithtail(expr nw, se) = % eg R
2259     draw nw{se+.5u*left-nw} .. se .. se+.3u*dir 45;
2260 enddef;
2261
2262 def SEdiagwithtwotails(expr nw, se) = % eg A, N
2263     draw nw+u*-dir 30 .. nw
2264     ... {se+.5u*left-(nw+.5u*right)}.5[nw,se] ...
2265     se .. se+u*dir 30;
2266 enddef;
2267
2268 numeric letterspacing; letterspacing = 2.6u;
2269
2270 def letter (expr c) =
2271     % this big case statement is a bit grotty, but a better way doesn't
2272     % spring to mind...
2273     if c = ASCII "A":
2274         SEdiagwithtwotails(lh*up+2u*right, 5u*right);
2275         draw (0,0)--lh*up+2u*right;
2276         diagfoot((0,0),lh*up+2u*right);
2277         crossbar(.4[(0,0),lh*up+2u*right], 2.5u);
2278         width(letterspacing+5u);
2279
2280     elseif c = ASCII "B":
2281         vertstem((0,0));
2282         upperbowl((0,0), .5lh);
2283         draw .5lh*up{right} .. .2lh*up+3.5u*right .. {left}(0,0);
2284         width(letterspacing+3u);
2285
2286     elseif c = ASCII "E":
2287         crossbar((0,0), 2u);
2288         vertstem((0,0)); % next four lines same as an "F"
2289         crossbar(.5lh*up, u);
2290         draw .8lh*up{dir 30} .. lh*up+2u*right .. .8lh*up+3u*right;
2291         width(letterspacing+3u);
2292
2293     elseif c = ASCII "F":
2294         vertstem((0,0));
2295         crossbar(.5lh*up, u);

```

```

2296     draw .8lh*up{dir 30} .. lh*up+2u*right .. .8lh*up+3u*right;
2297     width(letterspacing+3u);
2298
2299     elseif c = ASCII "G":
2300     draw 4u*right+(lh-u)*up .. 3u*right+lh*up ..
2301         .5lh*up .. 2u*right .. {up}4u*right+.5lh*up;
2302     draw 4u*right -- 4u*right+.5lh*up -- 3u*right+.5lh*up;
2303     width(letterspacing+4u);
2304
2305     elseif c = ASCII "H":
2306     vertstem((0,0));
2307     vertstem(3.5u*right);
2308     crossbar(.5lh*up, 3u);
2309     width(letterspacing+3.5u);
2310
2311     elseif c = ASCII "I":
2312     vertstem((0,0));
2313     width(letterspacing+u);
2314
2315     elseif c = ASCII "L":
2316     vertstem((0,0));
2317     crossbar((0,0), 2u);
2318     width(letterspacing+3u);
2319
2320     elseif c = ASCII "M":
2321     diagfoot((0,0), lh*up+.5u*right);
2322     draw (0,0) -- lh*up+.5u*right;
2323     SEdiagwithtwotails(lh*up+.5u*right, 3.5u*right);
2324     draw 3u*right+.5u*up -- 5u*right+lh*up -- 6u*right+lh*up;
2325     draw 5u*right+lh*up -- 6u*right;
2326     diagfoot(6u*right, lh*up-u*right);
2327     width(letterspacing+6u);
2328
2329     elseif c = ASCII "N":
2330     foot((0,0));
2331     draw (0,0)--.85lh*up;
2332     SEdiagwithtwotails(lh*up+u*left, 4u*right);
2333     draw 4u*right -- 4u*right+.8lh*up ..
2334         3u*right+lh*up{left} -- 3u*right+lh*up+u*--dir 60;
2335     width(letterspacing+4u);
2336
2337     elseif c = ASCII "R":
2338     vertstem((0,0));
2339     upperbowl((0,0), .4lh);
2340     SEdiagwithtail(.4lh*up+u*right, 4u*right);
2341     width(letterspacing+3.5u);
2342
2343     elseif c = ASCII "S":
2344     draw 4u*right+(lh-u)*up-.5u*dir 45 --

```

```

2345         4u*right+(lh-u)*up .. {left}2u*right+lh*up ..
2346         (lh-2u)*up .. 4u*right+2u*up ..
2347         {left}2u*right .. u*up
2348         -- u*up+.5u*dir 45;
2349         width(letterspacing+3.5u);
2350
2351     elseif c = ASCII "T":
2352         foot(2.5u*right);
2353         draw 2.5u*right -- 2.5u*right+lh*up;
2354         draw u*right+(lh-2u)*up{dir 135} .. (lh-u)*up ..
2355         {right}2u*right+lh*up -- 5u*right+lh*up;
2356         width(letterspacing+4u);
2357
2358     elseif c = ASCII "U":
2359         hook(lh*up);
2360         draw lh*up{down} -- .4lh*up{down} ..
2361         2u*right{right} -- 3.5u*right+u*up;
2362         hook(3.5u*right+lh*up);
2363         draw 3.5u*right+lh*up -- 3.5u*right -- 3.5u*right+.5u*dir 20;
2364         width(letterspacing+4u);
2365
2366     elseif c = ASCII "W":
2367         draw lh*up -- 2u*right -- .3[3u*right+lh*up,5u*right];
2368         draw 3u*right+lh*up -- 5u*right;
2369         draw 5u*right{dir 60} .. {left}5u*right+lh*up
2370         -- 5u*right+lh*up + .5u*dir 30;
2371         diaghook(lh*up, 2u*right-lh*up);
2372         diaghook(3u*right+lh*up, 2u*right-lh*up);
2373         width(letterspacing+6u);
2374
2375     elseif c = ASCII " ":
2376         width(letterspacing+0); % used to be +1.5u, but that was too slack
2377
2378     elseif c = ASCII "/":
2379         width(-.5u); % small kern
2380
2381     fi;
2382 enddef;
2383
2384 % pathtext takes theword (a string) and draws it with a baseline that
2385 % follows thepath (roughly). Probably won't work for intricate paths,
2386 % but fine for smooth shallow curves.
2387
2388 def pathtext (expr theword, thepath) =
2389     % width advances thetime, so that the next letter will go in the right
2390     % place on thepath. Works by intersecting thepath with the 'vertical'
2391     % line at the right of the character.
2392     def width(expr wid) =
2393         thetime := xpart (thepath intersectiontimes

```

```

2394         ((wid,-infinity)--(wid,infinity))
2395         transformed currenttransform));
2396     enddef;
2397     numeric thetime; thetime := 0;
2398     transform savetfm; savetfm := currenttransform;
2399     for i = 1 upto (length theword):
2400         currenttransform :=
2401             savetfm rotated(angle direction thetime of thepath)
2402             shifted(point thetime of thepath);
2403             % ie the translation to put the letter at the right place
2404             % and angle on thepath
2405             letter(ASCII (substring (i-1,i) of theword))
2406         endfor;
2407     currenttransform := savetfm;
2408 enddef;
2409
2410 numeric lh; lh = 6u; % letter height
2411
2412 pickup calligraphicpen;
2413
2414 def offset (expr d, t, p) = % point d away from path p at time t
2415     (point t of p + d*dir(90 + angle direction t of p))
2416 enddef;
2417
2418 pathtext ("WHERE", subpath (1.25, 2) of loweredge
2419     shifted (3.15u*dir (90 + angle direction 1.7 of loweredge)));
2420
2421 path thetextpath;
2422
2423 def scaffold (expr theoffset, thetime) =
2424     if thetime <= 4:
2425         offset(theoffset,thetime,loweredge)
2426         {direction thetime of loweredge}
2427     else:
2428         offset(theoffset,(thetime-4),reverse (loweredge reflectedabout axis))
2429         {direction (thetime-4) of reverse (loweredge reflectedabout axis)}
2430     fi
2431 enddef;
2432
2433 thetextpath =
2434     (scaffold(3.15u,3.32) ... scaffold(3.2u,3.6) ... scaffold(3.25u,4)
2435     ... scaffold(3.2u,4.4) ... scaffold(3.15u,4.68))
2436     shifted (u*up);
2437 pathtext ("FINBARR T/A/U/GHT L/E//T MUNSTER", thetextpath);
2438
2439 pathtext ("LEARN",
2440     subpath (2.25,3) of reverse (loweredge reflectedabout axis)
2441     shifted (3.15u*dir (90 + angle direction 2.5 of
2442         reverse (loweredge reflectedabout axis))));

```

```

2443
2444 enddef;
2445
2446     transform tfm;
2447     tfm := currenttransform;
2448
2449     currenttransform := tfm;                                shield(a);
2450 %%                                                         banner(j);
2451
2452     currenttransform := tfm shifted (round 106u, round 79u); crown(b);
2453     currenttransform := tfm shifted (round 144u, round 79u); crown(c);
2454     currenttransform := tfm shifted (round 125u, round 48u); crown(d);
2455
2456     currenttransform := tfm shifted (.5total_width, 109u);  book(e);
2457
2458     currenttransform := tfm shifted (132u, 148u);           castle(f);
2459     currenttransform := tfm shifted (total_width-132u,148u); castle(g);
2460
2461     currenttransform := tfm shifted (.5total_width,151u);   ship(h);
2462
2463     currenttransform := tfm shifted (15u,57u);              lion(i);
2464
2465     currenttransform := tfm;
2466
2467 picture crest_picture; cullit; % crest_picture := currentpicture;
2468 crest_picture := nullpicture; addto crest_picture also currentpicture;
2469
2470 clearit;
2471 fill unitsquare xscaled (section_width+4u)
2472         yscaled (total_height+(banner_gap_knob+1)*u)
2473         shifted (2u*left+(banner_gap_knob+1)*u*down);
2474 picture mask; cullit; mask = currentpicture;
2475
2476 for code := 1 upto sections:
2477     beginchar(code, section_width#, total_height#, total_depth#); "UCC Arms";
2478     currentpicture := crest_picture shifted ((code-1)* -section_width,0);
2479     addto currentpicture also mask; cull currentpicture keeping (2,2);
2480     endchar;
2481 endfor
2482
2483
2484 end

```

B \LaTeX style file for the UCC crest

```
2485 \NeedsTeXFormat{LaTeX2e}[2009/09/24]
2486 \ProvidesPackage{ucccrest}[2014/09/21 v2.3
2487 LaTeX style file for the UCC crest]
```

This is the `uccnew.sty` style package for the UCC crest implemented as a character in a METAFONT font outline.

```
2488 %% UCC crest implemented as a character in a METAFONT font outline
2489 \def\fileversion{2.0}
2490 \def\filedate{2012/11/22}
2491 \def\docdate{2013/07/06}
2492 \NeedsTeXFormat{LaTeX2e}
2493 \ProvidesPackage{ucccrest}[\filedate\space\fileversion\space
2494 UCC 2013 crest font MFNFSS2e package]
2495 %\RequirePackage[U]{fontenc}
2496 \newcommand{\UCCcrest}{\fontencoding{U}\fontfamily{zcc}\selectfont\char'001 }
```

C UCC crest font definition file

```
2497 %% Filename: uzcc UCC crest
2498 %% Created by: PF 2000/03/23
2499 \ProvidesFile{uzcc.fd}
2500 [2000/03/23 UCC crest definitions for U/zcc.]
2501 \DeclareFontFamily{U}{zcc}{}
2502 \DeclareFontShape{U}{zcc}{m}{n}{<-> uccnew}{}

```

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D.5 Maintenance of The Work

The Work has the status 'author-maintained' if the Copyright Holder explicitly and prominently states near the primary copyright notice in the Work that the Work can only be maintained by the Copyright Holder or simply that it is 'author-maintained'.

The Work has the status 'maintained' if there is a Current Maintainer who has indicated in the Work that they are willing to receive error reports for the Work (for example, by supplying a valid e-mail address). It is not required for the Current Maintainer to acknowledge or act upon these error reports.

The Work changes from status 'maintained' to 'unmaintained' if there is no Current Maintainer, or the person stated to be Current Maintainer of the work cannot be reached through the indicated means of communication for a period of six months, and there are no other significant signs of active maintenance.

You can become the Current Maintainer of the Work by agreement with any existing Current Maintainer to take over this role.

If the Work is unmaintained, you can become the Current Maintainer of the Work through the following steps:

1. Make a reasonable attempt to trace the Current Maintainer (and the Copyright Holder, if the two differ) through the means of an Internet or similar search.
2. If this search is successful, then enquire whether the Work is still maintained.
 - (a) If it is being maintained, then ask the Current Maintainer to update their communication data within one month.
 - (b) If the search is unsuccessful or no action to resume active maintenance is taken by the Current Maintainer, then announce within the pertinent community your intention to take over maintenance. (If the Work is a \LaTeX work, this could be done, for example, by posting to `news:comp.text.tex.`)
3.
 - (a) If the Current Maintainer is reachable and agrees to pass maintenance of the Work to you, then this takes effect immediately upon announcement.
 - (b) If the Current Maintainer is not reachable and the Copyright Holder agrees that maintenance of the Work be passed to you, then this takes effect immediately upon announcement.
4. If you make an ‘intention announcement’ as described in item 2b above and after three months your intention is challenged neither by the Current Maintainer nor by the Copyright Holder nor by other people, then you may arrange for the Work to be changed so as to name you as the (new) Current Maintainer.
5. If the previously unreachable Current Maintainer becomes reachable once more within three months of a change completed under the terms of item 3b above or item 4 above, then that Current Maintainer must become or remain the Current Maintainer upon request provided they then update their communication data within one month.

A change in the Current Maintainer does not, of itself, alter the fact that the Work is distributed under the LPPL license.

If you become the Current Maintainer of the Work, you should immediately provide, within the Work, a prominent and unambiguous statement of your status as Current Maintainer. You should also announce your new status to the same pertinent community as in item 2b above.

D.6 Whether and How to Distribute Works under This License

This section contains important instructions, examples, and recommendations for authors who are considering distributing their works under this license. These authors are addressed as ‘you’ in this section.

D.6.1 Choosing This License or Another License

If for any part of your work you want or need to use *distribution* conditions that differ significantly from those in this license, then do not refer to this license anywhere in your work but, instead, distribute your work under a different license. You may use the text of this license as a model for your own license, but your license should not refer to the LPPL or otherwise give the impression that your work is distributed under the LPPL.

The document `modguide.tex` in the base \LaTeX distribution explains the motivation behind the conditions of this license. It explains, for example, why distributing \LaTeX under the GNU General Public License (GPL) was considered inappropriate. Even if your work is unrelated to \LaTeX , the discussion in `modguide.tex` may still be relevant, and authors intending to distribute their works under any license are encouraged to read it.

D.6.2 A Recommendation on Modification Without Distribution

It is wise never to modify a component of the Work, even for your own personal use, without also meeting the above conditions for distributing the modified component. While you might intend that such modifications will never be distributed, often this will happen by accident — you may forget that you have modified that component; or it may not occur to you when allowing others to access the modified version that you are thus distributing it and violating the conditions of this license in ways that could have legal implications and, worse, cause problems for the community. It is therefore usually in your best interest to keep your copy of the Work identical with the public one. Many works provide ways to control the behavior of that work without altering any of its licensed components.

D.6.3 How to Use This License

To use this license, place in each of the components of your work both an explicit copyright notice including your name and the year the work was authored and/or last substantially modified. Include also a statement that

the distribution and/or modification of that component is constrained by the conditions in this license.

Here is an example of such a notice and statement:

```
%%% pig.dtx
%%% Copyright 2005 M. Y. Name
%%
%% This work may be distributed and/or modified under the
%% conditions of the LaTeX Project Public License, either version 1.3
%% of this license or (at your option) any later version.
%% The latest version of this license is in
%% http://www.latex-project.org/lppl.txt
%% and version 1.3 or later is part of all distributions of LaTeX
%% version 2005/12/01 or later.
%%
%% This work has the LPPL maintenance status 'maintained'.
%%
%% The Current Maintainer of this work is M. Y. Name.
%%
%% This work consists of the files pig.dtx and pig.ins
%% and the derived file pig.sty.
```

Given such a notice and statement in a file, the conditions given in this license document would apply, with the 'Work' referring to the three files `pig.dtx`, `pig.ins`, and `pig.sty` (the last being generated from `pig.dtx` using `pig.ins`), the 'Base Interpreter' referring to any 'L^AT_EX-Format', and both 'Copyright Holder' and 'Current Maintainer' referring to the person M. Y. Name.

If you do not want the Maintenance section of LPPL to apply to your Work, change 'maintained' above into 'author-maintained'. However, we recommend that you use 'maintained' as the Maintenance section was added in order to ensure that your Work remains useful to the community even when you can no longer maintain and support it yourself.

D.6.4 Derived Works That Are Not Replacements

Several clauses of the LPPL specify means to provide reliability and stability for the user community. They therefore concern themselves with the case that a Derived Work is intended to be used as a (compatible or incompatible) replacement of the original Work. If this is not the case (e.g., if a few lines of code are reused for a completely different task), then clauses 6b and 6d shall not apply.

D.6.5 Important Recommendations

D.6.5.1 Defining What Constitutes the Work The LPPL requires that distributions of the Work contain all the files of the Work. It is therefore important that you provide a way for the licensee to determine which files constitute the Work. This could, for example, be achieved by explicitly listing all the files of the Work near the copyright notice of each file or by using a line such as:

```
% This work consists of all files listed in manifest.txt.
```

in that place. In the absence of an unequivocal list it might be impossible for the licensee to determine what is considered by you to comprise the Work and, in such a case, the licensee would be entitled to make reasonable conjectures as to which files comprise the Work.

Change History

- v0.70
 General: First working version derived from the author's personal thesis class.: Added running headers and footers. 1
 \now: Added timestamp 107
- v0.90
 \@pnumwidth: Changed pnumwidth. 123
 General: Last changes before release: 1) Added all known degrees; 2) Updated bibliographic reference styles for those schools and departments who responded to the request; 3) Fixed text-wrapping error in footers and headers. 1
 \madedecl: Centering removed from Declaration. 115
 Wording from Michelle Nelson. 115
 \maketitle: Changed author to LARGE size. 112
- v0.91
 General: Changes after first release: 1) Added justified option; 2) Implemented 10/11/12 point size options; 3) Changed proportions of the page for floats. 1
 \UCC@textbodywidth: Zapped the intrusive double backslash in titles affecting the running footers 107
- v0.92
 General: Bugs reported by testers: 1) Added code to automate detection of use of tables and figures, and disable LoT and LoF accordingly.; 2) Added nolot and nolof options to manually disable automated Lists of Tables and Figures.; 3) Replaced the harvard package reference with natbib and har2nat, because harvard on its own was invoking html and breaking on an undefined htmladdnormallink* command (thanks to Dan Luecking, Mico Loretan, and others for this).; 4) Corrected misspelling of Sociology.. 1
 epigraph: Added Epigraphs. . 120
- v0.93
 General: More bugs reported by testers: 1) Re-placed re-floating to put captions under figures (already above tables).; 2) Enclosed footmisc in ifjustified to defeat ragged footnotes; moved ragged re-definition of captions to do the same.; 3) Added plainheaders option to avoid fancy headers.; 4) Added indented option to revert to indented/unspaced paragraphs.; 5) Added stable option to footmisc to allow footnotes in chapter and section headings.. 1
 \ifjustified: Added justified in response to user queries .. 99
- v0.94
 General: Fixed incorrect recording of justification option: Justification option was not resetting indentation and paragraph spacing.. 1
 \ifjustified: updated (manual comment) 105
- v0.95
 General: Reinforced wording of justification option: Justification option was open to misinterpretation.. 1
- v0.96
 General: Added subject and keywords 110

Rewrite of XML for new version of classpack: Changed method of specification of packages.	1	Changed onehalfspacing to setstretch of 1.333 for prelims and moved the main 1.666 one to here.	120
<code>\maketitle</code> : Added PDF metadata	115	<code>\UCC@textbodywidth</code> : Fixed uppercased headings at last ...	107
<code>\now</code> : Simplified now, added adobedate	107	Italicised the thesis title in the footer	107
v0.97		v1.00	
General: Added author so we can have optional student number	108	General: Added new code for citations in quotations: This tucks citations into the remaining space of the last line where possible..	1
Added mdiss option	100	<code>epigraph</code> : Added new positional code for citations to epigraphs	121
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v0.98		<code>\UCC@textbodywidth</code> : Made plain style for chapter starts retain the page number	106
General: Tidying up packages: Removed xcolor and ulem. ...	1	v1.01	
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v0.99		v1.02	
<code>\@usebib</code> : Added institutions to the list of options to generate (previously omitted)	47	General: Added revision date facility for drafts: Added <code>@revdate</code> and <code>revdate</code> ; if present in drafts, they supersede the default TODAY date..	1
General: Added tracing to bibliography: Reset page margins to allow printing on inkjets with restricted paper-handling.	1	v1.03	
Changed it back to single spacing for prelims and one and a half spacing for the rest.	125	General: Renamed Bibliography to References: Following suggestion from Ehsan Sooudi of Tyndall..	1
Changed onehalfspacing to setstretch of 1.333 for prelims and moved the main 1.666 one to the start of the first part or chapter.	125	v1.04	
Removed code for altering layout of description lists, as the modifications were not working consistently	123	General: Changes to quotations: Spacing of instep citation was not flush to margin. ...	1
<code>\bibliography</code> : Added typeout to bibliography	124	<code>\quotation</code> : Removed footnote-size for citation, changed <code>hfil</code> to <code>hfill</code> , and moved the <code>parfillskip</code> and <code>finalhyphendemerits</code> earlier	122
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v1.07	General: Added a setlist command via prepost to preset description lists to the unboxed option	123
	Reorganisation of implementations sections: Addition of crest files, changes to description lists.	1
v1.08	General: Added short title to main title: Use the @title and @@title.	1
	\title: Added the @title and @@title commands	111
v1.09	General: Corrected locations for installation in build file: Distinct directories for different embedded filetypes; also updated BIS to use APA.	1
v1.10	General: Added twoside option: Some people need to print bindable two-sided copies of long theses..	1
	\UCC@textbodywidth: Added specs for twosided fancy headers	106
v1.11	General: Removed from automaketitle and put in start of part or chapter:	1
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	\UCC@textbodywidth: Added replication of columnwidth for use in headers to avoid conflict with longtable and lscape.	105
v1.12	General: Fixed double-sided:	1
v1.13	General: Added detection for glossaries package:	1
v1.14	General: Changed prelims to onehalfspacing:	1
v1.15	General: Added method to change tocdepth:	1
v1.16	General: Added switch to fix Head of Dept/School:	1
v1.17	\@usebib: Added code for apacite exception	46
	General: Added switch to force apacite to load after hyperref: And removed the data, as the problem is fixed, but retained the code.	1
	Documented the fix for apacite	37
v1.18	General: Split options tables into two chapters: Refactored code for updated ClassPack.	1
v1.19	General: Fixed bug in automated LOF/LOT: Added separate counters, incremented by endtable and endfigure (thanks to Malcolm Prinn of Tyndall for finding this bug).	1
	These are now separate counters to reflect total figs and tables, because the normal counters get reset at the start of each chapter	96
v1.20	General: Added availability to maketitle: Used for links to epub version.	1
v1.21	General: Adjusted top and bottom margins: This allows less room at the top and more at the bottom.	1
v2.1	General: Revised for new regulations: Changed to 12pt.	1

v2.2		
General: Added DAH: Digital Arts and Humanities.	1	
v2.3		
General: Added doc on reset-		
		bibstyle: Coping with LaTeX and BibTeX styles, and MLA's need for PassOptionsToPackage.
		1

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