

## ASSIGNMENT 1 (PRE-COURSE TASK) Problems and solutions from your field of study

**Deadline: bring a paper copy to the first meeting**

During this course, you will write and speak about solutions related to your own field of study: write a report (500-600 words) recommending a solution from your field of study to a specific problem or need, and give an oral presentation on the same topic.

Every field of science is constantly developing solutions to problems arising from real-life situations and needs. These solutions can be, for example, **technologies, methods, devices, approaches, or strategies**, which usually aim to achieve one of the following goals:

- to improve the efficiency of an existing technology or method
- to implement a more effective strategy
- to enhance methods to organize a process

To get started, your first task is to do some research to find a suitable topic and contents for the compulsory written and oral assignments.

Look for **solutions that you find interesting** yourself and motivating to explain in more detail to a **non-expert audience** (i.e. intelligent and educated but not experts in your specific field of study). You may choose some application, strategy or technology that is central to your field, or perhaps you have noticed an item of news (YLE, HS, BBC, Discovery) that is closely **related to your field**? Or maybe you have some expert knowledge of current developments in your field based on your experience in working life, your bachelor's thesis or a project in which you have participated.

**For this assignment, fill in the *Pre-course task template* with the following information:**

1. Find **2 real-life needs/problems** that can be solved or alleviated using a **particular solution** from **your own field of study**.
  - *The solution* may be e.g. a method, device, technology, material, or strategy.
  - *The problem* can be a need to develop a new technology, or improve on an existing method or process. For example:

**Problem/need**

Metal screws are currently used for treating bone fractures. *However, they have to be removed in a later operation, which increases costs and prolongs the recovery period.*

**Proposed solution**

*Such complications can be avoided by using biodegradable materials.*

To identify such problems and solutions, browse the web for interesting solutions or current developments in your field (e.g. search with key words, or look into your school or department home pages or Aalto University Library [Information Resources](#) ). See also examples below (table 1).

2. Briefly describe a technical **solution** for both of the problems that you identified.
3. Identify a potential **client**, i.e. **who** would most probably implement this solution (what public/private institution, company or individual entrepreneur?).
4. Copy the links to the **sources** of your information into the *Pre-course template* (item 4).

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**Table 1:** Examples of topics chosen by previous students

Ionic liquids in cellulose processing  
Driver drowsiness detection  
Microfluidic chips in neuron culture  
Single-port manipulator system for brain tumor removal surgery  
Microchip-integrated antennas  
Prototyping by 3D printing  
Nanoscale salt crystals