

# AO 500 Design Pattern: Final Project

As your final project for this course, you will submit a complete ontology **design pattern** based on the topic you have selected and refined during the semester. Your project will demonstrate your ability to apply **Basic Formal Ontology (BFO)** principles and the modeling techniques we have discussed.

You have access to my lectures, slides, and examples on GitHub, and you should closely follow the conventions and “recipe” outlined throughout the course (especially lecture 5).

<https://github.com/Applied-Ontology-Education/design-patterns/tree/main>

Each project submission must have the following **five sections**:

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## 1. Motivation ( $\leq 200$ words)

Provide a brief description motivating the need for your design pattern.

- What problem or representational gap does it address?
  - Why is a formal pattern needed for this topic?
  - Keep your description clear, concise, and tied to a real modeling need.
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## 2. Competency Question ( $\leq 20$ words)

State one competency question that your design pattern is designed to answer.

- This should be a **simple, focused question** that your model structure makes answerable.
  - See lectures for examples.
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## 3. Construction Explanation ( $\leq 500$ words)

Describe how you constructed your design pattern, following the modeling **recipe** from class.

*Step 1:*

Identify classes needed to address your competency question:

- Material entities within scope, i.e. **Material Entity**
- Qualities these material entities have, i.e. **Quality**

- What these material entities could do, i.e. **Realizable Entity**
- What these material entities actually do, i.e. **Process**
- Where these material entities and boundaries are located, i.e. **Immaterial Entity**
- When these entities exist, i.e. **Temporal Region**
- Information we use to talk about 1-6, i.e. **Generically Dependent Continuant**

Note: Asterisk next to ambiguous terms and revisit them after working through each class. Disambiguate based on the competency question identified.

*Step 2:*

Using the classes identified, provide relations to connect them according to BFO:

- Qualities to material entities, i.e. **inheres in**
- Realizables to material entities, i.e. **inheres in, has material basis**
- Processes to material entities, i.e. **participates in**
- Realizables to processes, i.e. **has realization**
- Immaterial location of material entity, i.e. **located in**
- When any such entities exist, i.e. **exists at, datatype property**
- When any such entities carry information, e.g. **generically depends on**

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## 4. Visual Display of the Design Pattern

Create a **visual diagram** of your design pattern. You must use a consistent convention. I recommend:

- **Ovals** represent **classes**.
- **Diamonds** represent **instances**.
- **Boxes** represent **literals**.
- **Labeled arrows** represent **relations** (e.g., `participates_in`, `has_specified_input`).

Include a **legend** explaining the meaning of shapes and arrows.

Keep the visual clean, organized, and easy to follow.

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## 5. Feedback Evidence

Show that you have **presented your design pattern** to at least one other UB applied ontology student and **received feedback**.

- You can easily fulfill this requirement by **posting your design pattern in the Slack channel** and noting who responded.

- Alternatively, you can share by email or in-person and note who provided comments.
  - Include a **brief summary** (1–2 sentences) of the feedback you received and any changes you made as a result.
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## Submission Details:

- Submit a **single document** (PDF preferred) with these five sections clearly labeled.
  - Due Date: **May 9, 2025**.
  - Final project questions and guidance will be provided in our last class meeting on **May 5, 2025**.
  - Late submissions will not be accepted unless previously arranged.
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If you have any questions or concerns, bring them to the final meeting or post them to the course Slack.