

# General information about the 2025 course MSE485 (ELA1 Mon. 17:15-19:00) Tribology

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## 1. Course support

On the Moodle page MSE485 <https://moodle.epfl.ch/course/view.php?id=14726>

## 2. Calendar (tentative\*)

Date	Topic	Teachers
08.09	Introduction to tribology	Igual
15.09	Contact phenomena	Igual
29.09	Friction, Lubrication	Igual
6.10	Wear	Igual
13.10	Third bodies	Igual
27.10	<b>Mid term exam (fixed date)</b>	Igual
03.11	Tribologie et horlogerie (in French)	S. Debaud
10.11	Material responses in tribological contacts	S. Mischler
17.11	Coatings and surface treatments	Igual
24.11	Tribology of artificial hip joints	C. Rieker
01.12	Tribology in railways	A. Roda-Buch
08.12	<b>Final exam (fixed date)</b>	Igual
15.12	<b>Practical assessment</b>	Igual/Mischler

\* subject to changes

## 3. Examinations

The students will be evaluated in two distinct forms:

- mid term exam
- Final term exam.

The final grade corresponds to the average of these two examinations. The examination format is subject to changes for example in case of COVID restrictions.

### Mid term exam

- The evaluation concerns only the issues treated in the first 6 weeks.
- Each of you will receive a sheet with general questions on tribology (multiple choice answers) and calculus exercises (you must just give the right result with the right unit). You should write your name and Sciper number on the sheet as well as your answers and return it to me when you leave the room.

- You can keep the usual support material (computer, calculator, written notes, books, ...) with you but you are not allowed to use Internet or the phone. The exam is individual, so no interactions between students are tolerated.
- You have 90 minutes (no break) to complete the exam. However, if you followed the course regularly, you will certainly be able to finish the exam within a much shorter time.

### **Final term exam**

- The evaluation concerns the issues treated in all lectures from the beginning of the course. It includes the lectures given by the external speakers except the one given by S. Debaud (which was given in French).
- Each of you will receive a sheet with general questions on tribology (multiple choice answers) and calculus exercises (you must just give the right result with the right unit). You should write your name and Sciper number on the sheet as well as your answers and return it to me when you leave the room.
- You can keep the usual support material (computer, calculator, written notes, books, ...) with you but you are not allowed to use Internet or the phone. The exam is individual, so no interactions between students are tolerated.
- You have 90 minutes (no break) to complete the exam. However, if you followed the course regularly, you will certainly be able to finish the exam within a much shorter time.

## **4. Invited speakers from industry and academia**

Three lectures will be given by tribologists professionally active in different industrial sectors (watches, biomedical implants, transportation systems). One lecture will be given by an experienced material tribologist. Some of these lectures are interactive and one is given in French. In principle these lectures are given in November but changes may occur depending on speaker availability.

## **5. Recommended books**

### *Introductory book*

I.M. Hutchings

Tribology: Friction and Wear of Engineering Materials

Arnold, London (1992)

ISBN 0-340-56184-x, 273 pages

### *Reference book*

G.W. Stachowiak et A.W. Batchelor

Engineering Tribology

Elsevier, Amsterdam (1993)

ISBN 0-444-89235-4, 872 pages