

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

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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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 - ▶ Union/Find data structures
- ▶ Cuts/Flows
- ▶ Matchings

2 Literatur

-  Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman:
The design and analysis of computer algorithms,
Addison-Wesley Publishing Company: Reading (MA), 1974
-  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*,
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2 Literatur

-  Ronald L. Graham, Donald E. Knuth, Oren Patashnik:
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2. Auflage, Addison-Wesley, 1994
-  Volker Heun:
Grundlegende Algorithmen: Einführung in den Entwurf und die Analyse effizienter Algorithmen,
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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Christos H. Papadimitriou, Kenneth Steiglitz:

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Steven S. Skiena:

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