HSR–Stud Document Classes

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Contents

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`).

margin=<size> Sets up margins to reasonable size.

* Any other given option is passed to the underlying class (article).

Size	H	V	Size	H	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.

<dl>
<dt>**\instructor**</dt>
<dd>Name of the instructor / academic that is following or has assigned your work.</dd>
<dt>**\startdate**</dt>
<dd>Date when you started the project.</dd>
<dt>**\finishdate**</dt>
<dd>Date when you finished the project (can be set to **\today** to keep automatically updated.</dd>
<dt>**\address**</dt>
<dd>Address or place where your work is produced. This field is optional.</dd>
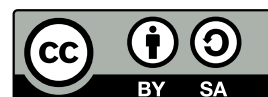<dt>**\matriculationnr**</dt>
<dd>Your matriculation number.</dd>
<dt>**\logo**</dt>
<dd>Code to insert your logo.</dd>
<dt>**\clientlogo**</dt>
<dd>Code to insert the logo of the client / research department / ….</dd>
</dl>

5.2 Minimal working example

6 License

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7 Implementation

```
1 %^^A%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
2 %^^A Class Headers
3
4 ⟨*hsrzf⟩
5 \NeedsTeXFormat{LaTeX2e}
6 \ProvidesClass{hsrzf}[2020/04/05 v0.1 HSRStud Summary class]
7 ⟨/hsrzf⟩
8
9 ⟨*hsrbericht⟩
10 \NeedsTeXFormat{LaTeX2e}
11 \ProvidesClass{hsrbericht}[2020/05/05 v0.1 HSRStud Report class]
12 ⟨/hsrbericht⟩
13
14 %^^A%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
15 %^^A Implementation
16 %
17 ⟨*hsrzf | hsrbericht⟩
18
19 %% Coding Packages (Dependencies)
20 \RequirePackage{iftex}
21 \RequirePackage{kvoptions}
22 \RequirePackage{etoolbox}
23
24 %% Default font
25 \RequirePackage{lmodern}
26
27 %% Class options
28 \SetupKeyvalOptions{
29   family=hsr,
30   prefix=hsr@
31 }
32
33 %% Use header and footer
34 \DeclareBoolOption[false]{header}
```

```latex
35 \DeclareComplementaryOption{noheader}{header}
36
37 %% Use a sans-serif slab-serif or concrete font
38 \DeclareBoolOption[false]{sans}
39 \DeclareBoolOption[false]{slab}
40 \DeclareBoolOption[false]{concrete}
41
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 ( 5mm, 20mm)
52 \DeclareStringOption{margin}[huge]
53
54 %% Configures the polyglossia package
55 % \DeclareStringOption[]{lang}[german]
56
57
58 %% Pass other options to the class
59 \DeclareDefaultOption{%
60   \ifx\CurrentOptionValue\relax
61     \PackageWarningNoLine{\@currname}{%
62       Unknown option ``\CurrentOption''\MessageBreak
63       is passed to class ``article''%
64     }%
65     % Pass the option to package color.
66     % Again it is better to expand \CurrentOption.
67     \expandafter\PassOptionsToClass
68       \expandafter{\CurrentOption}{article}
69   \else
70     % Package color does not take options with values.
71     % We provide the standard LaTeX error.
72     \@unknownoptionerror
73   \fi
74 }
75
76 \ProcessKeyvalOptions{hsr}
77
78
79 %% Create new metadata fields
80
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}
89
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}
 98
 99 \newcommand\authoremail[1]{\gdef\hsr@authoremail{#1}}
100 \newcommand\hsr@authoremail{\ClassWarning{hsrzf}{no \noexpand\authoremail given}{}}
101 \newcommand\theauthoremail{\hsr@authoremail}
102
103 \newcommand\maintainer[1]{\gdef\hsr@maintainer{#1}}
104 \newcommand\hsr@maintainer{\ClassWarning{hsrzf}{no \noexpand\maintainer given}{}}
105 \newcommand\themaintainer{\hsr@maintainer}
106
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}
118
119 %% Project informations
120 \newcommand\category[1]{\gdef\hsr@category{#1}}
121 \newcommand\hsr@category{\ClassWarning{hsrbericht}{no \noexpand\category given}{}}
122 \newcommand\thecategory{\hsr@category}
123
124 \newcommand\project[1]{\gdef\hsr@project{#1}}
125 \newcommand\hsr@project{\ClassError{hsrbericht}{no \noexpand\project given}{}}
126 \newcommand\theproject{\hsr@project}
127
128 \newcommand\topic[1]{\gdef\hsr@topic{#1}}
129 \newcommand\hsr@topic{\ClassError{hsrbericht}{no \noexpand\topic given}{}}
130 \newcommand\thetopic{\hsr@topic}
131
132 \newcommand\version[1]{\gdef\hsr@version{#1}}
133 \newcommand\hsr@version{\ClassError{hsrbericht}{no \noexpand\version given}{}}
134 \newcommand\theversion{\hsr@version}
135
136 \newcommand\instructor[1]{\gdef\hsr@instructor{#1}}
137 \newcommand\hsr@instructor{\ClassError{hsrbericht}{no \noexpand\instructor given}{}}
138 \newcommand\theinstructor{\hsr@instructor}
139
140 \newcommand\startdate[1]{\gdef\hsr@startdate{#1}}
141 \newcommand\hsr@startdate{\ClassError{hsrbericht}{no \noexpand\startdate given}{}}
142 \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}{}}
```

```latex
151 \newcommand\theaddress{\hsr@address}
152
153 \newcommand\matriculationnr[1]{\gdef\hsr@matriculationnr{#1}}
154 \newcommand\hsr@matriculationnr{\ClassError{hsrbericht}{no \noexpand\matriculationnr given}{}}
155 \newcommand\thematriculationnr{\hsr@matriculationnr}
156
157 %% Logos informations
158 \newcommand\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⟩
167
168 %^^A%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
169 %^^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
183 %^^A%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
184 %^^A Setup Style
185 %
186
187
188 %% Configure Sans-Serif font
189 \ifhsr@sans
190   \ifhsr@slab
191     \PackageError{hsrzf}{%
192       sans ans slab options cannot be used at the same time
193     }
194   \fi
195   \ifhsr@concrete{hsrzf}{%
196     sans and concrete options cannot be used at the same time
197   }
198   \fi
199
200   \PassOptionsToPackage{T1}{fontenc}
201   \RequirePackage{fontenc}
202   \RequirePackage{cmbright}
203   \RequirePackage{sfmath}
204 \fi
205
206 %% Configure Slab-Serif font
207 \ifhsr@slab
208   \ifhsr@sans
```

```latex
209     \PackageError{hsrzf}{%
210       slab and sans options cannot be used at the same time
211     }
212   \fi
213   \ifhsr@concrete{hsrzf}{%
214     slab and concrete options cannot be used at the same time
215   }
216   \fi
217
218   \PassOptionsToPackage{T1}{fontenc}
219   \RequirePackage{fontenc}
220   \PassOptionsToPackage{rm,light}{roboto}
221   \RequirePackage{roboto}
222 \fi
223
224 %% Configure (secret) concrete font
225 \ifhsr@concrete
226   \ifhsr@sans{hsrzf}{%
227     concrete and sans options cannot be used at the same time
228   }
229   \fi
230   \ifhsr@slab
231     \PackageError{hsrzf}{%
232       concrete ans slab options cannot be used at the same time
233     }
234   \fi
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
248   \setlength\hsr@hmarginwidth{30mm}
249   \setlength\hsr@vmarginheight{30mm}
250 \else
251   \expandafter\ifstrequal\expandafter{\hsr@margin}{huge}{
252     \setlength\hsr@hmarginwidth{45mm}
253     \setlength\hsr@vmarginheight{40mm}}{}
254 %%
255   \expandafter\ifstrequal\expandafter{\hsr@margin}{large}{
256     \setlength\hsr@hmarginwidth{35mm}
257     \setlength\hsr@vmarginheight{35mm}}{}
258 %%
259   \expandafter\ifstrequal\expandafter{\hsr@margin}{big}{
260     \setlength\hsr@hmarginwidth{30mm}
261     \setlength\hsr@vmarginheight{30mm}}{}
262 %%
263   \expandafter\ifstrequal\expandafter{\hsr@margin}{normal}{
264     \setlength\hsr@hmarginwidth{25mm}
265     \setlength\hsr@vmarginheight{30mm}}{}
266 %%
```

```latex
267    \expandafter\ifstrequal\expandafter{\hsr@margin}{small}{
268        \setlength\hsr@hmarginwidth{20mm}
269        \setlength\hsr@vmarginheight{20mm}}{}
270 %%
271    \expandafter\ifstrequal\expandafter{\hsr@margin}{tiny}{
272        \setlength\hsr@hmarginwidth{10mm}
273        \setlength\hsr@vmarginheight{20mm}}{}
274 %%
275    \expandafter\ifstrequal\expandafter{\hsr@margin}{minimal}{
276        \setlength\hsr@hmarginwidth{ 5mm}
277        \setlength\hsr@vmarginheight{20mm}}{}
278 %%
279    % TODO: fix this
280    % \ClassError{hsrzf}{Invalid margin size}
281    % \setlength\hsr@hmarginwidth{30mm}
282    % \setlength\hsr@vmarginheight{30mm}
283 \fi
284
285 ⟨/hsrzf | hsrbericht⟩
286
287 %^^A%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
288 %^^A HSR ZF specific
289 ⟨*hsrzf⟩
290 %% TODO: change vmarginheight if header is on
291 \newgeometry{
292        hmargin=\hsr@hmarginwidth,
293        vmargin=\hsr@vmarginheight,
294        marginparsep=0pt,
295        marginpar=0pt,
296 }
297
298 \fancypagestyle{hsrzf}{%
299        \fancyhf{} % clear
300        \fancyhead[L]{\leftmark}
301        \fancyhead[C]{\themodule}
302        \fancyhead[R]{\@date}
303
304        \fancyfoot[L]{\href{https://github.com/HSR-Stud/}{\texttt{HSR-Stud}}}
305        \fancyfoot[C]{\texttt{CC BY-NC-SA}}
306        \fancyfoot[R]{\thepage ~/ \pageref{TotPages}}
307
308        \renewcommand{\headrulewidth}{.5pt}
309        \renewcommand{\footrulewidth}{.5pt}
310 }
311
312 \fancypagestyle{hsrzf-norulers}{%
313        \fancyhf{} % clear
314        \fancyhead[L]{\leftmark}
315        \fancyhead[C]{\themodule}
316        \fancyhead[R]{\@date}
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
322        \renewcommand{\headrulewidth}{0pt}
323        \renewcommand{\footrulewidth}{0pt}
324 }
```

```
325
326 \ifhsr@header
327 \pagestyle{hsrzf}
328 \fi
329 ⟨/hsrzf⟩
330
331 %^^A%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
332 %^^A HSR Bericht specific
333 ⟨*hsrbericht⟩
334
335 %% Redefine title and abstract
336 \renewcommand\maketitle{%
337 \begin{titlepage}
338     \thispagestyle{hsrbericht}
339     \begin{center}
340     \vspace*{6cm}
341     \textbf{\fontsize{48}{60}\selectfont \@title}
342     \vspace{1.5cm} \\
343     \textbf{\fontsize{24}{48}\selectfont \hsr@subtitle}
344     \vspace{1cm} \\
345     \textbf{\fontsize{22}{48}\selectfont \hsr@category}
346     \vspace{0.5cm} \\
347     \begin{tabular}{rl}
348     \textbf{Version:} & \hsr@version \\
349     \end{tabular}
350     \vspace{4cm} \\
351     \begin{tabular}{rl p{1.5cm} rl}
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              &&               & \\
356     \end{tabular}{}
357     \vspace{2cm} \\
358     \begin{tabular}{rl}
359     \textbf{Erstellt am:}       & \textbf{\hsr@startdate} \\
360     \textbf{Letze Änderung am:} & \textbf{\hsr@finishdate} \\
361     \end{tabular}
362     \end{center}
363 \end{titlepage}}
364
365 \renewenvironment{abstract}{%
366     \section*{Abstract}%
367     \newcommand\problem{\paragraph{Problem}}
368     \newcommand\goal{\paragraph{Ziel}}
369     \newcommand\method{\paragraph{Method / Vorgehen}}
370     \newcommand\results{\paragraph{Wesentliche Ergebnisse}}
371     \newcommand\suggestions{\paragraph{Empfehlungen}}
372     \newcommand\keywords{\paragraph{Schl\"usselw\"orter}}
373 }{}
374
375 %% TODO: twoside / book support
376 %% Debug:
377 %% \RequirePackage{showframe}
378
379 \newgeometry{
380     hmargin=\hsr@hmarginwidth,
381     vmargin=\hsr@vmarginheight,
382     marginparsep=0pt,
```

```
383     marginpar=0pt,
384 }
385
386 %% Configure headers
387 \fancypagestyle{hsrbericht}{%
388     \fancyhf{} % clear
389     \fancyhead[C]{\@title}
390     \fancyhead[R]{\hsr@clientlogo}
391     \fancyhead[L]{\hsr@logo}
392     \fancyfoot[R]{\thepage / \pageref{TotPages} }
393     \fancyfoot[L]{Dockument: \jobname \\ Druck: \finishdate}
394     \renewcommand{\headrulewidth}{.5pt}
395     \renewcommand{\footrulewidth}{.5pt}
396 }
397
398 \fancypagestyle{plain}{%
399     \fancyhf{} % clear
400     \fancyhead[C]{\@title}
401     \fancyhead[R]{\hsr@clientlogo}
402     \fancyhead[L]{\hsr@logo}
403     \fancyfoot[R]{\thepage / \pageref{TotPages} }
404     \fancyfoot[L]{Dockument: \jobname \\ Druck: \finishdate}
405     \renewcommand{\headrulewidth}{.5pt}
406     \renewcommand{\footrulewidth}{.5pt}
407 }
408
409 \pagestyle{hsrbericht}
410
411 ⟨/hsrbericht⟩
```

8 Minimal working examples

```
1  \documentclass[margin=normal]{hsrzf}
2
3  % Packages
4  %% the HSRStud package
5  \usepackage{hsrstud}
6
7  % Metadata
8  \course{Elektrotechnik}
9  \module{ModAbk}
10 \semester{Herbstsemester 2020}
11
12 \authoremail{vname@hsr.ch}
13 \author{\textsl{Vorname Name} -- \texttt{\theauthoremail}}
14
15 \title{\texttt{\themodule} Zusammenfassung}
16 \date{\thesemester}
17
18 % document
19 \begin{document}
20 \maketitle
21 \tableofcontents
22 \section{Introduction}
23 \[
24   i\hbar \partial_t \left| \psi(t) \right\rangle
25     = \hat{H} \left| \psi(t) \right\rangle
26 \]
```

```latex
\end{document}
```