

HSR–Stud Document Classes

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October 3, 2020

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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`).

`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 through the following commands: `\theauthor`, `\thedata`, `\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 /

5.2 Minimal working example

6 License

This work is licensed under a [Creative Commons](https://creativecommons.org/licenses/by-sa/4.0/) “Attribution-ShareAlike 4.0 International” license.



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 %% Class options
25 \SetupKeyvalOptions{
26   family=hsr,
27   prefix=hsr@
28 }
29
30 %% Use header and footer
31 \DeclareBoolOption[false]{header}
32 \DeclareComplementaryOption{noheader}{header}
33
34 %% Use a sans-serif slab-serif or concrete font

```

```

35 \DeclareBoolOption[false]{sans}
36 \DeclareBoolOption[false]{slab}
37 \DeclareBoolOption[false]{concrete}
38
39 %% Configures the geometry package
40 %%
41 %% Possible values:
42 %% - huge      (45mm, 40mm)
43 %% - large     (35mm, 35mm)
44 %% - big       (30mm, 30mm)
45 %% - normal    (25mm, 30mm)
46 %% - small     (20mm, 20mm)
47 %% - tiny      (10mm, 20mm)
48 %% - minimal   ( 5mm, 20mm)
49 \DeclareStringOption{margin}[huge]
50
51 %% Configures the polyglossia package
52 % \DeclareStringOption[]{\lang}{german}
53
54
55 %% Pass other options to the class
56 \DeclareDefaultOption{%
57   \ifx\CurrentOptionValue\relax
58     \PackageWarningNoLine{\@currname}{%
59       Unknown option ``\CurrentOption''\MessageBreak
60       is passed to class ``article'%
61     }%
62     % Pass the option to package color.
63     % Again it is better to expand \CurrentOption.
64     \expandafter\PassOptionsToClass
65     \expandafter{\CurrentOption}{article}
66   \else
67     % Package color does not take options with values.
68     % We provide the standard LaTeX error.
69     \@unknownoptionerror
70   \fi
71 }
72
73 \ProcessKeyvalOptions{hsr}
74
75
76 %% Create new metadata fields
77
78 %% Required fields
79 \newcommand\course[1]{\gdef\hsr@course{#1}}
80 \newcommand\hsr@course{\ClassError{hsrzf}{no \noexpand\course given}{}}
81 \newcommand\thecourse{\hsr@course}
82
83 \newcommand\module[1]{\gdef\hsr@module{#1}}
84 \newcommand\hsr@module{\ClassError{hsrzf}{no \noexpand\module given}{}}
85 \newcommand\themodule{\hsr@module}
86
87 \newcommand\semester[1]{\gdef\hsr@semester{#1}}
88 \newcommand\hsr@semester{\ClassError{hsrzf}{no \noexpand\semester given}{}}
89 \newcommand\thesemester{\hsr@semester}
90
91 %% Optional fields
92 \newcommand\institute[1]{\gdef\hsr@institute{#1}}

```

```

93 \newcommand\hsr@institute{\ClassWarning{hsrzf}{no \noexpand\institute given}{}}
94 \newcommand\theinstitute{\hsr@institute}
95
96 \newcommand\authoremail[1]{\gdef\hsr@authoremail{#1}}
97 \newcommand\hsr@authoremail{\ClassWarning{hsrzf}{no \noexpand\authoremail given}{}}
98 \newcommand\theauthoremail{\hsr@authoremail}
99
100 \newcommand\maintainer[1]{\gdef\hsr@maintainer{#1}}
101 \newcommand\hsr@maintainer{\ClassWarning{hsrzf}{no \noexpand\maintainer given}{}}
102 \newcommand\themaintainer{\hsr@maintainer}
103
104 \newcommand\contributors[1]{\gdef\hsr@contributors{#1}}
105 \newcommand\hsr@contributors{\ClassWarning{hsrzf}{no \noexpand\contributors given}{}}
106 \newcommand\thecontributors{\hsr@contributors}
107 /hsrzf | hsrbericht)
108 (*hsrbericht)
109 %% The report class has some extra metadata
110
111 %% Extra title informations
112 \newcommand\subtitle[1]{\gdef\hsr@subtitle{#1}}
113 \newcommand\hsr@subtitle{\ClassError{hsrbericht}{no \noexpand\subtitle given}{}}
114 \newcommand\thesubtitle{\hsr@subtitle}
115
116 %% Project informations
117 \newcommand\category[1]{\gdef\hsr@category{#1}}
118 \newcommand\hsr@category{\ClassWarning{hsrbericht}{no \noexpand\category given}{}}
119 \newcommand\thecategory{\hsr@category}
120
121 \newcommand\project[1]{\gdef\hsr@project{#1}}
122 \newcommand\hsr@project{\ClassError{hsrbericht}{no \noexpand\project given}{}}
123 \newcommand\theproject{\hsr@project}
124
125 \newcommand\topic[1]{\gdef\hsr@topic{#1}}
126 \newcommand\hsr@topic{\ClassError{hsrbericht}{no \noexpand\topic given}{}}
127 \newcommand\thetopic{\hsr@topic}
128
129 \newcommand\version[1]{\gdef\hsr@version{#1}}
130 \newcommand\hsr@version{\ClassError{hsrbericht}{no \noexpand\version given}{}}
131 \newcommand\theversion{\hsr@version}
132
133 \newcommand\instructor[1]{\gdef\hsr@instructor{#1}}
134 \newcommand\hsr@instructor{\ClassError{hsrbericht}{no \noexpand\instructor given}{}}
135 \newcommand\theinstructor{\hsr@instructor}
136
137 \newcommand\startdate[1]{\gdef\hsr@startdate{#1}}
138 \newcommand\hsr@startdate{\ClassError{hsrbericht}{no \noexpand\startdate given}{}}
139 \newcommand\thestartdate{\hsr@startdate}
140
141 \newcommand\finishdate[1]{\gdef\hsr@finishdate{#1}}
142 \newcommand\hsr@finishdate{\ClassError{hsrbericht}{no \noexpand\finishdate given}{}}
143 \newcommand\thefinishdate{\hsr@finishdate}
144
145 %% Author informations
146 \newcommand\address[1]{\gdef\hsr@address{#1}}
147 \newcommand\hsr@address{\ClassWarning{hsrbericht}{no \noexpand\address given}{}}
148 \newcommand\theaddress{\hsr@address}
149
150 \newcommand\matriculationnr[1]{\gdef\hsr@matriculationnr{#1}}

```

```

151 \newcommand\hsr@matriculationnr{\ClassError{hsrbericht}{no \noexpand\matriculationnr given}{}}
152 \newcommand\thematriculationnr{\hsr@matriculationnr}
153
154 %% Logos informations
155 \newcommand\logo[1]{\gdef\hsr@logo{#1}}
156 \newcommand\hsr@logo{\ClassWarning{hsrbericht}{no \noexpand\logo given}{}}
157 \newcommand\thelogo{\hsr@logo}
158
159 \newcommand\clientlogo[1]{\gdef\hsr@clientlogo{#1}}
160 \newcommand\hsr@clientlogo{\ClassWarning{hsrbericht}{no \noexpand\clientlogo given}{}}
161 \newcommand\theclientlogo{\hsr@clientlogo}
162 \hsrbericht
163 \hsrzf | hsrbericht
164
165 %^^A%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
166 %^^A Setup base class
167 \LoadClass[a4paper]{article}
168
169 %% Style deps
170 \RequirePackage{geometry}
171 \RequirePackage{fancyhdr}
172 \RequirePackage{titling}
173 \RequirePackage{lastpage}
174 \RequirePackage{array}
175
176 %% Insert metadata in the pdf
177 \PassOptionsToPackage{plainpages=false, pdfpagelabels, pdfusetitle}{hyperref}
178 \RequirePackage{hyperref}
179
180 %^^A%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
181 %^^A Setup Style
182 %
183
184
185 %% Configure Sans-Serif font
186 \ifhsr@sans
187   \ifhsr@slab
188     \PackageError{hsrzf}{%
189       sans ans slab options cannot be used at the same time
190     }
191   \fi
192   \ifhsr@concrete{hsrzf}{%
193     sans and concrete options cannot be used at the same time
194   }
195   \fi
196
197   \PassOptionsToPackage{T1}{fontenc}
198   \RequirePackage{fontenc}
199   \RequirePackage{cmbright}
200   \RequirePackage{sfbmath}
201 \fi
202
203 %% Configure Slab-Serif font
204 \ifhsr@slab
205   \ifhsr@sans
206     \PackageError{hsrzf}{%
207       slab and sans options cannot be used at the same time
208     }

```

```

209 \fi
210 \ifhsr@concrete{hsrzf}{%
211     slab and concrete options cannot be used at the same time
212 }
213 \fi
214
215 \PassOptionsToPackage{T1}{fontenc}
216 \RequirePackage{fontenc}
217 \PassOptionsToPackage{rm,light}{roboto}
218 \RequirePackage{roboto}
219 \fi
220
221 %% Configure (secret) concrete font
222 \ifhsr@concrete
223     \ifhsr@sans{hsrzf}{%
224         concrete and sans options cannot be used at the same time
225     }
226 \fi
227 \ifhsr@slab
228     \PackageError{hsrzf}{%
229         concrete and slab options cannot be used at the same time
230     }
231 \fi
232
233 \PassOptionsToPackage{boldsans,amssymb}{concmath}
234 \RequirePackage{concmath}
235 \PassOptionsToPackage{T1}{fontenc}
236 \RequirePackage{fontenc}
237 \fi
238
239 %% configure geometry
240 %% defaults to big
241 \newlength{\hsr@hmarginwidth}
242 \newlength{\hsr@vmarginheight}
243
244 \ifx\hsr@margin\@empty
245     \setlength\hsr@hmarginwidth{30mm}
246     \setlength\hsr@vmarginheight{30mm}
247 \else
248     \expandafter\ifstrequal\expandafter{\hsr@margin}{huge}{
249         \setlength\hsr@hmarginwidth{45mm}
250         \setlength\hsr@vmarginheight{40mm}}{}
251 %%
252     \expandafter\ifstrequal\expandafter{\hsr@margin}{large}{
253         \setlength\hsr@hmarginwidth{35mm}
254         \setlength\hsr@vmarginheight{35mm}}{}
255 %%
256     \expandafter\ifstrequal\expandafter{\hsr@margin}{big}{
257         \setlength\hsr@hmarginwidth{30mm}
258         \setlength\hsr@vmarginheight{30mm}}{}
259 %%
260     \expandafter\ifstrequal\expandafter{\hsr@margin}{normal}{
261         \setlength\hsr@hmarginwidth{25mm}
262         \setlength\hsr@vmarginheight{30mm}}{}
263 %%
264     \expandafter\ifstrequal\expandafter{\hsr@margin}{small}{
265         \setlength\hsr@hmarginwidth{20mm}
266         \setlength\hsr@vmarginheight{20mm}}{}

```

```

267 %%
268 \expandafter\ifstrequal\expandafter{\hsr@margin}{tiny}{
269 \setlength\hsr@hmarginwidth{10mm}
270 \setlength\hsr@vmarginheight{20mm}}{}
271 %%
272 \expandafter\ifstrequal\expandafter{\hsr@margin}{minimal}{
273 \setlength\hsr@hmarginwidth{5mm}
274 \setlength\hsr@vmarginheight{20mm}}{}
275 %%
276 % TODO: fix this
277 % \ClassError{hsrzf}{Invalid margin size}
278 % \setlength\hsr@hmarginwidth{30mm}
279 % \setlength\hsr@vmarginheight{30mm}
280 \fi
281
282 </hsrzf | hsrbericht>
283
284 %^^A%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
285 %^^A HSR ZF specific
286 <*hsrzf>
287 %% TODO: change vmarginheight if header is on
288 \newgeometry{
289 hmargin=\hsr@hmarginwidth,
290 vmargin=\hsr@vmarginheight,
291 marginparsep=0pt,
292 marginpar=0pt,
293 }
294
295 \fancypagestyle{hsrzf}{%
296 \fancyhf{} % clear
297 \fancyhead[L]{\leftmark}
298 \fancyhead[C]{\themodule}
299 \fancyhead[R]{\@date}
300
301 \fancyfoot[L]{\href{https://github.com/HSR-Stud/}{\texttt{HSR-Stud}}}
302 \fancyfoot[C]{\texttt{CC BY-NC-SA}}
303 \fancyfoot[R]{\thepage ~/ \pageref{LastPage}}
304
305 \renewcommand{\headrulewidth}{.5pt}
306 \renewcommand{\footrulewidth}{.5pt}
307 }
308
309 \fancypagestyle{hsrzf-norulers}{%
310 \fancyhf{} % clear
311 \fancyhead[L]{\leftmark}
312 \fancyhead[C]{\themodule}
313 \fancyhead[R]{\@date}
314
315 \fancyfoot[L]{\href{https://github.com/HSR-Stud/}{\texttt{HSR-Stud}}}
316 \fancyfoot[C]{\texttt{CC BY-NC-SA}}
317 \fancyfoot[R]{\thepage ~/ \pageref{LastPage}}
318
319 \renewcommand{\headrulewidth}{0pt}
320 \renewcommand{\footrulewidth}{0pt}
321 }
322
323 \ifhsr@header
324 \pagestyle{hsrzf}

```



```

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

```

```

383 %% Configure headers
384 \fancypagestyle{hsrbericht}{%
385     \fancyhf{} % clear
386     \fancyhead[C]{\@title}
387     \fancyhead[R]{\hsr@clientlogo}
388     \fancyhead[L]{\hsr@logo}
389     \fancyfoot[R]{\thepage / \pageref{LastPage} }
390     \fancyfoot[L]{Dokument: \jobname \\ Druck: \finishdate}
391     \renewcommand{\headrulewidth}{.5pt}
392     \renewcommand{\footrulewidth}{.5pt}
393 }
394
395 \fancypagestyle{plain}{%
396     \fancyhf{} % clear
397     \fancyhead[C]{\@title}
398     \fancyhead[R]{\hsr@clientlogo}
399     \fancyhead[L]{\hsr@logo}
400     \fancyfoot[R]{\thepage / \pageref{LastPage} }
401     \fancyfoot[L]{Dokument: \jobname \\ Druck: \finishdate}
402     \renewcommand{\headrulewidth}{.5pt}
403     \renewcommand{\footrulewidth}{.5pt}
404 }
405
406 \pagestyle{hsrbericht}
407
408 \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 \[
24   i\hbar \partial_t \left| \psi(t) \right\rangle
25   = \hat{H} \left| \psi(t) \right\rangle
26 \]
27
28 \end{document}

```