

HUM-425

Critical thinking I

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Cursus	Sem.	Type
Humanities and Social Sciences	MA1	Obl.

Language of teaching	English
Credits	3
Session	Winter
Semester	Fall
Exam	During the semester
Workload	90h
Weeks	14
Hours	3 weekly
Lecture	2 weekly
Project	1 weekly
Number of positions	35

Remark

Une seule inscription à un cours SHS+MGT autorisée. En cas d'inscriptions multiples elles seront toutes supprimées sans notification.

Summary

This course will develop logical reasoning and argumentation skills to enable you to influence decision making. You will achieve this by learning how to represent and communicate your reasoning as arguments, and by continuously practicing logical reasoning and problem solving in teams.

Content

Good analysts make good arguments: they can explain the hypotheses underlying their claims, state their assumptions upfront, expose the relevance and reliability of their evidence, and make their logic fully transparent to their audience. All easier said than done!

The methodology we will use in class to develop these skills is argument diagramming, which is a technique to visually display how explicit and implicit assumptions work together to support a claim (recommendation, opinion, decision, etc.). Diagramming the visual structure of reasoning reveals gaps in logic that may be overlooked in prose arguments (discussions, written and oral presentations, etc.). It also prompts us to reassess and reframe the core issue/problem, fostering a deeper understanding of the issue we want to solve.

Through argument diagramming and immersive case discussions, you will develop the attitudes and habits of a critical thinker, transferable to analytic work done without argument diagrams.

As you gain experience applying the course concepts and methodologies, you'll analyze and build arguments for several issues with controversial societal and ethical implications. These issues include hiring based on physical attractiveness, targeted advertising algorithms, and many others. The fall semester will lay the foundation for your upcoming spring semester project work.

Keywords

Critical thinking, argumentation, analytical reasoning, logical reasoning, ethical reasoning, problem framing, problem solving, decision making.

Learning Prerequisites**Recommended courses**

None

Important concepts to start the course

No prerequisites are required.

Learning Outcomes

By the end of the course, the student must be able to:

- Produce logically valid arguments that are also complete, rigorous, non-obvious, and well-organized.
- Analyze information and underlying assumptions presented in an argument.
- Assess / Evaluate argument plausibility and strength to form well-reasoned judgements and decisions.
- Argue using logical rigor about controversial issues with ethical and societal implications.
- Identify hidden assumptions in an argument (which often turn out to be at the heart of an issue/problem).
- Defend decisions using sound arguments.
- Critique the reasoning of others, by constructively exposing weaknesses in logic.
- Manage disagreements by securing rational consensus.
- Specify the symptoms of a problem and distinguish them from the causes of a problem. This helps reformulate the problem and identify what needs to be solved and how.

Transversal skills

- Access and evaluate appropriate sources of information.
- Take feedback (critique) and respond in an appropriate manner.
- Negotiate effectively within the group.
- Make an oral presentation.
- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Take account of the social and human dimensions of the engineering profession.
- Demonstrate the capacity for critical thinking
- Communicate effectively with professionals from other disciplines.

Teaching methods

Interactive lectures, interactive seminars, review exercises, small group activities, project work.

The course is divided into two interconnected semesters, emphasizing different teaching methods.

Fall Semester: During the fall semester, our focus will be on acquiring a solid foundation in argument diagramming and other reasoning concepts. Class time will involve a combination of theory-based interactive lectures, concept applications, small group activities, and case discussions.

Spring Semester: In the spring semester, we will build upon the knowledge gained in the Fall term through more targeted case study discussions and coaching sessions. These activities will provide valuable guidance as you develop and present your final project, allowing for deeper exploration and practical application of the learned concepts.

Expected student activities

Due to the highly interactive nature of the course and its pedagogical requirements, the number of **participants in this course is limited to 35 students**.

Fall Semester: During the fall semester, you will acquire the necessary groundwork for your spring project.

The fall term will be hands-on, emphasizing learning-by-doing in small teams. We will start each class session by covering argumentation and reasoning principles, which you will then apply in the second part of the class session.

The central premise of the course is that critical thinking and argumentation competencies are best learned through repeated cycles of practice, feedback from the instructor and peers, and reflection prompted by that feedback. To that end, almost all class sessions will require that you actively participate in discussions, produce arguments, assess your peers' arguments, and give and receive feedback. At the end of each class session, you will submit deliverables based on the activities completed in class. These activities cannot be made up outside of class, so please note that if you think that such a course structure may present a problem for you, then this course is not for you.

As we will be building arguments using a (free) software, you will need to bring your computers to class.

Spring Semester: Building on the knowledge acquired in the fall semester, you will develop your final group project in the spring term. In the initial three weeks, you will apply argumentation and reasoning principles to specific cases, gaining confidence for your final project. Throughout the rest of the semester, you will collaborate in teams with increased autonomy and will receive intermittent coaching to guide your project's development. For the final project, you will have several topics to choose from.

More information on what to expect from the course will be given on the first day of class.

Assessment methods

The assessment for the course is based on the following:

Fall Semester:

Performance on in-class group activities and case discussions, class debates, mini-quizzes: 40%

In class mid-semester test: 30%

In class end-of-semester test: 30%

Spring Semester:

Final Group Project: 100%

The final project will be broken down into three different deliverables over the Spring term, which will be discussed in class.

Supervision

Office hours Yes

Assistants No

Others The course instructor will provide continuous supervision and can be contacted via email to set up office hours (zsuzsanna.szemeredi@epfl.ch).

Resources

Bibliography

Material (text excerpts, articles, argument diagrams, case studies, podcasts, etc.) will be made available on Moodle or will be referenced in class.

The link to the course's Moodle page will be made available at the beginning of the course.

Moodle Link

- <https://go.epfl.ch/HUM-425>