# HSR-Stud Document Classes

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## 1 Purpose of these document classes

The following document classes were made by and for the HSR-Stud organization. These classes are intended to be used to create beautiful summaries and cheat sheets. Available classes are:

hsrzf For summaries (Zusammenfassung)

hsrbericht For reports (Bericht)

# 2 Class Options

sans Use Sans-Serif fonts (cmbright and hfbright).

slab Use Slab-Serif fonts (bitter and eulervm).

 ${\tt margin=<\!size>}$  Sets up margins to reasonable size.

 $\boldsymbol{\ast}$  Any other given option is passed to the underlying class (article).

Size	Н	V	Size	Н	V
huge	45	40	small	20	20
large	35	35	tiny	10	20
big	30	30	minimal	5	20
normal	25	30			

Table 1: Sizes for the margin option. All sizes are in millimeters

#### 3 Extra Metadata

Thanks to the titling package, normal metadata informations are available throug the following commands: \theauthor, \thedate, \thetitle. Additionally, more metadata variables have been created for this class, to conserve informations related to the university course.

\course The degree programme of the discussed subject. Example: Elektrotechnik

\module Short name of the module according to the class schedule. Example: ComEng1

\semester Semester during which the summarized subject was taught. Example: FS20

\institute Internal institute in which the module was taught. This field is optional.

\authoremail Email of the author. This field is optional.

\maintainer Name of the person maintaining the work. This field is optional.

\contributors List of names of those who have contributed to the document. This field is optional.

Like \date, \title, etc. these fields have too an accessor macro \the<metadata>. For example: \thecourse, \themodule, and so on.

### 4 Zusammenfassung hsrzf class

This class is intended to be used to write short summaries.

### 4.1 Class options

header Use the HSR-Stud standard header. The option noheader disables the header.

#### 5 Bericht hsrbericht class

This class tries to conform to the indications given by the communication department of the HSR. The specifications are found in the "Werkzeugkastens Technische Berichte".

#### 5.1 Metadata

In addition to the metadata described in the previous section. This class requires:

**\subtitle** Pretty self explanatory.

\category Category assigned to the project. This field is optional.

\project Name or reference to your project.

**\topic** You chosen topic in the category.

\instructor Name of the instructor / academic that is following or has assigned your work.

\startdate Date when you started the project.

\finishdate Date when you finished the project (can be set to \today to keep automatically updated.

**\address** Address or place where your work is produced. This field is optional.

\matriculationnr Your matriculation number.

**\logo** Code to insert your logo.

\clientlogo Code to insert the logo of the client / research department / ....

## 6 Minimal working examples

```
\documentclass[margin=normal]{hsrzf}
    % Packages
3
    %% the HSRStud package
4
    \usepackage{hsrstud}
5
6
    % Metadata
    \course{Elektrotechnik}
8
9
    \module{ModAbk}
    \semester{Herbstsemester 2020}
10
11
12
    \authoremail{vname@hsr.ch}
    \author{\textsl{Vorname Name} -- \texttt{\theauthoremail}}
13
14
    \title{\texttt{\themodule} Zusammenfassung}
15
    \date{\thesemester}
16
17
18
    % document
19
    \begin{document}
20
    \maketitle
21
    \tableofcontents
22
    \section{Introduction}
23
      i\hbar \partial_t \left| \psi(t) \right\rangle
24
         = \hat{H} \left| \psi(t) \right\rangle
25
    \]
26
27
28
    \end{document}
```

#### 7 License

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Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

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3
4 (*hsrzf)
5 \NeedsTeXFormat{LaTeX2e}
6 \ProvidesClass{hsrzf}[2020/04/05 v0.1 HSRStud Summary class]
7 (/hsrzf)
9 (*hsrbericht)
10 \NeedsTeXFormat{LaTeX2e}
11 \ProvidesClass{hsrbericht}[2020/05/05 v0.1 HSRStud Report class]
12 (/hsrbericht)
15 %^^A Implementation
16 %
17 (*hsrzf | hsrbericht)
19 %% Coding Packages (Dependencies)
20 \RequirePackage{iftex}
```

21 \RequirePackage{kvoptions}
22 \RequirePackage{etoolbox}

25 \RequirePackage{lmodern}

24 %% Default font

27 %% Class options

```
28 \SetupKeyvalOptions{
   family=hsr,
    prefix=hsr@
31 }
32
33 %% Use header and footer
34 \DeclareBoolOption[false] {header}
{\tt 35 \ \backslash DeclareComplementaryOption\{noheader\}\{header\}}
37 %% Use a sans-serif slab-serif or concrete font
38 \DeclareBoolOption[false] {sans}
39 \DeclareBoolOption[false] {slab}
40 \DeclareBoolOption[false] {concrete}
42 %% Configures the geometry package
43 %%
44 %% Possible values:
45 %% - huge
                 (45mm, 40mm)
46 %% - large
                 (35mm, 35mm)
47 %% - big
                 (30mm, 30mm)
48 %% - normal (25mm, 30mm)
49 %% - small
                 (20mm, 20mm)
50 %% - tiny
                 (10mm, 20mm)
51\ \%\% - minimal ( 5\text{mm} , 20\text{mm} )
52 \DeclareStringOption{margin} [huge]
54 %% Configures the polyglossia package
55 % \DeclareStringOption[]{lang}[german]
56
58 \% Pass other options to the class
59 \DeclareDefaultOption{%
    \ifx\CurrentOptionValue\relax
      \PackageWarningNoLine{\@currname}{%
62
         Unknown option ``\CurrentOption''\MessageBreak
         is passed to class ``article''%
63
64
      }%
      \mbox{\ensuremath{\mbox{\%}}} Pass the option to package color.
65
      % Again it is better to expand \CurrentOption.
66
67
      \expandafter\PassOptionsToClass
         \expandafter{\CurrentOption}{article}
68
69
      % Package color does not take options with values.
70
71
      % We provide the standard LaTeX error.
72
      \@unknownoptionerror
73
    \fi
74 }
75
76 \ProcessKeyvalOptions{hsr}
77
78
79 %% Create new metadata fields
81 %% Required fields
82 \newcommand\course[1] {\gdef\hsr@course{#1}}
83 \newcommand\hsr@course{\ClassError{hsrzf}{no \noexpand\course given}{}}
84 \newcommand\thecourse{\hsr@course}
85
```

```
86 \newcommand\module[1]{\gdef\hsr@module{#1}}
 87 \newcommand\hsr@module{\ClassError{hsrzf}{no \noexpand\module given}{}}
 88 \newcommand\themodule{\hsr@module}
 90 \newcommand\semester[1]{\gdef\hsr@semester{#1}}
 91 \newcommand\hsr@semester{\ClassError{hsrzf}{no \noexpand\semester given}{}}
 92 \newcommand\thesemester{\hsr@semester}
93
94 %% Optional fields
 95 \newcommand\institute[1]{\gdef\hsr@institute{#1}}
 96 \newcommand\hsr@institute{\ClassWarning{hsrzf}{no \noexpand\institute given}{}}
 97 \newcommand\theinstitute{\hsr@institute}
 100 \newcommand\hsr@authoremail{\ClassWarning{hsrzf}{no \noexpand\authoremail given}{}}
101 \newcommand\theauthoremail{\hsr@authoremail}
103 \verb|\newcommand\maintainer[1]{\gdef\hsr@maintainer{#1}}|
104 \ensuremath{\texttt{Nonewcommand}} for $$104 \rightarrow \frac{\ensuremath{\texttt{ClassWarning}}}{no \rightarrow noexpand\ensuremath{\texttt{Maintainer}}} $$
105 \newcommand\themaintainer{\hsr@maintainer}
107 \newcommand\contributors[1] {\gdef\hsr@contributors{#1}}
108 \newcommand\hsr@contributors{\ClassWarning{hsrzf}{no \noexpand\contributors given}{}}
109 \newcommand\thecontributors{\hsr@contributors}
110 (/hsrzf | hsrbericht)
111 (*hsrbericht)
112 %% The report class has some extra metadata
113
114 %% Extra title informations
115 \newcommand\subtitle[1]{\gdef\hsr@subtitle{#1}}
116 \newcommand\hsr@subtitle{\ClassError{hsrbericht}{no \noexpand\subtitle given}{}}
117 \newcommand\thesubtitle{\hsr@subtitle}
119 %% Project informations
120 \newcommand\category[1]{\gdef\hsr@category{#1}}
\label{localization} \end{\colored} $$121 \newcommand\hsr@category{\ClassWarning\{hsrbericht\}\{no \newpand\category given\}\{\}\}$} $$
122 \newcommand\thecategory{\hsr@category}
124 \verb|\newcommand\project[1]{\gdef\hsr@project{#1}}|
125 \newcommand\hsr@project{\ClassError{hsrbericht}{no \noexpand\project given}{}}
126 \newcommand\theproject{\hsr@project}
128 \newcommand\topic[1]{\gdef\hsr@topic{#1}}
129 \newcommand\hsr@topic{\ClassError{hsrbericht}{no \noexpand\topic given}{}}
130 \newcommand\thetopic{\hsr@topic}
132 \newcommand\version[1] {\gdef\hsr@version{#1}}
133 \newcommand\hsr@version{\ClassError{hsrbericht}{no \noexpand\version given}{}}
134 \newcommand\theversion{\hsr@version}
136 \newcommand\instructor[1] {\gdef\hsr@instructor{#1}}
137 \newcommand\hsr@instructor{\ClassError{hsrbericht}{no \noexpand\instructor given}{}}
138 \newcommand\theinstructor{\hsr@instructor}
140 \newcommand\startdate[1] {\gdef\hsr@startdate{#1}}
141 \newcommand\hsr@startdate{\ClassError{hsrbericht}{no \noexpand\startdate given}{}}
142 \verb|\newcommand\\thestartdate{\hsr@startdate}|
```

143

```
144 \newcommand\finishdate[1] {\gdef\hsr@finishdate{#1}}
145 \newcommand\hsr@finishdate{\ClassError{hsrbericht}{no \noexpand\finishdate given}{}}
146 \newcommand\thefinishdate{\hsr@finishdate}
147
148 %% Author informations
149 \newcommand\address[1] {\gdef\hsr@address{#1}}
150 \newcommand\hsr@address{\ClassWarning{hsrbericht}{no \noexpand\address given}{{}}
151 \newcommand\theaddress{\hsr@address}
153 \newcommand\matriculationnr[1] {\gdef\hsr@matriculationnr{#1}}
154 \verb|\newcommand\hsr@matriculationnr{\ClassError{hsrbericht}{no \noexpand\matriculationnr given}{}}| 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 
155 \newcommand\thematriculationnr{\hsr@matriculationnr}
157 %% Logos informations
158 \ensuremath{\mbox{\sc logo}[1] {\gdef\hsr@logo{\#1}}}
159 \newcommand\hsr@logo{\ClassWarning{hsrbericht}{no \noexpand\logo given}{}}
160 \newcommand\thelogo{\hsr@logo}
161
162 \newcommand\clientlogo[1] {\gdef\hsr@clientlogo{#1}}
163 \newcommand\hsr@clientlogo{\ClassWarning{hsrbericht}{no \noexpand\clientlogo given}{}}
164 \newcommand\theclientlogo{\hsr@clientlogo}
165 (/hsrbericht)
166 (*hsrzf | hsrbericht)
169 \, \%^{\hat{}}   
A Setup base class
170 \LoadClass[a4paper] {article}
171
172 %% Style deps
173 \RequirePackage{geometry}
174 \RequirePackage{fancyhdr}
175 \RequirePackage{titling}
176 \RequirePackage{totpages}
177 \RequirePackage{array}
178
179 %% Insert metadata in the pdf
180 \PassOptionsToPackage{plainpages=false, pdfpagelabels, pdfusetitle}{hyperref}
181 \RequirePackage{hyperref}
182
184 %^^A Setup Style
185 %
186
188 %% Configure Sans-Serif font
189 \ifhsr@sans
        \ifhsr@slab
190
              \PackageError{hsrzf}{%
191
                  sans ans slab options cannot be used at the same time
192
193
        \fi
194
        \ifhsr@concrete{hsrzf}{%
195
            sans and concrete options cannot be used at the same time
196
        }
197
         \fi
198
199
        \PassOptionsToPackage{T1}{fontenc}
200
         \RequirePackage{fontenc}
201
```

```
\RequirePackage{cmbright}
203
     \RequirePackage{sfmath}
204 \fi
205
206 %% Configure Slab-Serif font
207 \ifhsr@slab
     \ifhsr@sans
208
       \PackageError{hsrzf}{%
209
210
         slab and sans options cannot be used at the same time
211
212
     \ifhsr@concrete{hsrzf}{%
       slab and concrete options cannot be used at the same time
214
215
    }
216
     \fi
217
     \PassOptionsToPackage{T1}{fontenc}
218
     \RequirePackage{fontenc}
219
     \PassOptionsToPackage{rm,light}{roboto}
220
     \RequirePackage{roboto}
221
222 \fi
224 %% Configure (secret) concrete font
225 \ifhsr@concrete
     \ifhsr@sans{hsrzf}{%
       concrete and sans options cannot be used at the same time
227
     }
228
229
     \fi
    \ifhsr@slab
230
       \PackageError{hsrzf}{%
231
232
         concrete ans slab options cannot be used at the same time
233
     \fi
234
235
236
     \PassOptionsToPackage{boldsans,amssymb}{concmath}
237
     \RequirePackage{concmath}
238
     \PassOptionsToPackage{T1}{fontenc}
239
     \RequirePackage{fontenc}
240 \fi
241
242 %% configure geometry
243 %% defaults to big
244 \newlength{\hsr@hmarginwidth}
245 \newlength{\hsr@vmarginheight}
246
247 \ifx\hsr@margin\@empty
     \setlength\hsr@hmarginwidth{30mm}
248
     \setlength\hsr@vmarginheight{30mm}
249
250 \else
     \expandafter\ifstrequal\expandafter{\hsr@margin}{huge}{
251
       \setlength\hsr@hmarginwidth{45mm}
252
       \setlength\hsr@vmarginheight{40mm}}{}
253
254 %%
     \expandafter\ifstrequal\expandafter{\hsr@margin}{large}{
255
       \setlength\hsr@hmarginwidth{35mm}
256
257
       \setlength\hsr@vmarginheight{35mm}}{}
258 %%
     \expandafter\ifstrequal\expandafter{\hsr@margin}{big}{
```

```
260
       \setlength\hsr@hmarginwidth{30mm}
261
       \setlength\hsr@vmarginheight{30mm}}{}
262 %%
     \expandafter\ifstrequal\expandafter{\hsr@margin}{normal}{
263
       \setlength\hsr@hmarginwidth{25mm}
264
       \setlength\hsr@vmarginheight{30mm}}{}
265
266 %%
267
     \expandafter\ifstrequal\expandafter{\hsr@margin}{small}{
268
       \setlength\hsr@hmarginwidth{20mm}
       \setlength\hsr@vmarginheight{20mm}}{}
269
270 %%
     \expandafter\ifstrequal\expandafter{\hsr@margin}{tiny}{
271
272
       \setlength\hsr@hmarginwidth{10mm}
273
       \setlength\hsr@vmarginheight{20mm}}{}
274 %%
     \expandafter\ifstrequal\expandafter{\hsr@margin}{minimal}{
275
       \setlength\hsr@hmarginwidth{ 5mm}
276
       \setlength\hsr@vmarginheight{20mm}}{}
277
278 %%
279
    % TODO: fix this
    % \ClassError{hsrzf}{Invalid margin size}
    % \setlength\hsr@hmarginwidth{30mm}
    % \setlength\hsr@vmarginheight{30mm}
283 \fi
284
285 (/hsrzf | hsrbericht)
288 %^^A HSR ZF specific
289 (*hsrzf)
290 %% TODO: change vmarginheight if header is on
291 \newgeometry{
       hmargin=\hsr@hmarginwidth,
       vmargin=\hsr@vmarginheight,
293
294
       marginparsep=0pt,
295
       marginpar=0pt,
296 }
297
298 \fancypagestyle{hsrzf}{%
       \fancyhf{} % clear
299
       \fancyhead[L]{\leftmark}
300
301
       \fancyhead[C]{\themodule}
       \fancyhead[R]{\@date}
302
303
304
       \fancyfoot[L]{\href{https://github.com/HSR-Stud/}{\texttt{HSR-Stud}}}
305
       \fancyfoot[C]{\texttt{CC BY-NC-SA}}
       \fancyfoot[R]{\thepage ~/ \pageref{TotPages}}
306
307
       \renewcommand{\headrulewidth}{.5pt}
308
       \renewcommand{\footrulewidth}{.5pt}
309
310 }
311
312 \fancypagestyle{hsrzf-norulers}{%
       \fancyhf{} % clear
314
       \fancyhead[L]{\leftmark}
315
       \fancyhead[C]{\themodule}
       \fancyhead[R]{\@date}
316
317
```

```
318
       \fancyfoot[L]{\href{https://github.com/HSR-Stud/}{\texttt{HSR-Stud}}}
319
       \fancyfoot[C]{\texttt{CC BY-NC-SA}}
320
       \fancyfoot[R]{\thepage ~/ \pageref{TotPages}}
321
       \renewcommand{\headrulewidth}{Opt}
322
       \renewcommand{\footrulewidth}{Opt}
323
324 }
325
326 \ifhsr@header
327 \pagestyle{hsrzf}
328 \fi
329 (/hsrzf)
330
332 %^^A HSR Bericht specific
333 (*hsrbericht)
334
335 %% Redefine title and abstract
336 \renewcommand\maketitle{%
337 \begin{titlepage}
       \thispagestyle{hsrbericht}
339
       \begin{center}
340
       \vspace*{6cm}
341
       \textbf{\fontsize{48}{60}\selectfont \@title}
342
       \vspace{1.5cm} \
       \textbf{\fontsize{24}{48}\selectfont \hsr@subtitle}
343
       \vspace{1cm} \\
344
       \textbf{\fontsize{22}{48}\selectfont \hsr@category}
345
       \vspace{0.5cm} \\
346
       \begin{tabular}{rl}
347
348
       \textbf{Version:} & \hsr@version \\
349
       \end{tabular}
       \vspace{4cm} \\
350
       \begin{tabular}{rl p{1.5cm} rl}
351
352
       \textbf{Autor:} & \textbf{\@author}
                                                   && Dozent:
                                                                    & \hsr@instructor \\
353
       E-Mail:
                      & \texttt{\hsr@authoremail} && Themengebiet: & \hsr@topic \\
354
       Matrikelnummer: & \hsr@matriculationnr
                                                   && Studiengang: & \hsr@course \\
355
       Adresse:
                      & \hsr@address
                                                   የታ
                                                                       & \\
       \end{tabular}{}
356
       \vspace{2cm} \\
357
       \begin{tabular}{rl}
358
                                  & \textbf{\hsr@startdate} \\
359
       \textbf{Erstellt am:}
       \textbf{Letze Änderung am:} & \textbf{\hsr@finishdate} \\
360
361
       \end{tabular}
       \end{center}
362
363 \end{titlepage}}
364
365 \renewenvironment{abstract}{%
       \section*{Abstract}%
366
       \newcommand\problem{\paragraph{Problem}}
367
       \newcommand\goal{\paragraph{Ziel}}
368
369
       \newcommand\method{\paragraph{Method / Vorgehen}}
       \newcommand\results{\paragraph{Wesentliche Ergebnisse}}
370
       \newcommand\suggestions{\paragraph{Empfehlungen}}
371
372
       \newcommand\keywords{\paragraph{Schl\"usselw\"orter}}
373 }{}
374
375 %% TODO: twoside / book support
```

```
376 %% Debug:
377 %% \RequirePackage{showframe}
379 \newgeometry{
       hmargin=\hsr@hmarginwidth,
380
       vmargin=\hsr@vmarginheight,
381
       marginparsep=0pt,
382
383
       marginpar=Opt,
384 }
385
386 %% Configure headers
387 \fancypagestyle{hsrbericht}{%
       \fancyhf{} % clear
       \fancyhead[C]{\@title}
389
       \fancyhead[R]{\hsr@clientlogo}
390
       \fancyhead[L]{\hsr@logo}
391
       \fancyfoot[R]{\thepage / \pageref{TotPages} }
392
       \fancyfoot[L]{Dockument: \jobname \\ Druck: \finishdate}
393
       \renewcommand{\headrulewidth}{.5pt}
394
395
       \renewcommand{\footrulewidth}{.5pt}
396 }
397
398 \fancypagestyle{plain}{%
       \fancyhf{} % clear
399
       \fancyhead[C]{\@title}
400
       \fancyhead[R]{\hsr@clientlogo}
401
       \fancyhead[L]{\hsr@logo}
402
       \fancyfoot[R]{\thepage / \pageref{TotPages} }
403
       \fancyfoot[L]{Dockument: \jobname \\ Druck: \finishdate}
404
       \renewcommand{\headrulewidth}{.5pt}
405
       \renewcommand{\footrulewidth}{.5pt}
406
407 }
408
409 \pagestyle{hsrbericht}
410
411 (/hsrbericht)
```