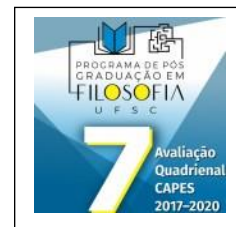




MINISTÉRIO DA EDUCAÇÃO
UNIVERSIDADE FEDERAL DE SANTA CATARINA
CENTRO DE FILOSOFIA E CIÊNCIAS HUMANAS
DEPARTAMENTO DE FILOSOFIA
PROGRAMA DE PÓS-GRADUAÇÃO EM FILOSOFIA



PLANO DE ENSINO

Nome da Disciplina: Graduate Seminar in Epistemology I:

First-order logic and beyond

Código da Disciplina: FIL 410072 (2 créditos)

Semestre: 2025.1 / Início: 23/05/2025 - Fim: 10/07/2025

Professor(a): Umberto Riveccio

E-mail: umberto.riveccio@gmail.com

Dia/Horário: Sextas-feiras, 14:20–18:00

Local: PPGFil/UFSC – Sala 334 do CFH

Horário e local de atendimento: terça-feira, 13h

EMENTA

Propositional Logic (Recap): Semantics, proof systems, completeness. First-Order Logic: Syntax and semantics, satisfaction, validity, proof theory, examples of structures. Model Theory and Meta-Theory: model existence, compactness and completeness, Löwenheim–Skolem theorems, expressiveness and limitations of FOL.

OBJETIVO

1. Understand and apply the syntax and semantics of (propositional and) first-order logic, including formalization of statements and logical consequence.
2. Analyze formal proofs within propositional and first-order calculi.
3. Demonstrate knowledge of key metatheoretical results such as completeness, compactness, and the Löwenheim–Skolem theorems.
4. Develop familiarity with first-order structures and models, and use them to interpret logical formulas.
5. Grasp the limits of first-order logic, including expressiveness and the motivation for stronger logics.

CONTEÚDO PROGRAMÁTICO

- 0.1 Propositional logic (recap): semantics.
- 0.2 Propositional logic (recap): a propositional calculus.
- 0.3 Propositional logic (recap): completeness.
- 1.1 First-order logic: terms, formulas, variables.
- 1.2 FOL: semantics.
- 1.3 Satisfaction, validity and consequence.
- 1.4 Some first-order structures.
- 1.5 Proof theory.
- 2.1 Set-theoretic notions (recap).
- 2.2 The model existence theorem.
- 2.3 Compactness and completeness.
- 2.4 Löwenheim-Skolem results.
- 2.5 Expressiveness of FOL.
- 2.6 Beyond FOL.

METODOLOGIA

Core concepts, formal definitions, and theorems will be introduced via instructor-led presentations. Class sessions will regularly include space for discussion, analysis of examples, and guided problem-solving exercises to reinforce understanding. Student engagement will be encouraged through collaborative exploration of logical reasoning and model-theoretic ideas.

AValiação

Students will be assessed through a written essay (approx. 2000–3000 words) in which they will explore one of the course topics in greater depth (75% of the final grade). The essay should go beyond class material to demonstrate deeper understanding of the chosen topic, formal clarity, and critical analysis. Feedback will be provided with an eye toward academic refinement and potential submission for conferences or journals. Class Participation: active participation in discussions and engagement with in-class exercises and examples will contribute to the final grade (25%).

De acordo com discussões colegiadas, a Coordenação do PPGFil sugere aos docentes que, dentre os itens de avaliação das disciplinas, solicitem trabalho em forma de artigo em *condições mínimas de ser submetido a revista acadêmica* para publicação. Trata-se de uma forma direta de incentivar a produção bibliográfica discente. Para tanto, é importante que após o encerramento da disciplina, na medida do possível, docentes façam devolutivas dos trabalhos aos estudantes com observações sobre tais condições de submissão (se o trabalho está em condições de ser submetido, se e o que eventualmente precisa ser melhorado etc.). Há uma variedade de revistas nacionais de Pós-Graduandos em Filosofia, como a Peri, a Kínesis, a Ítaca etc., cujos Qualis (2017-2020) podem ser consultados em <https://sucupira.capes.gov.br/sucupira/public/consultas/coleta/veiculoPublicacaoQualis/listaConsultaGeralPeriodicos.jsf>

FREQUÊNCIA

CRONOGRAMA

BIBLIOGRAFIA

HEDMAN, S. A first course in logic: an introduction to model theory, proof theory, computability, and complexity. Oxford University, 2004.

GOUVEIA, P., DIONÍSIO, F.M., MARCOS, J. Lógica Computacional. DMIST, 2000. <https://www.dimap.ufrn.br/~jmarcos/courses/LC/Ementa.htm>