

# SEMINAR LOGIC-BASED KNOWLEDGE REPRESENTATION

## Consultation Session

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<https://iccl.inf.tu-dresden.de/web/LBKR2022>

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# Consultation Session – Overview

- Term Paper – General Information
- Finding a research question
- Structure of the paper
- Goal of your paper
- Writing tips
- Your questions

# Term Paper – General Information

- Term paper on a research question related to a subject of your choice (from our seminar)
- 50% of your final grade
- Length: 5 pages (excluding title page and sources, 1.5 spacing, font height 12)
- **Deadline, Research Question: 15/08/2022**
- **Deadline, Final Paper: 19/09/2022**

**Explanation:** Develop an idea for your research question and send your suggestion to `hannes.strass@tu-dresden.de` no later than 15/08/2022. I will then review it and you can get started with your paper.

Finally, send your final draft to the same address no later than 19/09/2022.

# How do I find a research question?

# Finding a research question

As a starting point, ask yourselves the following questions:

- Which subject of our seminar do you want to learn more about?
- Of which subject do you have an intuitive, good understanding?
- Do you already have an idea of an issue related to one of the topics that you want to look into in more detail?

You can, of course, also start from your presentation.

# Example 1

Let us say you are interested in **Non-monotonic Reasoning**.

In the seminar we have seen that Moore claims that **Default Logic** and **Autoepistemic Logic** model different forms of Non-monotonic Reasoning.

It seems, however, that those logics are closely related.

**Possible research question:** Is there a translation from default logic statements to autoepistemic statements, and vice versa?

## Example 2

Let us say you are interested in **Temporal Reasoning**.

In the seminar we have seen that **Modal Logic** can be used to model Temporal Reasoning.

An alternative idea would be to construct a temporal logic based on **First-order Logic**.

**Possible research question:** What does a specific formal system for temporal reasoning based on First-order Logic look like and what are its advantages/disadvantages over the modal logic system that we saw in the seminar?

# How do I structure my term paper?



# Structure

Your term paper is expected to have the following structure:

1. Title Page
2. Abstract
3. Introduction
4. Main body of the text
5. Summary
6. Sources
7. Declaration of authorship

# Title Page

What belongs on the **title page**?

1. The title of your paper
2. Your name
3. Your affiliation (university, major, semester etc.)
4. Date
5. Matriculation Number

# Abstract

What is an **abstract**?

An abstract is a brief summary of your work. It covers around 100–200 words where you highlight the most important parts of what your paper is about.

# Introduction

What is the purpose of your **introduction**?

In the introduction, you are expected to lay out the structure of your work. More precisely, you are expected to:

- State and explain your research question;
- Discuss how you are going to answer this question based on the structure of your work;
- Tell the reader about the objective of each section in the rest of the paper.

**Example:** In **Section 1**, I will introduce the key concepts of framework X. Subsequently, in **Section 2**, I will discuss some major drawbacks of framework X. Finally, **Section 3** covers possible solutions to the drawbacks discussed in the previous section.

**Note:** In your actual paper, you should go into “a little” more detail.

# Main Body

This is the most important part of your paper. The first thing to do is to structure the main body into sections.

For a paper of 5 pages, a typical structure for the main body can look as follows:

- Formal preliminaries (e.g. Syntax and Semantics of Propositional Modal Logic)
- Discussion of results / features of the framework that you want to discuss
- Drawback and shortcomings of the framework
- Presentation of possible solutions

For each section, make sure to only discuss relevant information and explain to the reader how the sections are related.

# Summary

In the **summary**, you want to do the following:

- Restate your research question
- Consisely state the answer to your research question
- Explain how you came to your answer

# Bibliography

In this part of your paper, you state all sources that you cited in your paper. Thus, the specific way to do this depends on the style of citation you chose.

In computer science, two ways of in-text citation are the most common:

- Numerical keys (ACM style): [42]
- Author, year (Harvard style): (Knuth 1969), [Papadimitriou et. al., 2012]

For the bibliography entry, the information and format you have to provide depends on the type of source (journal paper, monograph, technical report...).

For the ACM style, see:

<https://www.acm.org/publications/authors/reference-formatting>

For the Harvard style, see:

<https://www.mendeley.com/guides/harvard-citation-guide>

# Declaration of Authorship

The final part of your paper is the declaration of authorship.

Find the German Version of the TU Dresden sample here:

<https://tu-dresden.de/gsw/phil/ressourcen/dateien/fak/pa/form/Selbstndigkeitserklrung.pdf?lang=en>



# Writing Tips

# General Writing Tips

## Who is your audience?

Suppose that you are writing the text for someone **unfamiliar** with your particular topic. You may assume that your reader has some familiarity with classical logic. This means: Explain everything (and the formal parts in particular) as **comprehensibly** as possible.

That being said, you want to accomplish two things:

- **Explain** challenging parts of your text in depth.
- Be as **concise** as possible in your explanations.

Since you write your paper for a reader, guide the reader through your paper. Use phrases such as:

- In the following, I will show X.
- Now that we have shown Y, we need to show Z.
- With that, it follows that T.

# General Writing Tips

## **Formatting:**

When it comes to formatting your paper, also have the reader mind. Make your paper as easily readable is possible.

→ Label definitions, theorems, proofs, examples and so on. For example:

**Definition 12.1:** This is a definition.

**Theorem 12.2:** This is a theorem.

**Proof.** Here, I prove my fascinating result.

# Citations

It is a common writing style issue to use citations as nouns. Try to avoid it.

**Remember:** Sentences should work both with and without the parenthetical remark.

In most cases, adding the author's name (authors' names) will suffice.

Don't:	Do:
"... as in [Reiter, 1980]"	"... as in the approach of Reiter [1980]"
"... as defined in [Moore, 1985]"	"... as defined by Moore [1985]"
"[Gebser et al., 2007] presented ..."	"Gebser et al. [2007] presented ..."
"... has also been studied, cf. e.g. [1, 7, 42]."	"... has also been studied [1, 7, 42]."
"We use the notation of [2] ..."	"We use the notation of Levesque [2] ..."
"Systems such as [9] ..."	"Systems such as clingo [9] ..."

# What is the Goal of my Paper?

# Goal of your Paper

In this paper, you do **not** have to develop your own approach to find an answer to your research question.

Rather, the goal is to show that you can:

- Describe a framework from our seminar in your own words
- Develop your own research question
- Find additional literature on your own (1 or 2 additional sources can be enough)
- Explain (again in your own words) how the problem from your research question can be solved from the additional sources

However, if you have an idea for developing a solution to some problem on your own, feel free to contact me.

# Your Questions

# Summary and Outlook

We have seen some guidelines on how to:

- Find a research question
- Structure your paper
- Write your paper

Two important deadlines:

- Research Question: 15/08/2022
- Final Paper: 19/09/2022

## **Open questions:**

- What's next? (Work on your research question ...)
- Thank you for the interesting talks and discussions!