

L^AT_EX 2_ε Document Styles for the University of Southampton File version v1.4, dated 2021/03/14

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1 Quickstart

This guide assumes you have installed MiKTeX or TeX live distributions. It also requires having the program “make” for producing the templates again.

The folder labelled tex-mf should be installed in your local tex files source or whatever your tex distro uses.

The Templates have been built for the Department of Electronics and Computer Science in the Faculty of Engineering and Physical Science at the University of Southampton.

The basic settings for University, Faculty and School are explained in Section 6

If a user only wishes to change the file for their thesis it is probably easier to navigate to the class file labeled uosthesis and change the department and faculty naming there. This will be located in the subdirectory where you unzipped the files under tex/latex/uosdocs/

2 Description

These L^AT_EX 2_ε document classes are designed to produce thesis, mini-thesis, progress, project, report, GDP report and GDP summary report documents which conformed to the University of Southampton guidelines of April 2001. They were updated in Jan 2019 to conform to changes in those guidelines. Specifically copy-right and authorship declaration changes. They are based on the document class `book`, but modify some of its layout decisions. An article class is also provided which is based on the document class `article`.

3 The DOCSTRIP modules

The following modules are used in the implementation to direct DOCSTRIP when generating the external files:

thesis	produce the <code>uosthesis</code> document class
minithesis	produce the <code>uosminithesis</code> document class
progress	produce the <code>uosprogress</code> document class
project	produce the <code>uosproject</code> document class
report	produce the <code>uosreport</code> document class
article	produce the <code>uosarticle</code> document class
gdp	produce the <code>uosgdp</code> document class
gdpsummary	produce the <code>uosgdpsummary</code> document class
testthesis	produce an example thesis
testminithesis	produce an example minithesis
testprogress	produce an example progress
testproject	produce an example project
testreport	produce an example report
testarticle	produce an example article
testgdp	produce an example GDP report
testgdpsummary	produce an example GDP summary report
introduction	produce an example introduction chapter
conclusions	produce an example conclusions chapter
appendix	produce an example appendix chapter
figure	produce an example figure file
definitions	produce an example definitions file
references	produce an example references file
bst	produce a bibliography style file
driver	produce a documentation driver file

4 Implementation

The checksum is to determine if there has been a truncation in the file during transmission over a network

The class has a custom option to define what colours should be used for links. This option defines `sotoncolour` to use UoS palette colours. Colour Code taken from <http://edshare.soton.ac.uk/10481>

All options are passed on to the `book` or `article` class.

```
1 <{*thesis | minithesis | progress | project | report | article | gdp | gdpsummary}>
```

```
\baseclass
```

```
2 %% ----- Class/Formating Adjustment -----
3 %% Adjust the book class to match the requirements
4 %% Set spacing, line and paragraph options
5 %% Set LaTeX builder options (work break penalties etc.)
6 <{*thesis | minithesis | progress | project | report | gdp | gdpsummary}>
7 \def\baseclass{book}
8 </thesis | minithesis | progress | project | report | gdp | gdpsummary>
9 <{*article}>
10 \def\baseclass{article}
11 </article>

12 \RequirePackage{xcolor}
13 \colorlet{linkBlue}{blue}
14 \colorlet{custGray}{gray}
15 \colorlet{chapRed}{red}
```

```

16 \DeclareOption{sotoncolour}{
17 \definecolor{sotonMarineBlue}{RGB}{1,67,89} % Soton marine blue (P 7469C)
18 \definecolor{sotonGrey}{RGB}{153,153,166} % Soton grey (P 443C)
19 \definecolor{sotonRed}{RGB}{171,18,16} % Soton Red (P 484C)
20 \colorlet{linkBlue}{sotonMarineBlue}
21 \colorlet{custGray}{sotonGrey}
22 \colorlet{chapRed}{sotonRed}
23 }
24 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{\baseclass}}

```

`\@checkoptions` Before we can process the options we must deal with a small problem. That is, we want to change the default options of the `book` or `article` class to `a4paper` and `11pt` or `12pt` but the macro `\ProcessOptions` used by the `book` or `article` class processes the options in the order specified in the file. Because `a4paper` is the first of the paper sizing options it will be overridden by any user defined option. But the same is not true of the font size option `11pt` or `12pt`. To remedy this we define a macro `\@checkoptions{<default>}{<option-list>}` which checks to see if any options in `<option-list>` have been specified and if not adds `<default>` to the option list.

```

25 \def\@checkoptions#1#2{
26   \edef\@curroptions{\@optionlist{\@currname.\@current}}
27   \@tempwafalse
28   \@tfor\@this:=#2\do{
29     \@expandtwoargs\in@{,\@this,}{,\@curroptions,}
30     \ifin@ \@tempswatruet \break@tfor \fi
31     \let\@this\@empty
32     \if@tempswa \else \PassOptionsToClass{#1}{\baseclass}\fi
33 }

```

With this macro at our disposal we can continue to process the options

```

34 (*thesis | minithesis | progress | report | article | gdp | gdpsummary)
35 \@checkoptions{11pt}{10pt}{11pt}{12pt}
36 /thesis | minithesis | progress | report | article | gdp | gdpsummary)
37 (*project)
38 \@checkoptions{12pt}{10pt}{11pt}{12pt}
39 /project)
40 \PassOptionsToClass{a4paper}{\baseclass}
41 \ProcessOptions\relax

```

and load the `book` or `article` document class with `A4` as the default paper size.

```

42 \LoadClass{\baseclass}

```

4.1 Banner

`\bhrule` Provide a function to produce a banner on the output making the location of the current section simpler.

```

43 \newcommand\bhrule{\typeout{-----}}
44 \newcommand\btypeout[1]{\bhrule\typeout{\space #1}\bhrule}

```

4.2 Date

`\today` This macro uses the \TeX primitives `\month`, `\day` and `\year` to provide the date of the \LaTeX -run in a suitable format.

```
45 <*thesis>
46 \def\today{\ifcase\month\or
47   January\or February\or March\or April\or May\or June\or
48   July\or August\or September\or October\or November\or December\fi
49   \space \number\year}
50 </thesis>
```

5 Document Layout

5.1 Font

```
51 %% \usepackage[T1]{fontspec}
52 %   Set font for copyright statement body text
53 \usepackage[defaultsans]{droidsans}
54 %   Set a particular style of font for the thesis. A font that has smallcaps
55 \usepackage{mathpazo}
56 %%\usepackage[T1]{fontenc} %This may not be necessary for english only text
```

5.2 Spacing

Load the `setspace` package so that spacing can easily be set. The text in all three styles is set to one and a half spacing, paragraphs not indented, and a newline between paragraphs.

```
57 \usepackage{setspace}
58 <thesis | minithesis | progress | project | report | gdp | gdpsummary>\onehalfspacing
59 <article>\singlespacing
60 \setlength{\parindent}{0pt}
61 \setlength{\parskip}{2.0ex plus0.5ex minus0.2ex}
```

5.3 Margins

Load the `vmargin` package to setup the page dimensions.

```
62 \usepackage{vmargin}
63 <*thesis | minithesis | progress | project | report | gdp | gdpsummary>
64 \setmarginsrb          { 1.5in} % left margin
65                        { 0.6in} % top margin
66                        { 1.0in} % right margin
67                        { 0.8in} % bottom margin
68                        { 20pt}  % head height
69                        {0.25in} % head sep
70                        { 9pt}   % foot height
71                        { 0.3in} % foot sep
72 </thesis | minithesis | progress | project | report | gdp | gdpsummary>
73 <*article>
74 \setmarginsrb          { 0.8in} % left margin
75                        { 0.6in} % top margin
76                        { 0.8in} % right margin
77                        { 0.8in} % bottom margin
78                        { 20pt}  % head height
```

```

79                                {0.25in} % head sep
80                                { 9pt} % foot height
81                                { 0.3in} % foot sep
82 </article>

```

5.4 Breaks

Control how pages and lines are broken.

```

83 \raggedbottom
84 \setlength{\topskip}{1\topskip \@plus 5\p@}
85 \doublehyphendemerits=10000 % No consecutive line hyphens.
86 \brokenpenalty=10000 % No broken words across columns/pages.
87 \widowpenalty=9999 % Almost no widows at bottom of page.
88 \clubpenalty=9999 % Almost no orphans at top of page.
89 \interfootnotelinepenalty=9999 % Almost never break footnotes.

```

5.5 Fancy Page Headers

Setup the the default fancy page headers with an underlined header containing chapter, name and page number.

```

90 \usepackage{fancyhdr}
91 % Help from https://texblog.org/2007/11/07/headerfooter-in-latex-with-fancyhdr/#comment-4783
92 \fancyhead[LE]{\textrm\thepage}
93 \fancyhead[LO]{\fancyplain{}{\textsl{\rightmark}}}}
94 \fancyhead[RE]{\fancyplain{}{\textsl{\leftmark}}}}
95 \fancyhead[RO]{\textrm\thepage}
96 \head{}\lfoot{}\rfoot{}\cfoot{}
97 \pagestyle{fancy}
98 \fancypagestyle{plain}{
99   \fancyhf{}
100   \fancyhead[OR]{\thepage}
101   \renewcommand{\headrulewidth}{0pt}
102 }

```

<pre> \chaptermark \sectionmark \subsectionmark </pre>	<pre> Redefine chaptermark and sectionmark to set up the correct header name and produce a banner on the output making the location of messages simpler. The \btypeout command is for console logging where chapters start \chapapp expands to "Chapter" or "Appendix" </pre>
--	---

```

103 <thesis | minithesis | progress | project | report | gdp>
104 \renewcommand{\chaptermark}[1]{\btypeout{\thechapter.\space #1}\markboth{\chaptername\ \thechapter}{\thepage}}
105 \renewcommand{\sectionmark}[1]{\markright{\thesection.\hspace{1em}#1}}
106 \renewcommand{\subsectionmark}[1]{}
107 </thesis | minithesis | progress | project | report | gdp>
108 <*article>
109 \renewcommand{\sectionmark}[1]{\btypeout{\thesection\hspace{1em}}\markboth{}{\thesection.\hspace{1em}#1}}
110 \renewcommand{\subsectionmark}[1]{}
111 \renewcommand{\subsubsectionmark}[1]{}
112 </article>
113 \gdpsummary\markboth{GDP Summary Report}{GDP Summary Report}

```

<pre> \cleardoublepage </pre>	<pre> Redefine cleardoublepage to remove headers from blank pages in twosided documents. </pre>
-------------------------------	---

```

114 \def\cleardoublepage{\clearpage\if@twoside \ifodd\c@page\else
115 \hbox{}
116 \thispagestyle{empty}
117 \newpage
118 \if@twocolumn\hbox{}\newpage\fi\fi\fi}

```

`\cleartoeven` Define `cleartoeven` to remove headers from blank pages and force to even page for appendix or index.

```

119 \def\cleartoeven{\clearpage\if@twoside \ifodd\c@page
120 \hbox{}
121 \thispagestyle{empty}
122 \newpage
123 \if@twocolumn\hbox{}\newpage\fi\fi\fi}

```

5.6 Mathematics

Load the `amsmath` packages, so we can do some serious math, and setup the theorem environments.

```

124 %% ----- Figure/Table/Equation/Listing Styling -----
125 %% Set the styling for non text elements of the document
126 \usepackage{amsmath,amsfonts,amssymb,amscd,amsthm,xspace}
127 \theoremstyle{plain}
128 \newtheorem{example}{Example}[chapter]
129 \newtheorem{theorem}{Theorem}[chapter]
130 \newtheorem{lemma}{Lemma}[chapter]
131 \newtheorem{proposition}{Proposition}[chapter]
132 \newtheorem{axiom}{Axiom}[chapter]
133 \newtheorem{definition}{Definition}[chapter]
134 \newtheorem{remark}{Remark}[chapter]
135 \newtheorem{corollary}{Corollary}[chapter]
136 \newtheorem{lemma}{Lemma}[chapter]
137 \newtheorem{proposition}{Proposition}[chapter]
138 \newtheorem{axiom}{Axiom}[chapter]
139 \newtheorem{definition}{Definition}[chapter]
140 \newtheorem{remark}{Remark}[chapter]
141 \newtheorem{corollary}{Corollary}[chapter]
142 \newtheorem{lemma}{Lemma}[chapter]
143 \newtheorem{proposition}{Proposition}[chapter]

```

5.7 Captions

`\fref` Load the `caption` package to improve formatting of captions, and provide short referencing commands.

```

\caption 144 \usepackage[justification=centerlast,font=small,labelfont=sc]{caption}
\caption 145 \setlength{\captionmargin}{20pt}
\caption 146 \newcommand{\fref}[1]{Figure~\ref{#1}}
\caption 147 \newcommand{\tref}[1]{Table~\ref{#1}}
\caption 148 \newcommand{\eref}[1]{Equation~\ref{#1}}
\caption 149 \newcommand{\cref}[1]{Chapter~\ref{#1}}
\caption 150 \newcommand{\sref}[1]{Section~\ref{#1}}
\caption 151 \newcommand{\aref}[1]{Appendix~\ref{#1}}

```

5.8 Float Placement

`\topfraction` Preventing figures from appearing on a page by themselves. L^AT_EX's figure placement algorithm is quite biased in favour of putting figures on a page by themselves, instead of on the top of a page with some text below it. Fortunately, the parameters of the algorithm can be changed. The main problem is that L^AT_EX per default only allows a part of the top of a text-page (70%) to contain figures, and requires at least 20% of a page to be text when text and figures share a page. These parameters should be set to more reasonable values, for example 85% and 10%.

```
152 \renewcommand{\topfraction}{0.85}
153 \renewcommand{\bottomfraction}{.85}
154 \renewcommand{\textfraction}{0.1}
155 \renewcommand{\dbltopfraction}{.85}
```

`\floatpagefraction` This helps, but sometimes L^AT_EX puts a figure on a page by itself, although it would fit perfectly well on the top of a page. This happens when the figure will not fit on the page where it was defined. L^AT_EX then attempts to put it on a figures-only page before it attempts to put it at the top of the next page. A page may contain figures alone if the figure(s) use at least half the page. To prevent half-empty pages this limit should probably be increased to around 75%.

```
156 \renewcommand{\floatpagefraction}{0.75}
157 \renewcommand{\dblfloatpagefraction}{.75}
```

Be careful not to make `floatpagefraction` larger than `topfraction`, then you risk to produce a figure that can neither go on the top of a text page, nor on a page by itself. If that happens, the figure and all later figures will be postponed until next time a `clearpage` is executed (typically at the end of a chapter or the end of the document). This will also happen if a figure is too large to fit on a page.

```
158 \setcounter{topnumber}{9}
159 \setcounter{bottomnumber}{9}
160 \setcounter{totalnumber}{20}
161 \setcounter{dbltopnumber}{9}
```

5.9 Graphics

Load the `graphicx` package, so we can include pictures easily. Load the `epstopdf`, so that eps files are automatically converted to pdf when pdfL^AT_EX is used. This requires a version of *epstopdf* to be installed on you system. You can find a windows version at

<http://www.ctan.org/tex-archive/support/epstopdf/epstopdf.exe>.

```
162 \usepackage{graphicx}
163 \usepackage{epstopdf}
```

5.10 Subfigures and subtables

Load the `subcaption` package, so we can include subfigures easily.

```
164 \usepackage[] {subcaption}
165 \usepackage{booktabs}
166 \usepackage{rotating}
```

5.11 Listings

Load the listings package, so we can include listings easily.

```

167 \usepackage{listings}
168 % \usepackage{lstpatch}
169 \lstset{captionpos=b,
170         frame=tb,
171         basicstyle=\scriptsize\ttfamily,
172         showstringspaces=false,
173         keepspaces=true}
174 \lstdefinestyle{matlab} {
175     language=Matlab,
176     keywordstyle=\color{blue},
177     commentstyle=\color[rgb]{0.13,0.55,0.13}\em,
178     stringstyle=\color[rgb]{0.7,0,0} }

```

5.12 Hyperlinks

Load the hyperref package to provide hyperlinks in pdf and dvi documents.

```

179 \usepackage[pdfpagemode={UseOutlines},bookmarks=true,bookmarksopen=true,
180     bookmarksopenlevel=0,bookmarksnumbered=true,plainpages=false,pdfpagelabels,
181     colorlinks,linkcolor={linkBlue},citecolor={linkBlue},urlcolor={linkBlue},
182     pdfstartview={FitV},unicode,breaklinks=true]{hyperref}
183 \pdfstringdefDisableCommands{
184     \let\\\space
185 }

```

6 Internal Names

<p><code>\supervisor</code></p> <p><code>\examiner</code></p> <p><code>\degree</code></p> <p><code>\authors</code></p> <p><code>\addresses</code></p> <p><code>\university</code></p> <p><code>\UNIVERSITY</code></p> <p><code>\department</code></p> <p><code>\DEPARTMENT</code></p> <p><code>\group</code></p> <p><code>\GROUP</code></p> <p><code>\faculty</code></p> <p><code>\FACULTY</code></p> <p><code>\subject</code></p> <p><code>\keywords</code></p>	<p>The various elements of the documents are defined as control sequences to make it easy to customize this style for other parts of the University. When the command is run the other terms are defined by the args.</p> <p>The examiner and supervisor commands can be pluralised so that it can print "Supervisors:". This is with an optional argument. [s] which will add and "s" to the word "Supervisor"</p> <p>186 %% ----- Organisational Structure -----</p> <p>187 \newcommand*\supervisor[2] [] {\def\supname{#2}\def\supplural{#1}}</p> <p>188 \newcommand*\examiner[2] [] {\def\examname{#2}\def\examplural{#1}}</p> <p>189 \newcommand*\degree[1] {\def\degreename{#1}}</p> <p>190 \newcommand*\authors[1] {\def\authornames{#1}}</p> <p>191 \newcommand*\qualifications[1] {\def\qual{#1}}</p> <p>192 \newcommand*\addresses[1] {\def\addressnames{#1}}</p> <p>193 \newcommand*\doi[1] {\def\doicode{#1}}</p> <p>194 \newcommand*\volume[2] {\def\volno{#1}\def\volof{#2}}</p> <p>195 \newcommand*\orcidid[1] {\def\orcid{#1}}</p> <p>196 \newcommand*\university[1] {\def\univname{#1}}</p> <p>197 \newcommand*\UNIVERSITY[1] {\def\UNIVNAME{#1}}</p> <p>198 \newcommand*\department[1] {\def\deptname{#1}}</p> <p>199 \newcommand*\DEPARTMENT[1] {\def\DEPTNAME{#1}}</p> <p>200 \newcommand*\group[1] {\def\groupname{#1}}</p> <p>201 \newcommand*\GROUP[1] {\def\GROUPNAME{#1}}</p>
--	--

```

202 \newcommand*{\faculty}[1]{\def\facname{#1}}
203 \newcommand*{\FACULTY}[1]{\def\FACNAME{#1}}
204 \newcommand*{\subject}[1]{\def\subjectname{#1}}
205 \newcommand*{\keywords}[1]{\def\keywordnames{#1}}

\supname The internal names of the elements are set to defaults appropriate to the Depart-
\examname ment of Electronics and Computer Science.
\degreename By running these commands at the top of your tex file it will overwrite the
\authornames defaults.
\univname 206 %% ----- Organisational Structure -----
\UNIVNAME 207 \doi{}
\deptname 208 \supervisor {}
\DEPTNAME 209 \examiner {}
\groupname 210 \degree {}
\GROUPNAME 211 \authors {}
\facname 212 \qualifications{}
\FACNAME 213 \orcidid{}
\volume{}{}
\subjectname 214 \volume{}{}
\keywordnames 215 \university {\texorpdfstring{\href{http://www.southampton.ac.uk}
216 {University of Southampton}}
217 {University of Southampton}}
218 \UNIVERSITY {\MakeUppercase{\univname}}
219 \department {School of Electronics and Computer Science}
220 \DEPARTMENT {\MakeUppercase{\deptname}}
221 \group {}
222 \GROUP {\MakeUppercase{\groupname}}
223 \faculty {Faculty of Engineering and Physical Science}
224 \FACULTY {\MakeUppercase{\facname}}
225 \addresses {}
226 \subject {}
227 \keywords {}

```

7 Special Pages

7.1 Title Page

```

\maketitle Setup an appropriate title page and pdf strings if we are using pdfLATEX.
The
global
let
@title
@empty has been removed
Possibly the relax statement also needs to be removed
228 <{*thesis | minithesis | progress | project | report | gdp | gdpsummary}>
229 % Start by Adding meta data to the produced document
230 \usepackage{titling}
231 \AtBeginDocument{
232 \hypersetup{pdftitle={\thetitle}}
233 \hypersetup{pdfsubject={\subjectname}}
234 \hypersetup{pdfauthor={\authornames}}
235 \hypersetup{pdfkeywords={\keywordnames}}
236 }

```

```

237 %    Define the title page layout
238 \renewcommand\maketitle{
239   \btypeout{Title Page}
240   \thispagestyle{empty}
241   \begin{titlepage}
242     \let\footnotesize\small
243     \let\footnoterule\relax
244     \let \footnote \thanks
245     \setcounter{footnote}{0}
246     \null\vfil
247     \vskip 60\p@
248     \begin{center}
249       \setlength{\parskip}{0pt}
250       {\scshape\LARGE\textbf{\univname}\par}
251       %% TODO: Change all the descriptions to italic like the Thesis one
252 <thesis | minithesis | progress | project | gdp | gdpsummary>
253       \bigskip
254       {\large \facname \par}
255       {\large \deptname \par}
256 </thesis | minithesis | progress | project | gdp | gdpsummary>
257 <*thesis | minithesis | progress>
258       {\large \groupname \par}
259 </thesis | minithesis | progress>
260       \vfill
261 <*minithesis>
262       {\large A mini-thesis submitted for transfer from}
263       {\large MPhil to PhD \par}
264 </minithesis>
265 <*progress>
266       {\large A progress report submitted for continuation}
267       {\large towards a PhD \par}
268 </progress>
269 <*project>
270       {\large A project report submitted for the}
271       {\large award of \par \degreename \par}
272 </project>
273 <*gdp>
274       {\large A group design project report submitted for}
275       {\large the award of \par \degreename \par}
276 </gdp>
277 <*gdpsummary>
278       {\large A group design project summary report submitted}
279       {\large for the award of \par \degreename \par}
280 </gdpsummary>
281 <*minithesis | progress | project>
282       \vfill
283       {\normalsize Supervisor\supplural: \supname \par}
284       \ifthenelse{\isempty{examname}}{
285       {\normalsize Examiner\examplural: \examname \par}{
286       \vfill
287       \hspace{6mm}\parbox[t][51mm][s]{89mm}{
288         \center
289         \vfill
290         {\large \bf \@title \par}

```

```

291         \vfill
292         {\normalsize \textit{by} \textbf\authornames \par}
293         \vfill
294         {\normalsize \@date \par}
295         \vfill
296     }
297     \parbox[t][95mm][s]{89mm}{
298 \</minithesis | progress | project>
299 \<*gdp | gdpsummary>
300     \vfill
301     {\normalsize \textit{by} \textbf\authornames \par}
302     \bigskip
303     {\normalsize Supervisor\supplural: \supname \par}
304     {\normalsize Examiner\examplural: \examname \par}
305     \vfill
306     \hspace{6mm}\parbox[t][51mm][s]{89mm}{
307         \center
308         \vfill
309         {\large \bf \@title \par}
310         \vfill
311         {\normalsize \@date \par}
312         \vfill
313     }
314     \parbox[t][95mm][s]{89mm}{
315 \</gdp | gdpsummary>
316 \<*thesis | report>
317     {\huge \bf \@title \par
318 }
319     \ifthenelse{\equal{\doicode}{}}{
320     {}
321     {\smallskip DOI: \href{https://doi.org/\doicode}{\doicode}\par}
322     \ifthenelse{\equal{\volno}{}}{
323     {}
324     {\smallskip Volume \volno{} of \volof{}
325     \vfill
326     {\LARGE \textit{by} \par}
327     \smallskip
328     {\LARGE \textbf\authornames
329     \ifthenelse{\equal{\quals}{}}{
330     {}
331     {\par\Large
332     \quals}
333     \par}
334     \ifthenelse{\equal{\orcid}{}}{
335     {}
336     {\smallskip
337     ORCID: \href{https://orcid.org/\orcid}{\orcid}}
338     }
339     \vfill
340 \<*thesis>
341     {\large \textit{A thesis for the degree of} \par}
342     {\large \textit{Doctor of Philosophy} \par}
343 \</thesis>
344 \<*report>     {\large \textit{Technical Report} \par}

```

```

345     \bigskip
346 \bigskip
347     {\large \facname \par}
348     {\large \deptname \par}
349 \report}
350     \bigskip
351     \bigskip
352     \bigskip
353     {\Large \@date \par}
354     \bigskip
355 \thesis | report}
356     \end{center}
357     \par
358     \@thanks
359     \vfil\null
360 \end{titlepage}
361 \setcounter{footnote}{0}%
362 \global\let\thanks\relax
363 \global\let\maketitle\relax
364 \global\let\@thanks\@empty
365 \global\let\@author\@empty
366 \global\let\@date\@empty
367 \global\let\title\relax
368 \global\let\author\relax
369 \global\let\date\relax
370 \global\let\and\relax
371 \thesis | minithesis | progress | project | report}
372 \cleardoublepage
373 \thesis | minithesis | progress | project | report}
374 }
375 \thesis | minithesis | progress | project | report | gdp | gdpsummary}
376 \article}
377 \if@titlepage
378 \renewcommand\maketitle{
379     \btypeout{Title Page}
380     \markboth{\authornames}{\@title}
381     \begin{titlepage}
382     \thispagestyle{empty}
383     \let\footnotesize\small
384     \let\footnoterule\relax
385     \let \footnote \thanks
386     \null\vfil
387     \vskip 60\p@
388     \begin{center}
389         {\LARGE \@title \par}
390         \vskip 3em
391         {\large \lineskip .75em
392             \begin{tabular}[t]{c} \authornames \end{tabular}
393         \par}
394         \vskip 1em
395         {\large \lineskip .5em
396             \begin{tabular}[t]{c} \addressnames \end{tabular}
397         \par}
398         \vskip 1.5em

```

```

399     {\large \@date \par}
400     \if\keywordnames
401     \else
402         \quotation
403         \vskip 1.5em
404         {\noindent \normalsize
405             \textbf{Keywords:}
406             \textit{\keywordnames}
407         \par}
408         \endquotation
409     \fi
410 \end{center}
411 \par
412 \@thanks
413 \vfil\null
414 \end{titlepage}
415 \setcounter{footnote}{0}
416 \global\let\thanks\relax
417 \global\let\maketitle\relax
418 \global\let\@maketitle\relax
419 \global\let\@thanks\@empty
420 \global\let\@author\@empty
421 \global\let\@date\@empty
422 \global\let\title\relax
423 \global\let\author\relax
424 \global\let\date\relax
425 \global\let\and\relax
426 }
427 \else
428 \renewcommand\maketitle{
429     \btypeout{Title Page}
430     \markboth{\authornames}{\@title}
431     \thispagestyle{empty}
432     \par
433     \begingroup
434         \renewcommand\thefootnote{\@fnsymbol\c@footnote}
435         \def\@makefnmark{
436             \rlap{\@textsuperscript{\normalfont\@thefnmark}}
437         }
438         \long\def\@makefntext##1{
439             \parindent 1em\noindent \hb@xt@1.8em
440             {\hss\@textsuperscript{\normalfont\@thefnmark}}##1
441         }
442         \if@twocolumn
443             \ifnum \col@number=\@one
444                 \@maketitle
445             \else
446                 \twocolumn[\@maketitle]%
447             \fi
448         \else
449             \newpage
450             % Prevent figures from going at top of page.
451             \global\@topnum\z@
452             \@maketitle

```

```

453     \fi
454     \thispagestyle{plain}\@thanks
455 \endgroup
456 \setcounter{footnote}{0}%
457 \global\let\thanks\relax
458 \global\let\maketitle\relax
459 \global\let\@maketitle\relax
460 \global\let\@thanks\@empty
461 \global\let\@author\@empty
462 \global\let\@date\@empty
463 \global\let\title\relax
464 \global\let\author\relax
465 \global\let\date\relax
466 \global\let\and\relax
467 }
468 \def\@maketitle{
469     \newpage
470     \null
471     \vskip 2em
472     \begin{center}
473         \let \footnote \thanks
474         {\LARGE \@title \par}
475         \vskip 1.5em
476         {\large \lineskip .5em
477           \begin{tabular}[t]{c} \authornames \end{tabular}
478         \par}
479         \vskip 0.7em
480         {\large \lineskip .5em
481           \begin{tabular}[t]{c} \addressnames \end{tabular}
482         \par}
483         \vskip 1em
484         {\large \@date}
485     \end{center}
486     \par
487     \vskip 1.5em
488 }
489 \fi
490 \end{article}

```

7.2 Abstract Page

`\abstract` Setup an appropriate abstract page.

```

491 (*thesis | minithesis | progress | project | report | gdp)
492 \newenvironment{abstract}
493 {
494     \btypeout{Abstract Page}
495     \thispagestyle{empty}
496     \null\vfil
497     \begingroup
498     \centering
499     \setlength{\parskip}{0pt}
500     {\textsc\normalsize \univname \par}
501     \bigskip

```

```

502     {\underline{Abstract}} \par}
503 (*thesis | minithesis | progress | project | report)
504     \bigskip
505     {\textsc\normalsize \facname \par}
506     {\textsc\normalsize \deptname \par}
507 \</thesis | minithesis | progress | project | report>
508     \bigskip
509 (*thesis)
510     {\normalsize \underline{Doctor of Philosophy}\par}
511 \</thesis>
512 (*minithesis)
513     {\normalsize \underline{A mini-thesis submitted for transfer from MPhil to PhD}\par}
514 \</minithesis>
515 (*progress)
516     {\normalsize \underline{A progress report submitted for continuation towards a PhD}\par}
517 \</progress>
518 (*project)
519     {\normalsize \underline{A project report submitted for the award of \degreename}\par}
520 \</project>
521     \bigskip
522     {\normalsize\bf \@title \par}
523     \medskip
524     {\normalsize by \authornames \par}
525     \bigskip
526 \endgroup
527 }
528 {
529 (*thesis | minithesis | progress | project | report)
530     \vfil\vfil\vfil\null
531     \cleardoublepage
532 \</thesis | minithesis | progress | project | report>
533 }
534 \</thesis | minithesis | progress | project | report | gdp>
535 (*article)
536 \if@titlepage
537     \renewenvironment{abstract}{
538         \titlepage
539         \null\vfil
540         \@beginparpenalty\@lowpenalty
541         \begin{center}
542             \bfseries \abstractname
543             \@endparpenalty\@M
544         \end{center}
545         \begin{itshape}
546             \noindent
547         }
548         {
549             \par
550             \end{itshape}
551             \if\keywordnames
552             \else
553                 \quote
554                 \vskip 1.5em
555                 {\noindent \normalsize

```

```

556         \textbf{Keywords:}
557         \textit{\keywordnames}
558     \par}
559 \endquote
560 \fi
561 \vfil\null\endtitlepage
562 }
563 \else
564 \renewenvironment{abstract}{
565     \if@twocolumn
566     \section*{\abstractname}
567     \else
568     \small
569     \begin{center}
570     {\bfseries \abstractname\vspace{-.5em}\vspace{\z@}}
571     \end{center}
572     \quote
573     \fi
574     \begin{itshape}
575 }
576 {
577     \end{itshape}
578     \if\keywordnames
579     \else
580     \vskip 1.5em
581     {\noindent \normalsize
582         \textbf{Keywords:}
583         \textit{\keywordnames}
584     \par}
585     \fi
586     \if@twocolumn\else\endquote\fi
587 }
588 \fi
589 \end{article}

```

7.3 Contents Pages

Possibly all of these pages should be redone but using the `tocloft` package to reduce complexity in this style file.

7.3.1 Add to Table of Contents

`\addtotoc` Get a better list of contents package

Ensures numbering for sub-subsections in the table of contents, and provide for 6 levels to appear in toc. Define `addtotoc` to enable adding elements to the toc at chapter level, using a dummy counter to fix bookmarks in pdfL^AT_EX.

```

590 (*thesis | minithesis | progress | project | report | gdp | article)
591 \usepackage[nottoc]{tocbibind} % Put the Lists, Glossary, Biblog and Idx in the conten
592 \addtocounter{secnumdepth}{1}
593 \setcounter{tocdepth}{6}
594 \newcounter{dummy}
595 \newcommand\addtotoc[1]{
596 \refstepcounter{dummy}

```

```

597 <*thesis | minithesis | progress | project | report | gdp>
598 \addcontentsline{toc}{chapter}{#1}}
599 </thesis | minithesis | progress | project | report | gdp>
600 <*article>
601 \addcontentsline{toc}{section}{#1}}
602 </article>

```

7.3.2 Table of Contents

```

\tableofcontents Adjust line and paragraph spacing.

603 \renewcommand\tableofcontents{
604 \hypersetup{linkcolor=black}}
605 \btypeout{Table of Contents}
606 \begin{spacing}{1}{
607   \setlength{\parskip}{1pt}
608   \if@twocolumn
609     \@restonecoltrue\onecolumn
610   \else
611     \@restonecolfalse
612   \fi
613 <*thesis | minithesis | progress | project | report | gdp>
614   \chapter*{\contentsname
615 </thesis | minithesis | progress | project | report | gdp>
616 <*article>
617   \section*{\contentsname
618 </article>
619     \@mkboth{
620       \MakeUppercase\contentsname}{\MakeUppercase\contentsname}}
621   \@starttoc{toc}
622   \if@restonecol\twocolumn\fi
623 <thesis | minithesis | progress | project | report | gdp> \cleardoublepage
624 } \end{spacing}
625 }

```

7.3.3 List of Figures

```

\listoffigures Adjust line and paragraph spacing.

626 \renewcommand\listoffigures{
627 \addtotoc{\listfigurename}
628 \begin{spacing}{1}{
629   \setlength{\parskip}{1pt}
630   \if@twocolumn
631     \@restonecoltrue\onecolumn
632   \else
633     \@restonecolfalse
634   \fi
635 <*thesis | minithesis | progress | project | report | gdp>
636   \chapter*{\listfigurename
637 </thesis | minithesis | progress | project | report | gdp>
638 <*article>
639   \section*{\listfigurename
640 </article>
641     \@mkboth{\MakeUppercase\listfigurename}

```

```

642             {\MakeUppercase\listfigurename}}
643     \@starttoc{lof}
644     \if@restonecol\twocolumn\fi
645     <thesis | minithesis | progress | project | report | gdp>
646     \cleardoublepage
647     </thesis | minithesis | progress | project | report | gdp>
648   }\end{spacing}
649 }

```

7.3.4 List of Tables

`\listoftables` Adjust line and paragraph spacing.

```

650 \renewcommand\listoftables{
651   \addtotoc{\listtablename}
652   \begin{spacing}{1}{
653     \setlength{\parskip}{1pt}
654     \if@twocolumn
655       \@restonecoltrue\onecolumn
656     \else
657       \@restonecolfalse
658     \fi
659     <thesis | minithesis | progress | project | report | gdp>
660     \chapter*{\listtablename
661     </thesis | minithesis | progress | project | report | gdp>
662     <article>
663       \section*{\listtablename
664     </article>
665     \@mkboth{
666       \MakeUppercase\listtablename}{\MakeUppercase\listtablename}}
667     \@starttoc{lot}
668     \if@restonecol\twocolumn\fi
669     <thesis | minithesis | progress | project | report | gdp>
670     \cleardoublepage
671     </thesis | minithesis | progress | project | report | gdp>
672   }\end{spacing}
673 }

```

7.3.5 List of Symbols

`\listsymbolname` Provide a `listofsymbols` command to produce a list of symbols,

```

\listofsymbols 674 <thesis | minithesis | progress | report | article>
675 \newcommand\listsymbolname{Definitions and Abbreviations}
676 </thesis | minithesis | progress | report | article>
677 <project | gdp>
678 \newcommand\listsymbolname{List of Symbols}
679 </project | gdp>
680 \usepackage{longtable}
681 \newcommand\listofsymbols[2]{
682   \btypeout{\listsymbolname}
683   \addtotoc{\listsymbolname}
684   <thesis | minithesis | progress | project | report | gdp>
685   \chapter*{\listsymbolname
686   </thesis | minithesis | progress | project | report | gdp>

```

```

687 <*article>
688     \section*{\listsymbolname
689 </article>
690     \mkboth{
691         \MakeUppercase\listsymbolname}{\MakeUppercase\listsymbolname}}
692 \begin{longtable}[c]{#1}#2\end{longtable}\par
693 <*thesis | minithesis | progress | project | report | gdp>
694     \cleardoublepage
695 </thesis | minithesis | progress | project | report | gdp>
696 }
697 </thesis | minithesis | progress | project | report | gdp | article>

```

7.3.6 List of Additional Material

`\addmaterialname` Provide a `listofaddmaterial` command to produce a list of additional material,
`\listofaddmaterial` the name can be changed with `\addmaterialname{NewName}`
`\addtolom` Material can be added by using `\addcontentsline{lom}{chapter}{Material Name}`

```

698 \newcommand\addmaterialname{List of Additional Material}
699 \newcommand\listofaddmaterial{
700 \addtotoc{\addmaterialname}
701 \begin{spacing}{1}{
702     \setlength{\parskip}{1pt}
703     \if@twocolumn
704         \@restonecoltrue\onecolumn
705     \else
706         \@restonecolfalse
707     \fi
708 <*thesis | minithesis | progress | project | report | gdp>
709     \chapter*{\addmaterialname
710 </thesis | minithesis | progress | project | report | gdp>
711 <*article | gdpsummary>
712     \section*{\addmaterialname
713 </article | gdpsummary>
714     \mkboth{
715         \MakeUppercase\addmaterialname}{\MakeUppercase\addmaterialname}}
716     \@starttoc{lom}
717     \if@restonecol\twocolumn\fi
718 <*thesis | minithesis | progress | project | report | gdp>
719     \cleardoublepage
720 </thesis | minithesis | progress | project | report | gdp>
721 }\end{spacing}
722 }
723 \newcommand\addtolom[1]{%
724 \addtocontents{lom}{\protect\contentsline{chapter}{\protect\numberline{#1}}{}}
725 }

```

7.4 Declaration of Authorship

`\authorshipdeclaration` Taken from Modified Template by Lovell 9.3
 TODO: Consider a separate dissertation class for non technical?
 TODO: Provide extra argument for putting the date into the Declaration
 This Authorship macro takes one argument for the case of People who have published part of their thesis already (perhaps in a paper).

This authorship macro produces the statement of Originality for the gdp class.
The authorship is normally done in custom appendix for projects like this.

xifthen else package used for the isempty command

```

726 (*thesis | minithesis | progress | report | article | project)
727 \usepackage{xifthen}
728 \newcommand\authorshipdeclaration[1]{
729 \btypeout{Declaration of Authorship}
730 \addtotoc{Declaration of Authorship}
731 \thispagestyle{plain}
732 \null\vfil
733 \vskip 60\p@
734 \begin{center}{\Large\bf Declaration of Authorship \par}\end{center}
735 I declare that this thesis and the work presented in it is my own and has
736 been generated by me as the result of my own original research.
737
738 I confirm that:
739
740 \begin{enumerate}
741 (*thesis | minithesis | progress | report | article)
742 \item This work was done wholly or mainly while in candidature for a research degree at this U
743 \item Where any part of this thesis has previously been submitted for a degree or any other qu
744 \end{thesis | minithesis | progress | report | article}
745 (*project)
746 \item This work was done wholly or mainly while in candidature for a degree at this University
747 \item Where any part of this thesis has previously been submitted for any other qualification
748 \end{project}
749 \item Where I have consulted the published work of others, this is always clearly attributed;
750 \item Where I have quoted from the work of others, the source is always given. With the except
751 \item I have acknowledged all main sources of help;
752 \item Where the thesis is based on work done by myself jointly with others, I have made clear
753
754 \ifthenelse{\isempty{#1}}{
755 {\item None of this work has been published before submission}
756 {\item Parts of this work have been published as: #1}
757 \end{enumerate}
758
759 \vspace{15.0mm}
760 \begin{minipage}[t]{0.7\textwidth}
761 Signed:.....
762 \end{minipage}%
763 \begin{minipage}[t]{0.3\textwidth}
764 Date:.....
765 \end{minipage}
766 \vfil\vfil\null
767 \cleardoublepage
768 }
769 \end{thesis | minithesis | progress | report | article | project}
770 (*gdp)
771 \usepackage{xifthen}
772 \newcommand\authorshipdeclaration[2][]{
773 \btypeout{Declaration of Authorship}
774 \addtotoc{Statement of Originality}
775 \thispagestyle{plain}
776 \null\vfil

```

```

777 \vskip 60\p@
778 \begin{center}{\Large\bf Statement of Originality \par}\end{center}
779 %TODO Check Spelling
780
781 \begin{enumerate}
782
783 \ifthenelse{\isempty{#1}}
784 {
785 \item I have read and understood the ECS Academic Integrity information
786 %% http://ecs.gg/ai
787 and the University's Academic Integrity Guidance for Students.
788 %% https://www.southampton.ac.uk/quality/assessment/academic\_integrity.page
789 \item I am aware that failure to act in accordance with the Regulations Governing Academic Integrity
790 %% http://www.calendar.soton.ac.uk/sectionIV/academic-integrity-regs.html
791 may lead to the imposition of penalties which, for the most serious cases, may include termination of the project.
792 \item I consent to the University copying and distributing any or all of my work in any form and for any purpose.
793 {#1}
794 %% The project specific statements
795 #2
796 \end{enumerate}
797 \vfil\vfil\vfil
798 \cleardoublepage
799 }
800 </gdp>

```

7.5 Copyright Statement

`\copyrightDeclaration` This standard Copyright statement is to be included for a thesis submission to University of Southampton Digital Repository

```

801 (*thesis)
802 \usepackage[export]{adjustbox} % for Soton logo alignment
803 \newcommand\copyrightDeclaration[1]{
804
805 \btypeout{Copyright declaration}
806 \thispagestyle{plain}
807
808 \hspace{-1.5in}\hspace{2.5cm}\begin{minipage}{17cm}
809 \null\vfil
810 \includegraphics[width=6cm,right]{UoSLogo.png}
811
812 \vskip 60\p@
813 \begin{center}{\selectfont\huge
814 \textcolor{cuscGray}{University of Southampton Research Repository}\par}
815 \end{center}
816 \vspace{1cm}
817
818 {\fontfamily{fds}\selectfont
819
820 \noindent Copyright \textcopyright~ and Moral Rights for this thesis and, where
821 applicable, any accompanying data are retained by the author and/or other
822 copyright owners. A copy can be downloaded for personal non-commercial research
823 or study, without prior permission or charge. This thesis and the accompanying
824 data cannot be reproduced or quoted extensively from without first obtaining

```

825 *permission in writing from the copyright holder/s. The content of the thesis*
826 *and accompanying research data (where applicable) must not be changed in any*
827 *way or sold commercially in any format or medium without the formal permission*
828 *of the copyright holder/s.*

829

830 `\vspace{0.5cm}`

831

832 *When referring to this thesis and any accompanying data, full bibliographic*
833 *details must be given, e.g.*

834

835 `\vspace{0.5cm}`

836

837 *Thesis: Author (Year of Submission) "Full thesis title", University of*
838 *Southampton, name of the University Faculty or School or Department,*
839 *PhD Thesis, pagination.*

840

841 `\vspace{0.5cm}`

842

843 *Data: Author (Year) Title. URI [dataset]}*

844 `\end{minipage}`

845 `\vfil\vfil\null`

846 `\cleardoublepage`

847 `}`

848

849 `\usepackage{lastpage} % counts the full number of pages`

850

851 `\</thesis>`

7.6 Acknowledgements

`\acknowledgements` Thank someone!

852 `\newcommand\acknowledgements[1]{`
853 `\btypeout{Acknowledgements}`
854 `\addtotoc{Acknowledgements}`
855 `{*thesis | minithesis | progress | project | report | gdp}`
856 `\thispagestyle{plain}`
857 `\null\vfil`
858 `\vskip 60\p@`
859 `\begin{center}{\Large\bf Acknowledgements \par}\end{center}`
860 `{\normalsize #1}`
861 `\vfil\vfil\null`
862 `\cleardoublepage`
863 `\</thesis | minithesis | progress | project | report | gdp}`
864 `{*article}`
865 `\section*{Acknowledgements}`
866 `{\normalsize #1}`
867 `\</article>`
868 `}`

7.7 Dedicatory

`\dedicatory` Dedicate the document to someone!

869 `\newcommand\dedicatory[1]{`

```

870 \btypeout{Dedicatory}
871 ⟨*thesis | minithesis | progress | project | report | gdp⟩
872 \thispagestyle{plain}
873 \null\vfil
874 \vskip 60\p@
875 \begin{center}{\Large \sl #1}\end{center}
876 \vfil\null
877 \cleardoublepage
878 ⟨/thesis | minithesis | progress | project | report | gdp⟩
879 }

```

8 Parts

`\frontmatter` Define `frontmatter`, `mainmatter`, `backmatter` for the article class and rename the
`\mainmatter` bibliography to something that makes more sense. For other classes make the
`\backmatter` Appendix entry in the table of contents better and rename the references in a
`\appendix` slightly different way.

```

880 ⟨*article⟩
881 \newcommand\frontmatter{ }
882 \newcommand\mainmatter{ }
883 \newcommand\bibname{References}
884 \newcommand\backmatter{}
885 ⟨/article⟩
886 ⟨*thesis | minithesis | progress | project | report | gdp⟩
887 \renewcommand\bibname{References}
888 \let\oldappendix\appendix % Put full appendix name in ToC
889 \renewcommand{\appendix}{%
890   \oldappendix
891   \let\oldacl@pp=\addcontentsline
892   \def\addcontentsline##1##2##3{\oldacl@pp{##1}{##2}{\appendixname\space ##3}}
893 }
894 \let\oldbackmatter\backmatter
895 \def\backmatter{%
896   \oldbackmatter
897   \let\addcontentsline=\oldacl@pp
898 }
899 ⟨/thesis | minithesis | progress | project | report | gdp⟩

900 ⟨/thesis | minithesis | progress | project | report | article | gdp | gdpsummary⟩

```

9 Example Documents

```

901 ⟨*testthesis⟩
902 \documentclass[sotoncolour]{uosthesis} % Use the Thesis Style with custom link colour
903 ⟨/testthesis⟩
904 ⟨*testminithesis⟩
905 \documentclass[sotoncolour]{uosminithesis} % Use the minithesis Style with custom link colour
906 ⟨/testminithesis⟩
907 ⟨*testprogress⟩
908 \documentclass[sotoncolour]{uosprogress} % Use the progress Style with custom link colour
909 ⟨/testprogress⟩
910 ⟨*testproject⟩

```

```

911 \documentclass[sotoncolour]{uosproject}      % Use the Project Style with custom link colour
912 \testproject
913 \testreport
914 \documentclass[sotoncolour]{uosreport}        % Use the Report Style with custom link colour
915 \testreport
916 \testarticle
917 \documentclass[sotoncolour]{uosarticle}       % Use the Article Style with custom link colour
918 \testarticle
919 \testgdp
920 \documentclass[sotoncolour]{uosgdp}           % Use the GDP Report Style with custom link colour
921 \testgdp
922 \testgdpsummary
923 \documentclass[sotoncolour]{uosgdpsummary}    % Use the GDP Summary Report Style with custom link colour
924 \testgdpsummary
925 \testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary)
926 \graphicspath{{../Figures/}} % Location of your graphics files
927 \usepackage[round]{natbib} % Use Natbib style for the refs.
928 \testthesis | testminithesis | testproject | testreport | testgdp)
929 \usepackage{bibentry} % Use bibentry for prepublished works
930 \nobibliography* % Use bibentry for prepublished works
931 \usepackage{attrib} % Use the attrib package for quotations
932 \testthesis | testminithesis | testproject | testreport | testgdp)
933 \hypersetup{colorlinks=true} % Set to false for black/white printing
934 \testthesis)
935 \hypersetup{pdfstartpage=3} % Set first page to skip copyright declaration
936 \testthesis)
937 \input{Definitions} % Include your abbreviations
938 %% -----
939 %% -----THESIS/DOC INFORMATION -----
940 \faculty {Faculty of [Insert faculty]}
941 \FACULTY {\MakeUppercase{\facname}}
942 \department {School of [Insert school]}
943 \DEPARTMENT {\MakeUppercase{\deptname}}
944 \group {[Group name]}
945 \GROUP {\MakeUppercase{\groupname}}
946 \title {An Investigation into \dots}
947 \testthesis)
948 %% TODO: Replace with your name removing []
949 \authors {[Insert full name, for example, Sarah Alison Watson]} % Use of Soton Email unadv
950 \testthesis)
951 \testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary)
952 \authors {\texorpdfstring
953 {\href{mailto:S.A.Watson@soton.ac.uk}{Name and email, for example, Sarah Alison W
954 {Name and email, for example, Sarah Alison Watson}
955 }
956 \testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary)
957 \addresses {\groupname\\deptname\\univname}
958 \date {\today}
959 \testminithesis | testprogress | testproject | testgdp | testgdpsummary)
960 % \supervisor[s] {Mr Beavis and Mrs S Supervisor}
961 \supervisor {Mr Beavis}
962 % \examiner[s] {Dr Butthead and Dr A.N. Other}
963 \examiner {Dr Butthead}
964 \testminithesis | testprogress | testproject | testgdp | testgdpsummary)

```

```

965 <*testproject>
966 \degree {BEng Electronic Engineering}
967 </testproject>
968 <*testgdp|testgdpsummary>
969 \degree {Master of Engineering}
970 </testgdp|testgdpsummary>
971 %% Optional Fields TODO: Replace these fields with your own data
972 <testthesis|testminithesis|testprogress>
973 \qualifications{[Insert Previous Qualifications, for example MEng]}
974 <*testthesis>
975 \orcidid{0000-0002-1825-0097}
976 \doi{10.1002/0470841559.ch1}
977 \volume{n}{m} %Optional Volume Numbering Volume n of m
978 </testthesis>
979 \subject {}
980 \keywords {}
981
982 \begin{document}
983 %% ----- FRONT MATTER ORGANISATION -----
984 <*testthesis>
985 \pagenumbering{gobble} % removes page number
986 \copyrightDeclaration{} % !!! Comment this line when printing the hardcopy !!!
987 \raggedright %% Set the style to Left justification, remove for fill justifi
988 %% Must be done after copyrightDeclaration
989 </testthesis>
990 \frontmatter
991 \maketitle
992 </testthesis|testminithesis|testprogress|testproject|testreport|testarticle|testgdp|testgdpsummary>
993 <*testthesis|testminithesis|testprogress|testproject|testreport|testarticle|testgdp>
994 \begin{abstract}
995 This work is all about \dots
996 <*testthesis|testminithesis|testprogress>
997 There are broad instructions for this template entitled: How to use the University of Southamp
998
999 There is no prescribed font, you should use a font appropriate to your discipline. See Produ
1000 </testthesis|testminithesis|testprogress>
1001 \end{abstract}
1002 <*testthesis|testminithesis|testprogress|testproject|testreport|testgdp>
1003 \pdfbookmark[0]{\contentsname}{toc} % Add pdf bookmark for contents page for navigation
1004 \tableofcontents
1005 \listoffigures
1006 \listoftables
1007 %% The List of listings does not, by default, appear in the ToC, so...
1008 \addtotoc{Listings}
1009 \lstlistoflistings
1010 \listofaddmaterial
1011 \addtolom{Material Name e.g Map}
1012 \addtolom{Material Name e.g CD}
1013 \addtolom{Test Material}
1014 <*testthesis|testminithesis|testproject|testreport>
1015 %% ----- AUTHORSHIP DECLARATION/ ACKNOW. / DEDICATORY -----
1016 %% Either include citations like below (as many as required spaced with commas or 'and').
1017 %% \bibentry command must be used here with prepublished papers
1018 % https://www.stefaanlippens.net/bibentry/

```

```

1019 \authorshipdeclaration{\bibentry{Gunn:2001:pdflatex}\newline\bibentry{Lovell:2011:updated}\new
1020 %% Or state no citations like below
1021 %% \authorshipdeclaration{}
1022 %% -----
1023 \acknowledgements{Thanks to no one.}
1024 \dedicatory{To \dots}
1025 </testthesis|testminithesis|testproject|testreport>
1026 <testgdp>
1027 %% ----- STATEMENT OF ORIGINALITY/ ACKNOW. / DEDICATORY -----
1028 %% based on ai_statement.docx available: https://secure.ecs.soton.ac.uk/notes/elec6200/
1029 %% If not for an ECS GDP and you want to remove or change the ECS Manadatory ai statements.
1030 %%\authorshipdeclaration[\item Department specific regulation]{\item extra statements}
1031 \authorshipdeclaration{
1032 %% *****You must change the statements below if you do not agree with them. *****
1033 \item I have acknowledged all sources, and identified any content taken from elsewhere.
1034 \item I have not used any resources produced by anyone else.
1035 \item I did all the work myself, or with my allocated group, and have not helped anyone else.
1036 \item The material in the report is genuine, and I have included all my data/code/designs.
1037 \item I have not submitted any part of this work for another assessment.
1038 \item My work did not involve human participants, their cells or data, or animals.}
1039 %% -----
1040
1041 \acknowledgements{Thanks to no one.}
1042 \dedicatory{To \dots}
1043 </testgdp>
1044 %%Lightweight Definitions and Abbreviations see package:nomencl for alternative
1045 %% Include if relevant to discipline
1046 \listofsymbols{lll}{\w$ & The weight vector\}$\S$ & If relevant to discipline}
1047 </testthesis|testminithesis|testprogress|testproject|testreport|testgdp>
1048 </testthesis|testminithesis|testprogress|testproject|testreport|testarticle|testgdp>
1049 <testthesis|testminithesis|testprogress|testproject|testreport|testarticle|testgdp|testgdpsummary>
1050 \mainmatter
1051 %% ----- MAIN MATTER (CONTENT) -----
1052 </testthesis|testminithesis|testprogress|testproject|testreport|testarticle|testgdp|testgdpsummary>
1053 <testthesis|testminithesis|testprogress|testproject|testreport|testgdp>
1054 \include{Introduction}
1055 \include{Conclusions}
1056 \begin{lstlisting}[caption=Listing of what an example listing would be like]
1057 This is a test listing
1058
1059 The test listing has serveral lines
1060 to show how the listings
1061 will be displayed
1062 \end{lstlisting}
1063 \appendix
1064 \include{AppendixA}
1065 \backmatter
1066 <testthesis|testminithesis|testprogress>
1067 \chapter{Glossary [if relevant]}
1068 </testthesis|testminithesis|testprogress>
1069 \bibliographystyle{plainnat}
1070 \bibliography{UOS}
1071 <testthesis|testminithesis|testprogress>
1072 \chapter{Bibliography}

```

```

1073 To use bibliography as well as the references section use the \texttt{multibbl} package.
1074 \chapter{Index [if relevant]}
1075 </testthesis|testminithesis|testprogress>
1076 </testthesis|testminithesis|testprogress|testproject|testreport|testgdp>
1077 <*testgdpsummary>
1078 \section*{Introduction}
1079 \section*{Objectives}
1080 \section*{Resources}
1081 \section*{Constraints}
1082 \section*{Approaching the task}
1083 \section*{Team Organisation}
1084 \section*{Important Results}
1085 \section*{Conclusions}
1086 \section*{Recommendations}
1087 </testgdpsummary>
1088 <*introduction>
1089 \chapter{Introduction} \label{Chapter:Introduction}
1090 </introduction>
1091 <*testarticle>
1092 \section{Introduction} \label{Section:Introduction}
1093 </testarticle>
1094 <*introduction|testarticle>
1095 You probably found all the files from \cite{Longman:2019:templ},
1096 they were originally made from \cite{Gunn:2001:pdflatex}.
1097 Template specific instructions can be found at:
1098 \url{https://git.soton.ac.uk/el7g15/uos-latex-template-instructions}.
1099
1100 \tref{Table:tabex} illustrates the results of some arbitrary example work.
1101 \begin{table}[!htb]
1102   \centering
1103   \begin{tabular}{cc}
1104     \toprule
1105     \textbf{Training Error} & \textbf{Testing Error}\\
1106     \midrule
1107     0 &  $\infty$ 
1108     \bottomrule
1109   \end{tabular}
1110   \caption{The Results}
1111   \label{Table:tabex}
1112 \end{table}
1113
1114 \fref{Figure:figex} shows why this is the case.
1115 \begin{figure}[!htb]
1116   \centering
1117   \includegraphics[width=8cm]{figure}
1118   \caption{A colourful picture.}
1119   \label{Figure:figex}
1120 \end{figure}
1121
1122 This page shows you a subfigure example in \fref{Figure:figsubex}.
1123 \begin{figure}[!htb]
1124   \centering
1125   \subcaptionbox{The left caption}{
1126     \includegraphics[width=4.2cm]{figure}

```

```

1127     \label{Figure:figsubex:left}
1128 }
1129 \subcaptionbox{The right caption}{
1130     \includegraphics[width=4.2cm]{figure}
1131     \label{Figure:figsubex:right}
1132 }
1133 \caption{A doubly colourful picture.}
1134 \label{Figure:figsubex}
1135 \end{figure}
1136 Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec rutrum sodales ligula, ac aliquam
1137
1138 \section{A Section of a chapter}
1139 Nulla molestie velit sed dui ullamcorper viverra. Fusce placerat vulputate lacus eu consequat.
1140
1141 \subsection{Some quotes}
1142
1143 Nam egestas felis euismod erat tincidunt ornare. Nulla hendrerit tempor purus ac consequat. Aliquam
1144 \begin{quote}
1145 Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec rutrum sodales ligula, ac aliquam
1146 \end{quote}
1147
1148 Pellentesque sodales lobortis feugiat. Vivamus volutpat mauris id odio aliquam maximus sed sit
1149 \begin{quote}
1150 The \verb|\attrib| macro attributes block elements, for example when citing
1151 a reference after a block quotation.
1152 \ifdefined\attrib\attrib{\cite{attribpackage}}\fi
1153 \end{quote}
1154
1155 Donec vitae massa nisi. Praesent sed sollicitudin urna. Suspendisse vitae cursus tortor. In eu
1156 \</introduction | testarticle>
1157 \< *conclusions>
1158 \chapter{Conclusions} \label{Chapter: Conclusions}
1159 \</conclusions>
1160 \< *testarticle>
1161 %% -----
1162 \section{Conclusions} \label{Section: Conclusions}
1163 \</testarticle>
1164 \< *conclusions | testarticle>
1165 It works.
1166 \</conclusions | testarticle>
1167 \< *testarticle>
1168 \acknowledgements{Thanks to no one.}
1169 \backmatter
1170 \appendix
1171 \bibliographystyle{plainnat}
1172 \bibliography{UOS}
1173 \</testarticle>
1174 \< *appendix | testarticle>
1175 \< *appendix>
1176 \chapter{Stuff} \label{Chapter:Stuff}
1177 \</appendix>
1178 \< *testarticle>
1179 %% -----
1180 \section{Stuff} \label{Section:Stuff}

```

```

1181 </testarticle>
1182 The following gets in the way of the text....
1183 </appendix | testarticle>
1184 < *testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary>
1185 \end{document}
1186 %% -----
1187 </testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary>

```

9.1 Example Figure

```

1188 <*figure>
1189 %%BoundingBox: 0 150 600 650
1190 %%EndComments
1191 0.0 setlinewidth
1192 /length 0.1 def
1193 /width 0.02 def
1194 /hsvcircle {
1195   gsave
1196     /h 0.0 def
1197     0 4 360 {
1198       pop
1199       gsave
1200       0.5 0.0 translate
1201       newpath
1202       0.0 0.0 moveto
1203       length 0.0 lineto
1204       length width lineto
1205       0.0 width lineto
1206       closepath
1207       h 1.0 1.0 sethsbcolor
1208       fill
1209       grestore
1210       /h h 4 360 div add def
1211       4 rotate
1212     } for
1213   grestore
1214 } def
1215 0.0 setlinewidth
1216 0.0 setgray
1217 300 400 translate
1218 500 500 scale
1219 30 rotate
1220 1.0 0.7 scale
1221 -30 rotate
1222 hsvcircle
1223 0.8 0.8 scale
1224 hsvcircle
1225 0.8 0.8 scale
1226 hsvcircle
1227 0.8 0.8 scale
1228 hsvcircle
1229 0.8 0.8 scale
1230 hsvcircle
1231 0.8 0.8 scale
1232 hsvcircle

```

```

1233 0.8 0.8 scale
1234 hsvcircle
1235 showpage
1236 </figure>

```

9.2 Definitions File

```

1237 <*definitions>
1238 \newcommand{\BibTeX}{\rm B\kern-.05em{\sc i\kern-.025em b}\kern-.08em T\kern-.1667em\lower.7
1239
1240 %% People
1241 \newcounter{address}
1242 \setcounter{address}{1}
1243 \renewcommand{\theaddress}{\textsuperscript{\fnsymbol{address}}\}
1244 \newcommand{\address}[1]{\refstepcounter{address}\theaddress#1\}
1245 \newcommand{\Name}[3]{\texorpdfstring{\href{mailto:#3}{#2}#1}{#2}\xspace}
1246 \newcommand{\SteveRGunn}[1]{\Name{#1}{Steve R. Gunn}{S.R.Gunn@ecs.soton.ac.uk}}
1247
1248 %% Dingbats
1249 \newcommand{\tick}{\ding{51}}
1250 \newcommand{\cross}{\ding{55}}
1251
1252 %% Calculus
1253 \newcommand{\pd}[2]{\ensuremath{\frac{\partial #1}{\partial #2}}\xspace}
1254 \newcommand{\fd}[2]{\ensuremath{\frac{d #1}{d #2}}\xspace}
1255 \newcommand{\dint}{\ensuremath{\int\!\!\!\int}\xspace}
1256 \newcommand{\tint}{\ensuremath{\int\!\!\!\int\!\!\!\int}\xspace}
1257
1258 %% Math Sets
1259 \newcommand{\Q}[1]{\ensuremath{\mathbb{#1}}\xspace}
1260 \newcommand{\R}{\Q{R}}
1261
1262 %% Matrix, Vector
1263 \newcommand{\V}[1]{\ensuremath{\boldsymbol{#1}}\xspace}
1264 \newcommand{\M}[1]{\ensuremath{\boldsymbol{#1}}\xspace}
1265 \newcommand{\0}{\V{0}}
1266 \newcommand{\1}{\V{1}}
1267 \newcommand{\I}{\M{I}}
1268
1269 %% Math Functions
1270 \newcommand{\F}[1]{\ensuremath{\mathrm{#1}}\xspace}
1271 \newcommand{\sgn}{\F{sgn}}
1272 \newcommand{\tr}{\F{trace}}
1273 \newcommand{\diag}{\F{diag}}
1274
1275 %% Math Names
1276 \newcommand{\N}[1]{\ensuremath{\mathit{#1}}\xspace}
1277
1278 %% Data
1279 \newcommand{\mc}[1]{\ensuremath{\mathcal{#1}}\xspace}
1280 \newcommand{\Hyp}{\mc{H}}
1281 \newcommand{\D}{\mc{D}}
1282
1283 %% Kernel
1284 \newcommand{\K}{\M{K}}

```

```

1285 \newcommand{\eins}{\texorpdfstring{\ensuremath{\epsilon}}{\textepsilon}-insensitive\xspace}
1286 \newcommand{\e}{\ensuremath{\epsilon}\xspace}
1287 \newcommand{\Bxi}{\ensuremath{\boldsymbol{\xi}}\xspace}
1288 \newcommand{\Kanova}{\ensuremath{\mathit{K}_{ANOVA}}\xspace}
1289 \newcommand{\Kspline}{\ensuremath{\mathit{K}_{spline}}\xspace}
1290
1291 %% Bayesian
1292 \newcommand{\MP}{\ensuremath{\mathit{\scriptscriptstyle M}\hspace{-1.5pt}P}\xspace}
1293 \newcommand{\ML}{\ensuremath{\mathit{\scriptscriptstyle M}\hspace{-1.5pt}L}\xspace}
1294 \newcommand{\Qw}{\ensuremath{Q_{\w}(\w)}\xspace}
1295 \newcommand{\Qa}{\ensuremath{Q_{\Ba}(\Ba)}\xspace}
1296 \newcommand{\Qb}{\ensuremath{Q_{\beta}(\beta)}\xspace}
1297 \newcommand{\wMPab}{\ensuremath{w_{\MP|\bar{\Ba},\bar{\beta}}}\xspace}
1298 \newcommand{\wMP}{\ensuremath{w_{\MP}}\xspace}
1299 \newcommand{\yMP}{\ensuremath{y_{\MP}}\xspace}
1300 \newcommand{\BaMP}{\ensuremath{Ba_{\hspace{1pt}\MP}}\xspace}
1301 \newcommand{\aMP}{\ensuremath{\alpha_{\hspace{1pt}\MP}}\xspace}
1302 \newcommand{\bMP}{\ensuremath{\beta_{\hspace{1pt}\MP}}\xspace}
1303 \newcommand{\Sab}{\ensuremath{M_{\Sigma}(\bar{\Ba},\bar{\beta})}\xspace}
1304 \newcommand{\Ba}{\ensuremath{\boldsymbol{\alpha}}\xspace}
1305 \newcommand{\Bb}{\ensuremath{\boldsymbol{\beta}}\xspace}
1306 \newcommand{\Bm}{\ensuremath{\boldsymbol{\mu}}\xspace}
1307 \newcommand{\BL}{\ensuremath{\boldsymbol{\Lambda}}\xspace}
1308 \newcommand{\BPhi}{\ensuremath{\boldsymbol{\Phi}}\xspace}
1309 \newcommand{\SMP}{\ensuremath{M_{\Sigma}(\MP)}\xspace}
1310
1311 \newcommand{\Pa}{\ensuremath{P(\alpha|\mathcal{H})}\xspace}
1312 \newcommand{\Pb}{\ensuremath{P(\beta|\mathcal{H})}\xspace}
1313 \newcommand{\Pab}{\ensuremath{P(\alpha,\beta|\mathcal{H})}\xspace}
1314 \newcommand{\Pw}{\ensuremath{P(\w|\mathcal{H})}\xspace}
1315 \newcommand{\PD}{\ensuremath{P(\mathcal{D}|\mathcal{H})}\xspace}
1316 \newcommand{\PwIa}{\ensuremath{P(\w|\alpha,\mathcal{H})}\xspace}
1317 \newcommand{\PDIwb}{\ensuremath{P(\mathcal{D}|\w,\beta,\mathcal{H})}\xspace}
1318 \newcommand{\PDwab}{\ensuremath{P(\mathcal{D},\w,\alpha,\beta|\mathcal{H})}\xspace}
1319 \newcommand{\PDIw}{\ensuremath{P(\mathcal{D}|\w,\mathcal{H})}\xspace}
1320 \newcommand{\PwID}{\ensuremath{P(\w|\mathcal{D},\mathcal{H})}\xspace}
1321 \newcommand{\PwabID}{\ensuremath{P(\w,\alpha,\beta|\mathcal{D},\mathcal{H})}\xspace}
1322
1323 \newcommand{\PanH}{\ensuremath{P(\alpha)}\xspace}
1324 \newcommand{\PbnH}{\ensuremath{P(\beta)}\xspace}
1325 \newcommand{\PabnH}{\ensuremath{P(\alpha,\beta)}\xspace}
1326 \newcommand{\PwnH}{\ensuremath{P(\w)}\xspace}
1327 \newcommand{\PDnH}{\ensuremath{P(\mathcal{D})}\xspace}
1328 \newcommand{\PwIanH}{\ensuremath{P(\w|\alpha)}\xspace}
1329 \newcommand{\PDIwbnH}{\ensuremath{P(\mathcal{D}|\w,\beta)}\xspace}
1330 \newcommand{\PDwabnH}{\ensuremath{P(\mathcal{D},\w,\Ba,\beta)}\xspace}
1331 \newcommand{\PDIwnH}{\ensuremath{P(\mathcal{D}|\w)}\xspace}
1332 \newcommand{\PwIDnH}{\ensuremath{P(\w|\mathcal{D})}\xspace}
1333 \newcommand{\PwabIDnH}{\ensuremath{P(\w,\alpha,\beta|\mathcal{D})}\xspace}
1334
1335 \newcommand{\PDwBab}{\ensuremath{P(\mathcal{D},\w,\Ba,\beta|\mathcal{H})}\xspace}
1336 \newcommand{\PwIBa}{\ensuremath{P(\w|\Ba,\mathcal{H})}\xspace}
1337 \newcommand{\PBab}{\ensuremath{P(\Ba,\beta|\mathcal{H})}\xspace}
1338 \newcommand{\PwBabID}{\ensuremath{P(\w,\Ba,\beta|\mathcal{D},\mathcal{H})}\xspace}

```

```

1339
1340 \newcommand{\PBanH}{\ensuremath{P(\backslash Ba)}\xspace}
1341 \newcommand{\PwIBanH}{\ensuremath{P(\backslash w|\backslash Ba)}\xspace}
1342
1343 %% Snakes
1344 \newcommand{\Esnake}{\ensuremath{\mathit{E}_{\text{snake}}}\xspace}
1345 \newcommand{\Eimage}{\ensuremath{\mathit{E}_{\text{image}}}\xspace}
1346 \newcommand{\Econt}{\ensuremath{\mathit{E}_{\text{cont}}}\xspace}
1347 \newcommand{\Ecurv}{\ensuremath{\mathit{E}_{\text{curv}}}\xspace}
1348 \newcommand{\Eint}{\ensuremath{\mathit{E}_{\text{int}}}\xspace}
1349 \newcommand{\Eext}{\ensuremath{\mathit{E}_{\text{ext}}}\xspace}
1350 \newcommand{\Eterm}{\ensuremath{\mathit{E}_{\text{term}}}\xspace}
1351 \newcommand{\Eline}{\ensuremath{\mathit{E}_{\text{line}}}\xspace}
1352 \newcommand{\Edge}{\ensuremath{\mathit{E}_{\text{edge}}}\xspace}
1353 \newcommand{\Econ}{\ensuremath{\mathit{E}_{\text{con}}}\xspace}
1354 \newcommand{\Eangle}{\ensuremath{\mathit{E}_{\text{angle}}}\xspace}
1355 \newcommand{\Elshape}{\ensuremath{\mathit{E}_{\text{lshape}}}\xspace}
1356 \newcommand{\Edgedir}{\ensuremath{\mathit{E}_{\text{edgedir}}}\xspace}
1357 \newcommand{\Emodel}{\ensuremath{\mathit{E}_{\text{model}}}\xspace}
1358 \newcommand{\wte}{\ensuremath{\mathit{w}_{\text{term}}}\xspace}
1359 \newcommand{\wli}{\ensuremath{\mathit{w}_{\text{line}}}\xspace}
1360 \newcommand{\wed}{\ensuremath{\mathit{w}_{\text{edge}}}\xspace}
1361 \newcommand{\wco}{\ensuremath{\mathit{w}_{\text{con}}}\xspace}
1362
1363
1364 %% Environments
1365 \newcounter{alg}
1366 \newenvironment{algorithm}[1]
1367 {
1368     \stepcounter{alg}
1369     \begin{table}[htb]
1370     \centering
1371     \begin{tabular}[t]{l}
1372     \hline&\\
1373     \multicolumn{2}{l}{\bf Algorithm \arabic{alg}: #1}\&\&\\
1374 } {
1375     &\\
1376     \hline
1377     \end{tabular}
1378     \end{table}
1379 }
1380 \</definitions>

```

9.3 References File

```

1381 \<references>
1382 @MISC{Longman:2019:templ,
1383   author = {E. Longman},
1384   title = {{University of Southampton LaTeX documents}},
1385   year = {2019},
1386   NOTE = {"\url{https://library.soton.ac.uk/thesis/templates} and
1387           "\url{https://git.soton.ac.uk/el7g15/uos-latex-template}"},
1388 }
1389 @MISC{Gunn:2001:pdflatex,
1390   author = {S.R. Gunn},

```

```

1391 title =      {PDFLaTeX Instructions},
1392 year =      {2001},
1393 url =       {http://www.ecs.soton.ac.uk/~srg/softwaretools/document/}
1394 }
1395 @MISC{Lovell:2011:updated,
1396 author =     {C. J. Lovell},
1397 title =     {Updated templates},
1398 year =      {2011}
1399 }
1400 @MISC{Gunn:2011:updated2,
1401 author =     {S.R. Gunn and C. J. Lovell},
1402 title =     {Updated templates reference 2},
1403 year =      {2011}
1404 }
1405 @MISC{attribpackage,
1406 author =     {Matt Swift},
1407 title =     {The attrib LaTeX package
1408 attribution of block elements (Frankenstein's hat)},
1409 year =      {1999},
1410 url =       {http://cs.brown.edu/about/system/managed/latex/doc/attrib.pdf}
1411 }
1412
1413 </references>

```

9.4 Bibliography Style File

This has now been changed to the ordinary plainnat as natbib caught up

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