



Task 0: Pre-assignment

Instructions: Check the following questions and exercises. Access the course textbook and read chapters 1 (4th edition available in the Aalto Library as an e-book).

Task 0_0: Check GRANTA EduPack software and learn the user interface, watch tutorial videos and follow the exercises by yourself (In GRANTA EduPack 2023 R2 go to → Help/Video Tutorials → “GRANTA EduPack overview”, and “Select” videos).

Task 0_1: You will be given the following material groups to study and choose one as you wish:

Composites	Plastics
Foams	Non-technical ceramics
Metals	Technical ceramics
Elastomers	Natural materials

- Explain the description of given material group (what it is, what are the typical material in the group, etc.)
- Give three examples of specific materials representative of this group and corresponding examples of what they are used for.

Task 0_2: From the GRANTA EduPack-database, find the following material properties:

Fracture toughness	Flammability
Transparency	Maximum operating Temperature
Specific heat capacity	CO ₂ footprint
Thermal conductivity	Coefficient of thermal expansion
Electrical conductivity	Toxicity

- What do they mean and how they can be measured/evaluated? (Use short discussion with terms, charts, etc.)
- Find typical values for the material group given in Task 0_1. Choose 4 material properties and compare these properties in Level 2 and Level 3 (see the tutorials to understand the meaning of “levels”). Shortly discuss what are the differences in the results.

Task 0_3. Find translations of the material properties in the list in Task 0_2 in at least two languages that are not English. Use your native language if that is not English, and at least one additional language you consider important in technology/engineering.