

# Part I

## Organizational Matters

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- ▶ Modul: IN2003
- ▶ Name: “Efficient Algorithms and Data Structures”  
“Effiziente Algorithmen und Datenstrukturen”
- ▶ ECTS: 8 Credit points
- ▶ Lectures:
  - ▶ 4 SWS  
Mon 10:00–12:00 (Room Interim2)  
Fri 10:00–12:00 (Room Interim2)
- ▶ Webpage:  
<https://www.moodle.tum.de/course/view.php?id=100478>

- ▶ Required knowledge:
  - ▶ IN0001, IN0003  
“**Introduction to Informatics 1/2**”  
“Einführung in die Informatik 1/2”
  - ▶ IN0007  
“**Fundamentals of Algorithms and Data Structures**”  
“Grundlagen: Algorithmen und Datenstrukturen” (GAD)
  - ▶ IN0011  
“**Basic Theoretic Informatics**”  
“Einführung in die Theoretische Informatik” (THEO)
  - ▶ IN0015  
“**Discrete Structures**”  
“Diskrete Strukturen” (DS)
  - ▶ IN0018  
“**Discrete Probability Theory**”  
“Diskrete Wahrscheinlichkeitstheorie” (DWT)

# The Lecturer

- ▶ Harald Räcke
- ▶ Email: [raecke@in.tum.de](mailto:raecke@in.tum.de)
- ▶ Room: 03.09.044
- ▶ Office hours: (by appointment)

- ▶ Omar AbdelWanis
- ▶ [omar.abdelwanis@in.tum.de](mailto:omar.abdelwanis@in.tum.de)
- ▶ Room: 03.09.042
- ▶ Office hours: (by appointment)

# 1 Contents

- ▶ Foundations
  - ▶ Machine models
  - ▶ Efficiency measures
  - ▶ Asymptotic notation
  - ▶ Recursion

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  - ▶ Search trees
  - ▶ Hashing
  - ▶ Priority queues
  - ▶ Union/Find data structures

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- ▶ Cuts/Flows
- ▶ Matchings

## 2 Literatur

-  Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman:  
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-  Thomas H. Cormen, Charles E. Leiserson, Ron L. Rivest,  
Clifford Stein:  
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McGraw-Hill, 1990
-  Michael T. Goodrich, Roberto Tamassia:  
*Algorithm design: Foundations, analysis, and internet  
examples*,  
John Wiley & Sons, 2002

## 2 Literatur

-  Ronald L. Graham, Donald E. Knuth, Oren Patashnik:  
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2. Auflage, Vieweg, 2003
-  Jon Kleinberg, Eva Tardos:  
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-  Donald E. Knuth:  
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3. Auflage, Addison-Wesley, 1997

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Donald E. Knuth:

*The art of computer programming. Vol. 3: Sorting and Searching,*

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Prentice Hall, 1982



Uwe Schöning:

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Steven S. Skiena:

*The Algorithm Design Manual,*

Springer, 1998