

L^AT_EX 2_ε Document Styles for the University of Southampton File version v1.3, dated 2021/02/15

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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 \@tempswafalse
28 \@tfor\@this:=#2\do{
29 \expandtwoargs\in@{,\@this,}{,\@curroptions,}
30 \ifin@ \@tempswatrue \@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 }

```

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

```

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}

```

`\cleardoublepage` Redefine `cleardoublepage` to remove headers from blank pages in twosided documents.

```

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/Eq/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
`\tref` referencing commands.

```

\eref 144 \usepackage[justification=centerlast,font=small,labelfont=sc]{caption}
\cref 145 \setlength{\captionmargin}{20pt}
\sref 146 \newcommand{\fref}[1]{Figure~\ref{#1}}
\aref 147 \newcommand{\tref}[1]{Table~\ref{#1}}
148 \newcommand{\eref}[1]{Equation~\ref{#1}}
149 \newcommand{\cref}[1]{Chapter~\ref{#1}}
150 \newcommand{\sref}[1]{Section~\ref{#1}}
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,hypertextnames=false,
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 {Cyber Physical Systems 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 </thesis | minithesis | progress | project | gdp | gdpsummary>
256 <*thesis | minithesis | progress | project>
257       {\large \deptname \par}
258 </thesis | minithesis | progress | project>
259       \vfill
260 <*minithesis>
261       {\large A mini-thesis submitted for transfer from}
262       {\large MPhil to PhD \par}
263 </minithesis>
264 <*progress>
265       {\large A progress report submitted for continuation}
266       {\large towards a PhD \par}
267 </progress>
268 <*project>
269       {\large A project report submitted for the}
270       {\large award of \par \degreename \par}
271 </project>
272 <*gdp>
273       {\large A group design project report submitted for}
274       {\large the award of \par \degreename \par}
275 </gdp>
276 <*gdpsummary>
277       {\large A group design project summary report submitted}
278       {\large for the award of \par \degreename \par}
279 </gdpsummary>
280 <*minithesis | progress | project>
281       \vfill
282       {\normalsize Supervisor\supplural: \supname \par}
283       \ifthenelse{\isempty{\examname}}{
284       {\normalsize Examiner\examplural: \examname \par}{
285       \vfill
286       \hspace{6mm}\parbox[t][51mm][s]{89mm}{
287         \center
288         \vfill
289         {\large \bf \@title \par}
290         \vfill

```

```

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

```

```

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

```

```

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

```

```

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

```

7.2 Abstract Page

`\abstract` Setup an appropriate abstract page.

```

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

```

```

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

```

```

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

```

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

```



```

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

```

7.3.2 Table of Contents

`\tableofcontents` Adjust line and paragraph spacing.

```

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

```

7.3.3 List of Figures

`\listoffigures` Adjust line and paragraph spacing.

```

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

```

```

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

```

7.3.4 List of Tables

`\listoftables` Adjust line and paragraph spacing.

```

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

```

7.3.5 List of Symbols

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

```

\listofsymbols 673 <*thesis | minithesis | progress | report | article>
674 \newcommand\listsymbolname{Definitions and Abbreviations}
675 </thesis | minithesis | progress | report | article>
676 <*project | gdp>
677 \newcommand\listsymbolname{List of Symbols}
678 </project | gdp>
679 \usepackage{longtable}
680 \newcommand\listofsymbols[2]{
681 \btypeout{\listsymbolname}
682 \addtotoc{\listsymbolname}
683 <*thesis | minithesis | progress | project | report | gdp>
684 \chapter*{\listsymbolname
685 </thesis | minithesis | progress | project | report | gdp>
686 <*article>

```

```

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

```

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

```

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

```

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

```

```

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

```

7.5 Copyright Statement

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

```

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

```

824 *permission in writing from the copyright holder/s. The content of the thesis*
825 *and accompanying research data (where applicable) must not be changed in any*
826 *way or sold commercially in any format or medium without the formal permission*
827 *of the copyright holder/s.*
828
829 `\vspace{0.5cm}`
830
831 *When referring to this thesis and any accompanying data, full bibliographic*
832 *details must be given, e.g.*
833
834 `\vspace{0.5cm}`
835
836 *Thesis: Author (Year of Submission) "Full thesis title", University of*
837 *Southampton, name of the University Faculty or School or Department,*
838 *PhD Thesis, pagination.*
839
840 `\vspace{0.5cm}`
841
842 *Data: Author (Year) Title. URI [dataset]}*
843 `\end{minipage}`
844 `\vfil\vfil\null`
845 `\cleardoublepage`
846 `}`
847
848 `\usepackage{lastpage}` % counts the full number of pages
849
850 `\</thesis>`

7.6 Acknowledgements

`\acknowledgements` Thank someone!

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

7.7 Dedicatory

`\dedicatory` Dedicate the document to someone!

868 `\newcommand\dedicatory[1]{`

```

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

```

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.

```

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

```

9 Example Documents

```

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

```

```

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

```



```

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

```

```

1018 \authorshipdeclaration{\bibentry{Gunn:2001:pdflatex}\newline\bibentry{Lovell:2011:updated}\new
1019 %% Or state no citations like below
1020 %% \authorshipdeclaration{}
1021 %% -----
1022 \acknowledgements{Thanks to no one.}
1023 \dedicatory{To \dots}
1024 \</testthesis|testminithesis|testproject|testreport>
1025 \<testgdp>
1026 %% ----- STATEMENT OF ORIGINALITY/ ACKNOW. / DEDICATORY -----
1027 %% based on ai_statement.docx available: https://secure.ecs.soton.ac.uk/notes/elec6200/
1028 %% If not for an ECS GDP and you want to remove or change the ECS Mandatory ai statements.
1029 %%\authorshipdeclaration[\item Department specific regulation]{\item extra statements}
1030 \authorshipdeclaration{
1031 %% *****You must change the statements below if you do not agree with them. *****
1032 \item I have acknowledged all sources, and identified any content taken from elsewhere.
1033 \item I have not used any resources produced by anyone else.
1034 \item I did all the work myself, or with my allocated group, and have not helped anyone else.
1035 \item The material in the report is genuine, and I have included all my data/code/designs.
1036 \item I have not submitted any part of this work for another assessment.
1037 \item My work did not involve human participants, their cells or data, or animals.}
1038 %% -----
1039
1040 \acknowledgements{Thanks to no one.}
1041 \dedicatory{To \dots}
1042 \</testgdp>
1043 %%Lightweight Definitions and Abbreviations see package:nomencl for alternative
1044 %% Include if relevant to discipline
1045 \listofsymbols{lll}{\w$ & The weight vector\}\$S$ & If relevant to discipline}
1046 \</testthesis|testminithesis|testprogress|testproject|testreport|testgdp>
1047 \</testthesis|testminithesis|testprogress|testproject|testreport|testarticle|testgdp>
1048 \<testthesis|testminithesis|testprogress|testproject|testreport|testarticle|testgdp|testgdpsummary>
1049 \mainmatter
1050 %% ----- MAIN MATTER (CONTENT) -----
1051 \</testthesis|testminithesis|testprogress|testproject|testreport|testarticle|testgdp|testgdpsummary>
1052 \<testthesis|testminithesis|testprogress|testproject|testreport|testgdp>
1053 \include{Introduction}
1054 \include{Conclusions}
1055 \begin{lstlisting}[caption=Listing of what an example listing would be like]
1056 This is a test listing
1057
1058 The test listing has serveral lines
1059 to show how the listings
1060 will be displayed
1061 \end{lstlisting}
1062 \appendix
1063 \include{AppendixA}
1064 \backmatter
1065 \<testthesis|testminithesis|testprogress>
1066 \chapter{Glossary [if relevant]}
1067 \</testthesis|testminithesis|testprogress>
1068 \bibliographystyle{plainnat}
1069 \bibliography{UOS}
1070 \<testthesis|testminithesis|testprogress>
1071 \chapter{Bibliography}

```

```

1072 To use bibliography as well as the references section use the \texttt{multibbl} package.
1073 \chapter{Index [if relevant]}
1074 </testthesis|testminithesis|testprogress>
1075 </testthesis|testminithesis|testprogress|testproject|testreport|testgdp>
1076 <*testgdpsummary>
1077 \section*{Introduction}
1078 \section*{Objectives}
1079 \section*{Resources}
1080 \section*{Constraints}
1081 \section*{Approaching the task}
1082 \section*{Team Organisation}
1083 \section*{Important Results}
1084 \section*{Conclusions}
1085 \section*{Recommendations}
1086 </testgdpsummary>
1087 <*introduction>
1088 \chapter{Introduction} \label{Chapter:Introduction}
1089 </introduction>
1090 <*testarticle>
1091 \section{Introduction} \label{Section:Introduction}
1092 </testarticle>
1093 <*introduction|testarticle>
1094 You probably found all the files from \cite{Longman:2019:templ},
1095 they were originally made from \cite{Gunn:2001:pdflatex}.
1096 Template specific instructions can be found at:
1097 \url{https://git.soton.ac.uk/el7g15/uos-latex-template-instructions}.
1098
1099 \tref{Table:tabex} illustrates the results of some arbitrary example work.
1100 \begin{table}[!htb]
1101   \centering
1102   \begin{tabular}{cc}
1103     \toprule
1104     \textbf{Training Error} & \textbf{Testing Error}\\
1105     \midrule
1106     0 &  $\infty$ 
1107     \bottomrule
1108   \end{tabular}
1109   \caption{The Results}
1110   \label{Table:tabex}
1111 \end{table}
1112
1113 \fref{Figure:figex} shows why this is the case.
1114 \begin{figure}[!htb]
1115   \centering
1116   \includegraphics[width=8cm]{figure}
1117   \caption{A colourful picture.}
1118   \label{Figure:figex}
1119 \end{figure}
1120
1121 This page shows you a subfigure example in \fref{Figure:figsubex}.
1122 \begin{figure}[!htb]
1123   \centering
1124   \subcaptionbox{The left caption}{
1125     \includegraphics[width=4.2cm]{figure}

```

```

1126     \label{Figure:figsubex:left}
1127 }
1128 \subcaptionbox{The right caption}{
1129     \includegraphics[width=4.2cm]{figure}
1130     \label{Figure:figsubex:right}
1131 }
1132 \caption{A doubly colourful picture.}
1133 \label{Figure:figsubex}
1134 \end{figure}
1135 Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec rutrum sodales ligula, ac aliquam
1136
1137 \section{A Section of a chapter}
1138 Nulla molestie velit sed dui ullamcorper viverra. Fusce placerat vulputate lacus eu consequat.
1139
1140 \subsection{Some quotes}
1141
1142 Nam egestas felis euismod erat tincidunt ornare. Nulla hendrerit tempor purus ac consequat. Aliquam
1143 \begin{quote}
1144 Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec rutrum sodales ligula, ac aliquam
1145 \end{quote}
1146
1147 Pellentesque sodales lobortis feugiat. Vivamus volutpat mauris id odio aliquam maximus sed sit
1148 \begin{quote}
1149 The \verb|\attrib| macro attributes block elements, for example when citing
1150 a reference after a block quotation.
1151 \ifdefined\attrib\attrib{\cite{attribpackage}}\fi
1152 \end{quote}
1153
1154 Donec vitae massa nisi. Praesent sed sollicitudin urna. Suspendisse vitae cursus tortor. In eu
1155 \</introduction | testarticle>
1156 \< *conclusions>
1157 \chapter{Conclusions} \label{Chapter: Conclusions}
1158 \</conclusions>
1159 \< *testarticle>
1160 %% -----
1161 \section{Conclusions} \label{Section: Conclusions}
1162 \</testarticle>
1163 \< *conclusions | testarticle>
1164 It works.
1165 \</conclusions | testarticle>
1166 \< *testarticle>
1167 \acknowledgements{Thanks to no one.}
1168 \backmatter
1169 \appendix
1170 \bibliographystyle{plainnat}
1171 \bibliography{UOS}
1172 \</testarticle>
1173 \< *appendix | testarticle>
1174 \< *appendix>
1175 \chapter{Stuff} \label{Chapter:Stuff}
1176 \</appendix>
1177 \< *testarticle>
1178 %% -----
1179 \section{Stuff} \label{Section:Stuff}

```

```

1180 </testarticle>
1181 The following gets in the way of the text....
1182 </appendix | testarticle>
1183 < *testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary>
1184 \end{document}
1185 %% -----
1186 </testthesis | testminithesis | testprogress | testproject | testreport | testarticle | testgdp | testgdpsummary>

```

9.1 Example Figure

```

1187 <*figure>
1188 %%BoundingBox: 0 150 600 650
1189 %%EndComments
1190 0.0 setlinewidth
1191 /length 0.1 def
1192 /width 0.02 def
1193 /hsvcircle {
1194   gsave
1195     /h 0.0 def
1196     0 4 360 {
1197       pop
1198       gsave
1199       0.5 0.0 translate
1200       newpath
1201       0.0 0.0 moveto
1202       length 0.0 lineto
1203       length width lineto
1204       0.0 width lineto
1205       closepath
1206       h 1.0 1.0 sethsbcolor
1207       fill
1208       grestore
1209       /h h 4 360 div add def
1210       4 rotate
1211     } for
1212   grestore
1213 } def
1214 0.0 setlinewidth
1215 0.0 setgray
1216 300 400 translate
1217 500 500 scale
1218 30 rotate
1219 1.0 0.7 scale
1220 -30 rotate
1221 hsvcircle
1222 0.8 0.8 scale
1223 hsvcircle
1224 0.8 0.8 scale
1225 hsvcircle
1226 0.8 0.8 scale
1227 hsvcircle
1228 0.8 0.8 scale
1229 hsvcircle
1230 0.8 0.8 scale
1231 hsvcircle

```

```

1232 0.8 0.8 scale
1233 hsvcircle
1234 showpage
1235 </figure>

```

9.2 Definitions File

```

1236 <*definitions>
1237 \newcommand{\BibTeX}{\rm B\kern-.05em{\sc i\kern-.025em b}\kern-.08em T\kern-.1667em\lower.7
1238
1239 %% People
1240 \newcounter{address}
1241 \setcounter{address}{1}
1242 \renewcommand{\theaddress}{\textsuperscript{\fnsymbol{address}}\}
1243 \newcommand{\address}[1]{\refstepcounter{address}\theaddress#1\}
1244 \newcommand{\Name}[3]{\texorpdfstring{\href{mailto:#3}{#2}#1}{#2}\xspace}
1245 \newcommand{\SteveRGunn}[1]{\Name{#1}{Steve R. Gunn}{S.R.Gunn@ecs.soton.ac.uk}}
1246
1247 %% Dingbats
1248 \newcommand{\tick}{\ding{51}}
1249 \newcommand{\cross}{\ding{55}}
1250
1251 %% Calculus
1252 \newcommand{\pd}[2]{\ensuremath{\frac{\partial #1}{\partial #2}}\xspace}
1253 \newcommand{\fd}[2]{\ensuremath{\frac{d #1}{d #2}}\xspace}
1254 \newcommand{\dint}{\ensuremath{\int\!\!\!\int}\xspace}
1255 \newcommand{\tint}{\ensuremath{\int\!\!\!\int\!\!\!\int}\xspace}
1256
1257 %% Math Sets
1258 \newcommand{\Q}[1]{\ensuremath{\mathbb{#1}}\xspace}
1259 \newcommand{\R}{\Q{R}}
1260
1261 %% Matrix, Vector
1262 \newcommand{\V}[1]{\ensuremath{\boldsymbol{#1}}\xspace}
1263 \newcommand{\M}[1]{\ensuremath{\boldsymbol{#1}}\xspace}
1264 \newcommand{\0}{\V{0}}
1265 \newcommand{\1}{\V{1}}
1266 \newcommand{\I}{\M{I}}
1267
1268 %% Math Functions
1269 \newcommand{\F}[1]{\ensuremath{\mathrm{#1}}\xspace}
1270 \newcommand{\sgn}{\F{sgn}}
1271 \newcommand{\tr}{\F{trace}}
1272 \newcommand{\diag}{\F{diag}}
1273
1274 %% Math Names
1275 \newcommand{\N}[1]{\ensuremath{\mathit{#1}}\xspace}
1276
1277 %% Data
1278 \newcommand{\mc}[1]{\ensuremath{\mathcal{#1}}\xspace}
1279 \newcommand{\Hyp}{\mc{H}}
1280 \newcommand{\D}{\mc{D}}
1281
1282 %% Kernel
1283 \newcommand{\K}{\M{K}}

```

```

1284 \newcommand{\eins}{\texorpdfstring{\ensuremath{\epsilon}}{\textepsilon}-insensitive\xspace}
1285 \newcommand{\e}{\ensuremath{\epsilon}\xspace}
1286 \newcommand{\Bxi}{\ensuremath{\boldsymbol{\xi}}\xspace}
1287 \newcommand{\Kanova}{\ensuremath{\mathit{K}_{ANOVA}}\xspace}
1288 \newcommand{\Kspline}{\ensuremath{\mathit{K}_{spline}}\xspace}
1289
1290 %% Bayesian
1291 \newcommand{\MP}{\ensuremath{\mathit{\scriptscriptstyle M}\hspace{-1.5pt}P}\xspace}
1292 \newcommand{\ML}{\ensuremath{\mathit{\scriptscriptstyle M}\hspace{-1.5pt}L}\xspace}
1293 \newcommand{\Qw}{\ensuremath{Q_{\w}(\w)}\xspace}
1294 \newcommand{\Qa}{\ensuremath{Q_{\Ba}(\Ba)}\xspace}
1295 \newcommand{\Qb}{\ensuremath{Q_{\beta}(\beta)}\xspace}
1296 \newcommand{\wMPab}{\ensuremath{w_{\MP|\bar{\Ba},\bar{\beta}}}\xspace}
1297 \newcommand{\wMP}{\ensuremath{w_{\MP}}\xspace}
1298 \newcommand{\yMP}{\ensuremath{y_{\MP}}\xspace}
1299 \newcommand{\BaMP}{\ensuremath{Ba_{\hspace{1pt}\MP}}\xspace}
1300 \newcommand{\aMP}{\ensuremath{\alpha_{\hspace{1pt}\MP}}\xspace}
1301 \newcommand{\bMP}{\ensuremath{\beta_{\hspace{1pt}\MP}}\xspace}
1302 \newcommand{\Sab}{\ensuremath{M_{\Sigma}(\bar{\Ba},\bar{\beta})}\xspace}
1303 \newcommand{\Ba}{\ensuremath{\boldsymbol{\alpha}}\xspace}
1304 \newcommand{\Bb}{\ensuremath{\boldsymbol{\beta}}\xspace}
1305 \newcommand{\Bm}{\ensuremath{\boldsymbol{\mu}}\xspace}
1306 \newcommand{\BL}{\ensuremath{\boldsymbol{\Lambda}}\xspace}
1307 \newcommand{\BPhi}{\ensuremath{\boldsymbol{\Phi}}\xspace}
1308 \newcommand{\SMP}{\ensuremath{M_{\Sigma}(\MP)}\xspace}
1309
1310 \newcommand{\Pa}{\ensuremath{P(\alpha|\mathcal{H})}\xspace}
1311 \newcommand{\Pb}{\ensuremath{P(\beta|\mathcal{H})}\xspace}
1312 \newcommand{\Pab}{\ensuremath{P(\alpha,\beta|\mathcal{H})}\xspace}
1313 \newcommand{\Pw}{\ensuremath{P(\w|\mathcal{H})}\xspace}
1314 \newcommand{\PD}{\ensuremath{P(\mathcal{D}|\mathcal{H})}\xspace}
1315 \newcommand{\PwIa}{\ensuremath{P(\w|\alpha,\mathcal{H})}\xspace}
1316 \newcommand{\PDIwb}{\ensuremath{P(\mathcal{D}|\w,\beta,\mathcal{H})}\xspace}
1317 \newcommand{\PDwab}{\ensuremath{P(\mathcal{D},\w,\alpha,\beta|\mathcal{H})}\xspace}
1318 \newcommand{\PDIw}{\ensuremath{P(\mathcal{D}|\w,\mathcal{H})}\xspace}
1319 \newcommand{\PwID}{\ensuremath{P(\w|\mathcal{D},\mathcal{H})}\xspace}
1320 \newcommand{\PwabID}{\ensuremath{P(\w,\alpha,\beta|\mathcal{D},\mathcal{H})}\xspace}
1321
1322 \newcommand{\PanH}{\ensuremath{P(\alpha)}\xspace}
1323 \newcommand{\PbnH}{\ensuremath{P(\beta)}\xspace}
1324 \newcommand{\PabnH}{\ensuremath{P(\alpha,\beta)}\xspace}
1325 \newcommand{\PwnH}{\ensuremath{P(\w)}\xspace}
1326 \newcommand{\PDnH}{\ensuremath{P(\mathcal{D})}\xspace}
1327 \newcommand{\PwIanH}{\ensuremath{P(\w|\alpha)}\xspace}
1328 \newcommand{\PDIwbnH}{\ensuremath{P(\mathcal{D}|\w,\beta)}\xspace}
1329 \newcommand{\PDwabnH}{\ensuremath{P(\mathcal{D},\w,\Ba,\beta)}\xspace}
1330 \newcommand{\PDIwnH}{\ensuremath{P(\mathcal{D}|\w)}\xspace}
1331 \newcommand{\PwIDnH}{\ensuremath{P(\w|\mathcal{D})}\xspace}
1332 \newcommand{\PwabIDnH}{\ensuremath{P(\w,\alpha,\beta|\mathcal{D})}\xspace}
1333
1334 \newcommand{\PDwBab}{\ensuremath{P(\mathcal{D},\w,\Ba,\beta|\mathcal{H})}\xspace}
1335 \newcommand{\PwIBa}{\ensuremath{P(\w|\Ba,\mathcal{H})}\xspace}
1336 \newcommand{\PBab}{\ensuremath{P(\Ba,\beta|\mathcal{H})}\xspace}
1337 \newcommand{\PwBabID}{\ensuremath{P(\w,\Ba,\beta|\mathcal{D},\mathcal{H})}\xspace}

```

```

1338
1339 \newcommand{\PBanH}{\ensuremath{P(\backslash Ba)}\xspace}
1340 \newcommand{\PwIBanH}{\ensuremath{P(\backslash w|\backslash Ba)}\xspace}
1341
1342 %% Snakes
1343 \newcommand{\Esnake}{\ensuremath{\mathit{E}_{\text{snake}}}\xspace}
1344 \newcommand{\Eimage}{\ensuremath{\mathit{E}_{\text{image}}}\xspace}
1345 \newcommand{\Econt}{\ensuremath{\mathit{E}_{\text{cont}}}\xspace}
1346 \newcommand{\Ecurv}{\ensuremath{\mathit{E}_{\text{curv}}}\xspace}
1347 \newcommand{\Eint}{\ensuremath{\mathit{E}_{\text{int}}}\xspace}
1348 \newcommand{\Eext}{\ensuremath{\mathit{E}_{\text{ext}}}\xspace}
1349 \newcommand{\Eterm}{\ensuremath{\mathit{E}_{\text{term}}}\xspace}
1350 \newcommand{\Eline}{\ensuremath{\mathit{E}_{\text{line}}}\xspace}
1351 \newcommand{\Edge}{\ensuremath{\mathit{E}_{\text{edge}}}\xspace}
1352 \newcommand{\Econ}{\ensuremath{\mathit{E}_{\text{con}}}\xspace}
1353 \newcommand{\Eangle}{\ensuremath{\mathit{E}_{\text{angle}}}\xspace}
1354 \newcommand{\Elshape}{\ensuremath{\mathit{E}_{\text{lshape}}}\xspace}
1355 \newcommand{\Edgedir}{\ensuremath{\mathit{E}_{\text{edgedir}}}\xspace}
1356 \newcommand{\Emodel}{\ensuremath{\mathit{E}_{\text{model}}}\xspace}
1357 \newcommand{\wte}{\ensuremath{\mathit{w}_{\text{term}}}\xspace}
1358 \newcommand{\wli}{\ensuremath{\mathit{w}_{\text{line}}}\xspace}
1359 \newcommand{\wed}{\ensuremath{\mathit{w}_{\text{edge}}}\xspace}
1360 \newcommand{\wco}{\ensuremath{\mathit{w}_{\text{con}}}\xspace}
1361
1362
1363 %% Environments
1364 \newcounter{alg}
1365 \newenvironment{algorithm}[1]
1366 {
1367     \stepcounter{alg}
1368     \begin{table}[htb]
1369     \centering
1370     \begin{tabular}[t]{l}
1371     \hline&\\
1372     \multicolumn{2}{l}{\bf Algorithm \arabic{alg}: #1}\&\&\\
1373     \end{tabular}
1374     &\\
1375     \hline
1376     \end{tabular}
1377     \end{table}
1378 }
1379 \end{definitions}

```

9.3 References File

```

1380 \begin{references}
1381 @MISC{Longman:2019:templ,
1382   author = {E. Longman},
1383   title = {{University of Southampton LaTeX documents}},
1384   year = {2019},
1385   NOTE = {"\url{https://library.soton.ac.uk/thesis/templates} and
1386           "\url{https://git.soton.ac.uk/el7g15/uos-latex-template}"},
1387 }
1388 @MISC{Gunn:2001:pdflatex,
1389   author = {S.R. Gunn},

```



```

1390 title =      {PDFLaTeX Instructions},
1391 year =      {2001},
1392 url =      {http://www.ecs.soton.ac.uk/~srg/softwaretools/document/}
1393 }
1394 @MISC{Lovell:2011:updated,
1395   author =    {C. J. Lovell},
1396   title =    {Updated templates},
1397   year =    {2011}
1398 }
1399 @MISC{Gunn:2011:updated2,
1400   author =    {S.R. Gunn and C. J. Lovell},
1401   title =    {Updated templates reference 2},
1402   year =    {2011}
1403 }
1404 @MISC{attribpackage,
1405   author =    {Matt Swift},
1406   title =    {The attrib LaTeX package
1407 attribution of block elements (Frankenstein's hat)},
1408   year =    {1999},
1409   url =    {http://cs.brown.edu/about/system/managed/latex/doc/attrib.pdf}
1410 }
1411
1412 </references>

```

9.4 Bibliography Style File

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

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