

## Algorithms for Model Checking (2IW55)

### Domestic Announcements

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HG 6.81 (soon to change)

10-09-10

## Domestic Announcements

### Course organisation:

- Lectures are (tentatively) organised as follows:
  - 10 September - 22 October 2010 (part I)
  - 12 November - 14 January 2011 (part II)
- Exam dates:
  - Thursday, 20 January, 2011, 2pm - 5pm
  - Wednesday, 6 April, 2011, 2pm - 5pm

Up-to-date course information and handouts are made available through:

<http://www.win.tue.nl/~timw/2IW55.php>

Bug-related health issues are communicated also through the above interface

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### Part I (basics):

- model checking subfamilies of CTL\*
- computation of equivalences
- model checking of the  $\mu$ -calculus

### Tentative schedule:

10 Sep	The temporal logics CTL*, CTL and LTL: syntax and semantics
17 Sep	Fairness and Basic Model Checking Algorithms for CTL and fair CTL
24 Sep	Symbolic Model Checking for CTL
1 Oct	Symbolic Model checking: fairness and counterexamples
8 Oct	Equivalences and Pre-orders: State Space Reduction and Preservation of Properties
15 Oct	Mu-calculus
22 Oct	Exercises

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### Part II (advanced topics):

- $\mu$ -calculus model checking through Boolean equation systems
- Parity Games for model checking
- Symbolic  $\mu$ -calculus model checking
- Real-time model checking

### Tentative schedule:

12 Nov	Boolean Equation Systems	
19 Nov	Parameterised Boolean Equation Systems	
26 Nov	Parameterised Boolean Equation Systems	
3 Dec	Parity Games	(Jeroen Keiren)
17 Dec	Parity Games	(Jeroen Keiren)
7 Jan	Parity Games	(Jeroen Keiren)
12 Jan	Real-Time	
14 Jan	Real-Time/ <b>Exercises</b>	

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### Additional reading:

- Handouts (accessible via the website on occasions)
- Book: Model Checking. Edmund M. Clarke, Jr., Orna Grumberg, and Doron A. Peled. MIT Press, ISBN 0-262-03270-8
- Book: Principles of Model Checking. Christel Baier and Joost-Pieter Katoen. MIT Press, ISBN 978-0-262-02649-9

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### Related Courses:

4.1	2IF25	Formal Methods.
4.1	2IW26	System Validation.
4.1	2IF95/2IW95	Seminar Design and Analysis of Systems/Formal Methods.
4.2	2IW15	Automated Reasoning.