

# Collective Problem-Solving

CS-234: Technologies for Democratic Society, Fall 2026

**NOTE:** If you have **any questions regarding this assignment**, please **do not hesitate to contact us** by starting a [discussion on Ed](#) so that (1) we can help you and (2) your classmates who might potentially have the same questions benefit from our answers. **You can also always contact the CS-234 staff at:** [cs234-internal@groupe.epfl.ch](mailto:cs234-internal@groupe.epfl.ch)

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## Introduction

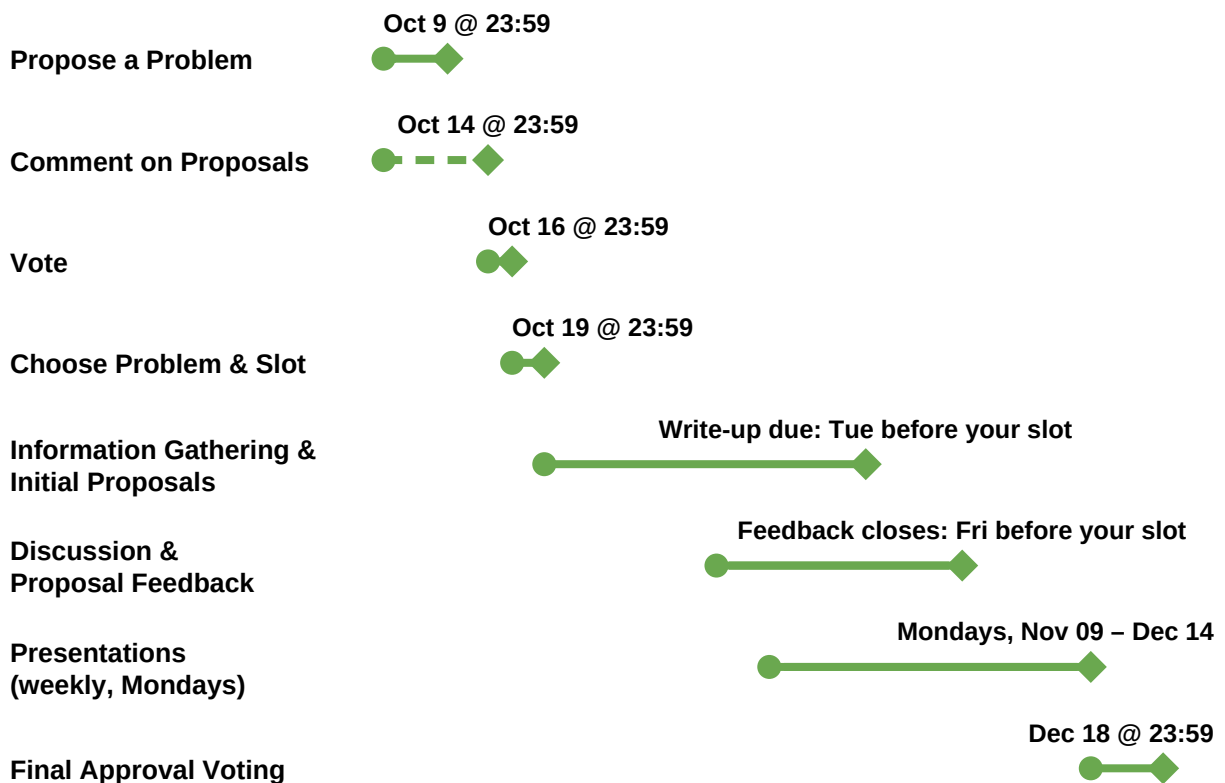
Deliberation is the process of thoughtfully weighing and carefully considering possible options. The process can be used for choosing the best candidate in an election or identifying a potential solution to a problem. In the following weeks, you will practice collective deliberation through agenda setting to identify problems that you have identified at EPFL (Part 1), gathering information to come up with a solution proposal (Part 2), and cross-validating and consolidating the proposals (Part 3).

- **Part 1 (Agenda setting):** Identifying the existing problems at EPFL that are potentially worth discussing; followed by narrowing them down to focus on the most important problems. Agenda setting consists of three stages: problem proposal, discussion, and voting. The outcome of this part is a list of problems that will be collectively studied and tackled in the next parts.

- **Part 2 (Information gathering & Initial proposals):** Gathering information (e.g. interviews, expert counseling, case studies, literature research) to come up with a proposal for solving one of the previously-identified problems.
- **Part 3 (Cross-validating proposals & Voting on the final proposals):** Comparing the suggested proposals, deliberating over their advantages and shortcomings, consolidating proposals, and, finally, doing an approval voting over all the proposals.

To facilitate efficient collaboration with your peers, we are going to use a decision-making software called Loomio. You should have received an invitation from Loomio. If you have not, please contact us at [cs234-internal@groupes.epfl.ch](mailto:cs234-internal@groupes.epfl.ch).

## Timeline



Part 1 deadlines are the same for everyone. From Part 2 onward, each team has its own deadlines, which depend on its presentation slot: the write-up is due on the Tuesday of the week before the presentation, feedback on it closes on the Friday before, and slides are due at noon on the day of the presentation. The 13 teams present over 6 weekly classes starting on Monday, November 9 (two teams in each of the first five classes and three teams on December 14). Find your slot in the table below; all deadlines in a row apply to the team(s) presenting on that date.

| Presentation (Mon, in class) | Teams | Write-up on Loomio (Tue @ 23:59) | Feedback closes (Fri @ 23:59) | Slides PDF (Mon @ 12:00) |
|------------------------------|-------|----------------------------------|-------------------------------|--------------------------|
| Nov 9                        | 2     | Nov 3                            | Nov 6                         | Nov 9                    |
| Nov 16                       | 2     | Nov 10                           | Nov 13                        | Nov 16                   |
| Nov 23                       | 2     | Nov 17                           | Nov 20                        | Nov 23                   |
| Nov 30                       | 2     | Nov 24                           | Nov 27                        | Nov 30                   |
| Dec 7                        | 2     | Dec 1                            | Dec 4                         | Dec 7                    |
| Dec 14                       | 3     | Dec 8                            | Dec 11                        | Dec 14                   |

## Part 1

### Problem proposal (250 words +/- 50)

We ask each student to suggest **one problem** that is present at EPFL that you have identified and think should be addressed. This problem might concern education, university infrastructure, sustainability policies, student life, bureaucracy, diversity, foreigners vs. Swiss citizens, this course, courses in general or anything else directly related to EPFL. The problems **do not** have to be unique across all the students (different students might be concerned about the same problem) but you need to come up with your own unique supporting arguments.

Each problem must be submitted as a new thread in the “**EPFL CS-234: Technologies of Societal Self-Organization**” organization on Loomio. Give your problem a concise but informative title, e.g., *Rise and Fall of the BC cafeteria: Monopolization of EPFL’s Food Supply*. Then, provide one paragraph describing the problem that you are bringing up in more detail **and** two concise paragraphs with arguments that explain why this problem is important. For example, you could briefly explain that all the cafeterias at EPFL have the same owners and that it affects the food quality. The arguments could include the importance of competition for maintaining quality and of fine food for students’ productivity. Other students will use your description and arguments as a starting point of discussion in the next stage.

We emphasize that each student needs to suggest **exactly one problem**, i.e., create one thread within the CS-234 organization on Loomio. Remember that the problems **do not** have to be unique. **The deadline for creating a thread on Loomio with your proposal is Friday, October 9 @ 23:59.**

In the following stages of this assignment, you are going to deliberate on the suggested problems to later collectively decide on which one is the most crucial.

## Discussion (200 words +/- 100 per comment)

This is the stage of active deliberation. As a true patriot of your future alma mater, you are going to ponder the problems that are raised by your fellow classmates and argue either in favor of or against their relevance/importance in the context of EPFL.

Specifically, you have two tasks during this stage. First, you must comment on at least four problems that are raised by other students (e.g., the problems that you can relate to the most) with elaborate arguments that either support the proposed problems or question them. Each comment must be 200 words +/- 100. **You are going to be assigned to two problem proposals that you have to comment on. This is to make sure that everyone gets feedback on their proposals. You are free to choose the other 2+ proposals that you want to comment on. We are going to announce your assignments immediately after the proposal deadline.** Second, you must engage in discussions with students who comment on your proposal, i.e., provide counterarguments to or agree with their questions/suggestions.

As you go through the proposed problems, you might realize that there is another proposal that is similar to yours. For instance, you might have brought up the problem of not having enough bike racks on campus, and another student might have pointed out that Point Velo is understaffed and their opening hours are not convenient. In this case, you can start a discussion with the other student and after deliberating over your distinct-but-related proposals, you can decide to merge your proposals under “EPFL is not bike-friendly enough”. Note that merging proposals is NOT mandatory: you can still engage in a discussion with the other student but keep your proposals separate. However, if you choose to merge your proposals, leave a comment under the thread “Request for Merge” in Loomio. In your comment, put (1) the names of the authors of the proposals that are merged and (2) the new title for the merged proposal (e.g., EPFL is not bike-friendly enough).

The goal of this stage is NOT to defend your proposal or trash the problems brought up by other students but to collectively deliberate and figure out which problems are the most crucial.

The discussion stage starts immediately after the assignment is released: you do not need to wait until the problem proposal deadline (Oct 9) to start commenting on proposals. **The deadline for commenting on the two proposals that you are assigned to, as well as for commenting on at least two other proposals that you can choose freely is Wednesday, October 14 @ 23:59.** Please make sure that the comments that you submit for the two assigned proposals start with “[MANDATORY]”.

**Points WILL be deducted if you do not include this exact string: [MANDATORY]**

## Voting

Now that you have deliberated over the problems that are plaguing EPFL, the time has come for you to choose the problems that you want to solve! In this stage, you are going to collectively decide on the problems that you believe to be more important or to require more immediate action than the others. To make this decision, you are going to vote on the proposals using Loomio.

Once the discussion stage is over, we are going to collect all the proposed problems (some of which might be merged if requested by their authors) and create a poll on Loomio with these proposals being the candidates. Specifically, we will create a multiple-choice poll with each proposal being an option, and you will be able to vote for as many proposals as you like. In other words, picking an option means voting in favor of the corresponding proposal and skipping an option means voting against it. At the end of the voting, you will have decided on the problems that everyone in the class is going to work on in the following weeks. We will announce the exact number of proposals that got selected shortly after the deadline for voting. **The deadline to cast your votes is Friday, October 16 @ 23:59.**

## Part 2

### Top proposals and problem selection

After you are done with part 1 of the project, there will be top proposals based on the number of votes. **We will share the top proposals in a Google Form shortly after the deadline of Part 1 (Oct 16).** From here on, you will work in your already-formed teams on one of the top problem proposals and devise a solution. To this end, you will: (1) gather information about the problem, (2) propose an initial potential solution to the problem, (3) engage in discussions over both your and other teams' proposals, (4) refine your proposal by incorporating feedback that you receive from other teams, (5) present your final proposals, and (6) participate in an approval voting over all the proposed solutions.

Your first task is to choose the problem your team will work on and your presentation slot. Each team fills out the Google Form with its preferences for the problems and for the presentation date (see the Timeline section). **The deadline to fill out the form is Monday, October 19 @ 23:59.** Each problem can be taken by only one team, and each presentation date has a limited number of slots (three on December 14, two on each other date). Both are assigned on a first-come, first-served basis, although we reserve the right to make adjustments as needed. Keep in mind that earlier slots leave less time for information gathering, but they also come with an earlier finish.

## Information gathering and initial proposals

Before you start the information-gathering stage, each team decides how they are going to investigate and address the chosen problem. You must also combine with the content in similar problem proposals (i.e., different aspects of the problem) above the 13th ranked proposal.

Once you have been assigned a problem, you can start gathering expert information that will help you come up with a proposal for a potential solution to this problem. Information gathering is a standard process in problem solving, e.g., data collection in science. For this assignment, you can choose from a variety of sources of information, such as interviews with experts, questionnaires with EPFL students & staff, literature studies (preferably peer-reviewed material such as academic papers) and surveys. **Although you are free to choose from any of the aforementioned sources of information, in your proposal, each sub-team has to contribute information from at least two sources. So, there should be at least six sources from each team.** It is a good idea to choose your sources such that the collected data can justify different parts of your proposal, e.g., you can find out the severity of the problem in one part, search for its root cause in another part, and finally support your solution with the data from a third source. You could also investigate what kind of side effects your solution may have. Note that conceptual separation is not a requirement, you could as well use all six information sources to refine your solution by having each sub-team focus on a specific aspect of the problem. Also note that the list of suggestions we make is neither comprehensive nor restrictive. **Be creative.**

When you have gathered all the precious information and come up with a proposal for a solution, it is time to prepare a write-up so that other teams can also learn about your findings and provide you with feedback on your proposal. The write-up must include a **one page** (i.e., concise) executive summary detailing the problem, the motivation behind the problem, the information gathered by each sub-team, a brief synopsis of each information and the proposed solution (not necessarily in this order). The write-up must follow with a **half page** introduction where you state the problem and what aspects of the problem your team is looking into and describe the motivation. **Each sub-team then provides an individual write-up that includes: (1) the information that the sub-team collected and (2) an analysis/description of the information collected. The length of this part must be between 2-3 pages PER sub-team.** Finally, the write-up must include a **half page** conclusion where you summarize the report, reinforcing the team's proposed solution. A conclusion should not introduce any new information. You may include one additional page anywhere in the text that describes your proposed solution in detail if needed. A page means 12-point type (single-spaced) and Times New Roman or a similar font such as Arial.

Please create a NEW thread on Loomio and attach your write-up and any additional supporting material that you have. You should name your thread as: [Team Name]: [Title of your proposed solution]. **The deadline for submitting your solution proposal is the**

***Tuesday @ 23:59 before your presentation (see the table in the Timeline section).***

## Discussion and feedback on proposals

Each team's thread opens for discussion as soon as its write-up is posted, and stays open until the Friday @ 23:59 before that team's presentation. Since teams present on different dates, new proposals will appear on Loomio every week, and this stage runs in parallel with the presentations. The goal of this stage is to discuss and argue about the proposals presented by the different teams. **The requirement is that each sub-team must give feedback on all the other proposals, within each proposal's feedback window.** To do so, you are going to comment under each team's threads that contain write-ups with their proposed solutions. You can either split the proposals between the sub-team members or go over all of them together. The feedback should be constructive and argued **(300 words +/- 100)** per comment. You are supposed to ask questions and suggest improvements. You may even refer to your own problem proposal if relevant.

This stage is not limited to participating in discussions on other teams' proposals. **You should also interact with others to discuss your own proposal on at least two different occasions during your feedback window.** As a team, you are supposed to moderate the discussion about your own proposal, to answer questions and to provide any necessary detail about your solution. This will allow you to improve your proposal, by taking into account the feedback from other people.

To summarize, the crucial point of this stage is to use the insights that you have learned during the information gathering stage to: (1) help other teams with their proposals and (2) use the information gathered by other teams to improve your proposal.

**The deadline for this stage is *the Friday @ 23:59 before each team's presentation* (see the table in the Timeline section).**

## Part 3

### Presentation

After the discussion phase on your proposal is over, you can finally present your solution proposal to your classmates and the CS-234 staff. Each team is going to do an 8-minute presentation with a summary of your information gathering approach and results, your proposed solution and the results of the discussion/feedback phase. **The presentation will be strictly limited to 8 minutes, and will be cut off at that time; keep your presentations concise and aim for 7 to 7.5 minutes in your dry-run.** There will be an additional 2-3 minutes for Q&A. In the overview of the discussion/feedback phase you can, for example, answer the following questions: Was the feedback phase useful for my team? Did we incorporate feedback from others into our proposal? Did the discussion on other proposals help us to improve our own proposal? For efficiency reasons, each team will select 3 representatives (one representative per sub-team) to present the team's work. This also allows team members with scheduling conflicts to skip the presentation.

**Presentations take place during class on Mondays, from November 9 to December 14:** two teams present in each of the first five classes (November 9, 16, 23, 30 and December 7), and three teams present on December 14. Presentation slots are assigned through the Google Form described in Part 2. Please attend all presentation sessions unless you have a conflict.

**The deadline to upload your slides to Loomio and on Moodle (under the same thread as your write-up and supporting material) is 12:00 on the day of your presentation.** Please submit your presentation as a PDF as it will be preloaded on a supplied laptop.

### Final voting & Peer Evaluations

We conclude this assignment with a final poll conducted on Loomio over your solutions, once all teams have presented. This time, we are going to use approval voting so that you can express whether or not you approve the presented solution proposals.

In addition, each sub-team member will evaluate themselves and each member on the same sub-team. You will also, more generally, evaluate the other sub-teams on your team. More information will be provided after the presentations.

**The deadline to submit your vote & evaluate your peers is Friday, December 18 @ 23:59.**

# Plagiarism

All work that you submit as part of this assignment must be your own original work. Failure to comply with this rule will be considered as plagiarism, which is a form of cheating and a severe violation of the academic honor code. Any potential case of plagiarism will be handled seriously in accordance with EPFL's disciplinary rules and regulations.

To ensure development and mastery of the contents and materials in this course, the use of generative artificial intelligence (AI) tools is prohibited. This includes tools that help reorganize and edit your written work because the ability to self-assess, reflect on your writing process, and develop your own voice are essential in your growth. You are also responsible for verifying the accuracy of citations and references used in your writing.

If you have any questions about whether your actions might cause any violations, please contact the CS-234 staff immediately.