

# The `esg8012exam` class\*

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October 8, 2010

## 1 Introduction

The `esg8012exam` class provides a template for ESG class PSets.

## 2 Usage

I give the usage and specification of every macro defined. I give bugs when I know them (please email me if you find other bugs, or have fixes for the bugs I list). I sometimes give extra description or justification.

`\duedate`      Usage: `\duedate{<date>}`  
Specification: The `<date>` is used as the due date.

## 3 Setup

```
1 \ifthenelse{\boolean{esg8012exam@problems} \OR \boolean{esg8012exam@solutions}}{
2 }{
3   \newwrite\esgexam@problemsout
4   \newwrite\esgexam@solutionsout
5   \newwrite\esgexam@tempout
6   \newcommand{\esgexam@compilefile}[1]{\write18{pdflatex "#1.tex"}}
7   \edef\esgexam@problemsfilename{\jobname\string_Problems.tex}
8   \edef\esgexam@solutionsfilename{\jobname\string_Solutions.tex}
9   \edef\esgexam@tempfilename{\jobname.tmp}
10  \newcommand{\writetoboth}[1]{\writetoproblems{#1}%
11    \writetosolutions{#1}}
12  \newcommand{\writetoall}[1]{\writetoboth{#1}\writetothis{#1}}
13  \newcommand{\writetoproblems}[1]{\immediate\write\esgexam@problemsout{#1}}
14  \newcommand{\writetosolutions}[1]{\immediate\write\esgexam@solutionsout{#1}}
15  \newcommand{\writetothis}[1]{\edef\temp{#1}\expandafter\scantokens\expandafter{
16
17    \immediate\openout\esgexam@problemsout\esgexam@problemsfilename
```

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\*This document corresponds to `esg8012exam ?`, dated ?.

```

18 \immediate\openout\esgexam@solutionsout\esgexam@solutionsfilename
19
20
21 \def\esgexam@end@hook{
22   \begingroup
23     \writetoboth{\string\end{document}}
24   \endgroup
25   \immediate\closeout\esgexam@problemsout
26   \immediate\closeout\esgexam@solutionsout
27   %\write18{pdflatex "\esgexam@problemsfilename"}
28   %\write18{pdflatex "\esgexam@solutionsfilename"}
29 }
30 \expandafter\expandafter\expandafter\def\expandafter\expandafter\expandafter\enddocument
31   \expandafter\expandafter\expandafter{\expandafter\esgexam@end@hook\enddocument}
32
33 \global\let\esgexam@begin@hook\relax
34 \expandafter\def\expandafter\begin
35   \expandafter#\expandafter1\expandafter{\expandafter\esgexam@begin@hook\begin{#1}}% This is
36
37 \begingroup
38   \writetosolutions{%
39     \string\documentclass[solutions]{esg8012exam}
40   }
41   \writetoproblems{%
42     \string\documentclass[problems]{esg8012exam}
43   }
44 \endgroup
45
46 \newenvironment{preamble}{%
47   \begingroup% Lets Keep the Changes Local
48     \immediate\openout\esgexam@tempout\esgexam@tempfilename
49     \@bsphack
50     \let\do\@makeother\dospecials\catcode'\^M\active
51     \def\verbatim@processline{\writetoboth{\the\verbatim@line}\immediate\write\esgexam@tempou
52     \verbatim@start
53   }{\@esphack
54     \immediate\closeout\esgexam@tempout\endgroup
55     \gdef\esgexam@begin@hook{\input{\esgexam@tempfilename}\global\let\esgexam@begin@hook\rela
56   }
57
58 \AtBeginDocument{
59
60   \begingroup
61     \writetoboth{%
62       \string\classname{\expandafter\unexpanded\expandafter{\@classname}}
63     }
64     \writetoboth{%
65       \string\semester{\expandafter\unexpanded\expandafter{\@semester}}
66     }
67     \writetoboth{%

```

```

68     \string\examnumber{\expandafter\unexpanded\expandafter{\@examnumber}}
69   }
70   \writetoboth{%
71     \string\date{\expandafter\unexpanded\expandafter{\@date}}
72   }
73   \writetoboth{\string\begin{document}}
74 \endgroup
75 }
76 }
77
78
79 \pagestyle{fancy}
80 \headheight 14.5pt
81 \fancyhead{}
82 \fancyfoot{}
83 \cfoot{\thepage\space of \pageref{LastPage}}
84
85 \AtBeginDocument{
86   \begingroup
87     \ifthenelse{\boolean{esg8012exam@problems}}{%
88       \edef\@cheader{Exam \@examnumber\space}
89     }{
90       \ifthenelse{\boolean{esg8012exam@solutions}}{
91         \edef\@cheader{Exam \@examnumber\space - Solutions}
92       }{
93         \edef\@cheader{Exam \@examnumber\space}
94       }
95     }
96   \expandafter\endgroup
97   \expandafter\thead\expandafter{\@cheader}
98   \begingroup
99     \bf
100    \begin{center}%
101      {\noindent MASSACHUSETTS INSTITUTE OF TECHNOLOGY \par}%
102      {\noindent Experimental Study Group \par}%
103    \end{center}%
104    {\noindent \@classname \hfill \@semester \par}%
105    \begin{center}%
106      {\noindent \Large
107        Exam \@examnumber
108        \ifthenelse{\boolean{esg8012exam@solutions}}{% \OR \NOT \boolean{esg8012exam@problems}}{
109          \space Solutions%
110        }{}%
111      \par}%
112    \end{center}%
113  \endgroup
114  \global\let\examnumber\relax
115  \global\let\semester\relax
116  \global\let\classname\relax
117  \global\let\@examnumber\relax

```

```

118 \global\let\@semester\relax
119 \global\let\@classname\relax
120 }

```

\duedate These four macros are provided by esg8012exam.dtx to provide information about  
 \examnumber the class assigning the exam. The information is stored away in internal control  
 \semester sequences. It is the task of the \maketitle command to use the information  
 \classname provided. The definitions of these macros are shown here for information.  
 \readingassignment

```

121 \newcommand*{\examnumber}[1]{\gdef\@examnumber{#1}}
122 \newcommand*{\semester}[1]{\gdef\@semester{#1}}
123 \newcommand*{\classname}[1]{\gdef\@classname{#1}}

```

### 3.1 Problem Environments

```

problem
statement 124 \newcounter{esg8012exam@problem@counter}
solution 125 \newenvironment{problem}[2][\relax]{%
126 \ifthenelse{\equal{#1}{\relax}}{%
127 \stepcounter{esg8012exam@problem@counter}%
128 \writetoall{\string\section*{Problem \arabic{esg8012exam@problem@counter}: #2}}%
129 }{%
130 \writetoall{\string\section*{Problem #1: #2}}%
131 }%
132 \writetosolutions{\string\subsection*{Problem}}%
133 \begingroup% Lets Keep the Changes Local
134 \@bsphack
135 \immediate\openout\esgexam@tempout\esgexam@tempfilename
136 \let\do\@makeother\dospecials\catcode'\^^M\active
137 \def\verbatim@processline{\writetoboth{\the\verbatim@line}\immediate\write\esgexam@tempout{
138 \verbatim@start
139 }}{\@esphack\immediate\closeout\esgexam@tempout\endgroup
140 \input{\esgexam@tempfilename}%
141 }
142 \newenvironment{solution}{%
143 \writetosolutions{\string\subsection*{Solution}}%
144 \begingroup% Lets Keep the Changes Local
145 \@bsphack
146 \let\do\@makeother\dospecials\catcode'\^^M\active
147 \def\verbatim@processline{\writetosolutions{\the\verbatim@line}}%
148 \verbatim@start
149 }{\@esphack\endgroup}%

```