# — Plano de Ensino 2022.2 —

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| Código | DCC024 |
| Disciplina | Linguagens de Programação |
| Turma | SI |
| Professor | Haniel Barbosa |
| Horário | 2a/4a 19:00-20:40 |
| Sala | 2010, ICEx |

**Ementa.** The purpose of this course is to study fundamentals concepts in programming languages and major tools and techniques to implement them. This includes a number of programming paradigms, namely: functional, imperative, and logic, as well as general aspects such as syntax specification and informal semantic models; binding and scoping; types and type systems; control structures; data abstraction; procedural abstraction and parameter passing; higher-order functions; and memory management. The course has a strong implementation component, with three languages being covered: SML, Python, and Prolog. No prior familiarity with these languages is assumed in this course. Learning them will have the secondary effect of exposing students to the different programming paradigms.

**Programa.**

| Class | Date | Content | Category |
|---|---|---|---|
| 1 | 22/08 (Mon) | Course Introduction & Overview | |
| 2 | 24/08 (Wed) | SML Introduction | |
| 3 | 29/08 (Mon) | Pattern Matching in SML | |
| 4 | 31/08 (Wed) | ADTs in SML | |
| 5 | 05/09 (Mon) | Polymorphism (via Zoom) | |
| - | 12/09 (Mon) | No class | |
| 6 | 14/09 (Wed) | Higher-Order Functions & Combinators | |
| 7 | 19/09 (Mon) | Syntax and Semantics (Part 1) | |
| 8 | 21/09 (Wed) | Syntax and Semantics (Part 2) | |
| 9 | 26/09 (Mon) | Bindings and scope | |
| 10 | 28/09 (Wed) | Closures | |
| 11 | 03/10 (Mon) | Formal Semantics: Operational Semantics | |
| 12 | 05/10 (Wed) | Program Equivalence as SMT | |
| – | 05/10 (Wed) | *Project 1 out* | |
| 13 | 10/10 (Mon) | Formal Semantics: $\lambda$-calculus | |
| 14 | 15/10 (Sat) | Revision on Formal languages (async) | |
| 15 | 17/10 (Mon) | **Exam 1** | |
| 16 | 19/10 (Wed) | *Tutorial Project 1* | |
| 17 | 22/10 (Sat) | Python Introduction (async) | |
| 18 | 24/10 (Mon) | Memory Management (Part 1) | |
| 19 | 26/10 (Wed) | Memory Management (Part 2) | |
| 20 | 31/10 (Mon) | Abstraction, Abstract Data Types and Object Orientation | |
| – | 31/10 (Mon) | *Project 2 out* | |
| – | 06/11 (Sun) | *Project 1 due* | |
| 21 | 07/11 (Mon) | *Tutorial Project 2* | |
| 22 | 09/11 (Wed) | Error Handling | |
| 23 | 14/11 (Mon) | Parameter Passing | |
| 24 | 16/11 (Wed) | Prolog Introduction | |
| 25 | 21/11 (Mon) | Unification and Resolution | |
| 26 | 23/11 (Wed) | Numeric Predicates in Prolog | |
| 27 | 26/11 (Sat) | Problem solving with Prolog (async) | |

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| 28 | 28/11 (Mon) | Problem solving with Prolog (async) |
| 29 | 30/11 (Wed) | **Exam 2** |
| – | 04/12 (Sun) | *Project 2 due* |
| 30 | 05/12 (Mon) | **Make-up exam** |

**Bibliografia.** Modern Programming Languages: A Practical Introduction, by Adam Webber.

**Material de apoio.** `https://homepages.dcc.ufmg.br/~hbarbosa/teaching/ufmg/2022-2/lp/`

**Avaliações.**

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|---|---|---|---|
| 1 | Prova 1 | 25 | 17/10 |
| 2 | Prova 2 | 30 | 23/11 |
| 3 | Projeto 1 | 15 | 06/11 |
| 3 | Projeto 2 | 20 | 04/12 |
| 4 | Listas de exercício | 10 | |