

# — Plano de Ensino 2024.2 —

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|------------|------------------------------------|
| Código     | DCC831                             |
| Disciplina | Theory and Practice of SMT solving |
| Turma      | ...                                |
| Professor  | Haniel Barbosa                     |
| Horário    | 2a/4a 14:55-16:35                  |
| Sala       | 407, CAD 3                         |

## Ementa.

- Satisfiability Modulo Theories
- CDCL(T) architecture
- Theory solvers
- Quantifiers
- Proofs
- State-of-the-art review

## Programa.

| Class | Date        | Content                                  |
|-------|-------------|------------------------------------------|
| 1     | 25/09 (Wed) | SMT intro and overview                   |
| 2     | 30/09 (Mon) | Propositional Logic                      |
| 3     | 02/10 (Wed) | Clausification and Resolution            |
| 4     | 07/10 (Mon) | DPLL and CDCL                            |
| 5     | 09/10 (Wed) | Efficient SAT solving                    |
| 6     | 14/10 (Mon) | First-order Logic and SMT                |
| 7     | 16/10 (Wed) | From SAT to SMT                          |
| 8     | 21/10 (Mon) | Laboratory: SMT introduction             |
| 9     | 23/10 (Wed) | Theory solvers: EUF                      |
| –     | 28/10 (Mon) | Holiday: Dia do Servidor Público         |
| –     | 30/10 (Wed) | No class                                 |
| 10    | 04/11 (Mon) | Theory solvers: Difference Logic, Arrays |
| 11    | 06/11 (Wed) | Theory solvers: Linear Real Arithmetic   |
| 12    | 11/11 (Mon) | Theory solvers: Linear Real Arithmetic   |
| 13    | 13/11 (Wed) | Theory solvers: Bit-vectors              |
| 14    | 18/11 (Mon) | Exam 1                                   |
| –     | 20/11 (Wed) | Holiday: Dia da Consciência Negra        |
| 15    | 25/11 (Mon) | Quantifiers                              |
| 16    | 27/11 (Wed) | Quantifiers                              |
| 17    | 02/12 (Mon) | Quantifiers                              |
| 18    | 04/12 (Wed) | Laboratory: Applications                 |
| 19    | 09/12 (Mon) | Theory Combination                       |
| 20    | 11/12 (Wed) | Proofs                                   |
| 21    | 16/12 (Mon) | Proofs                                   |
| 22    | 18/12 (Wed) | Proofs                                   |
| –     | 23/12 (Mon) | Blocked: Recesso de fim de ano           |
| –     | 25/12 (Wed) | Holiday: Natal                           |

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| –  | 30/12 (Mon) | Blocked: Recesso de fim de ano |
| –  | 01/01 (Wed) | Holiday: Ano novo              |
| 23 | 06/01 (Mon) | Laboratory: Proofs             |
| 24 | 08/01 (Wed) | Project check-in               |
| 25 | 13/01 (Mon) | Exam 2                         |
| 26 | 15/01 (Wed) | Seminars                       |
| 27 | 20/01 (Mon) | Seminars                       |
| 28 | 22/01 (Wed) | Seminars                       |
| 29 | 27/01 (Mon) | Seminars                       |
| 30 | 29/01 (Wed) | Seminars                       |

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**Bibliografia.** A disciplina não possui um livro-texto. Diversos materiais de leitura, entre notas de aula, tutoriais, capítulos de livros e artigos, serão passados durante o semestre e serão disponibilizados na página da disciplina.

- Decision Procedures: An Algorithmic Point of View by Daniel Kroening and Ofer Strichman
- A Mathematical Introduction to Logic by Herbert B. Enderton (online version).

#### **Avaliações.**

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|---|-----------|-----|-------|
| 1 | Prova 1   | 25% | 18/11 |
| 2 | Prova 2   | 25% | 13/01 |
| 3 | Projeto   | 30% |       |
| 4 | Seminário | 20% |       |

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