

Mini modules contents

G = Gersting, Math. Struct. for Comp. Science, G&T = Goodrich & Tamassia, Data Struct. & Alg. in Java

n.n, n.n.n refer to sections, pp n to pages

Material in brackets, [...], covers advanced topics not required to pass the course, but should be studied if you aim to pass with distinction.

M1 - Logic and Recursion

G: 1.0-1.4, 2.4 except proofs, [2.4 proofs]

G&T: pp 22-24, 3.5.0-3.5.3

material: [lecture slides](#), [lecture files](#), [M1 assignment](#), [M1 assignment files](#)

suggested exercises:

G: ch. 1.1: exercises 1, 2, 3, 5, 9, 11, 15, 17, 18, 20, 21, 22, 25, 27

ch. 2.4: exercises 1-4, 65, 66

G&T: ch. 3.6: R-3.8, R-3.13, R-3.14, C-3.6, C-3.12, C-3.13, C-3.21

M2 - Induction, Stacks, Complexity

G: Induction (2.2)

G&T: Arrays (3.1), Linked Lists (3.2), Mathematical functions (4.1), Complexity (4.2), Stacks (5.1)

material: [lecture slides](#), [M2 assignment](#)

suggested exercises:

G&T: ch. 4.4: R-4.1, R-4.5, R-4.12

M3 - Trees

G: 5.2, [5.4]

G&T: 7 (entire chapter), 10.1, [10.2, 12.4.1]

material: [lecture slides](#), [M3 assignment](#)

suggested exercises:

G: ch. 5.2: exercises 1, 2, 3, 4, 5

G&T: ch. 7.4: R-7.1, R-7.8, R-7.14, R-7.18

M4 - Sets

G: 3.0, 3.1 except countable and uncountable sets,

4.4 pages 331-342

material: [lecture slides](#), [M4 assignment](#) (updated 2014-02-25)

suggested exercises:

G: ch. 3.1: practice 1-8, 11, 16, [18-19], exercise 7, 9-10

ch. 4.4: practice 23, 26, 30, 31, exercise 1, 3, 6, 8, 16, 27

M5 - Sorting

G: 4.1 except equivalence relations

G&T: 8.1, 8.3, 11.1, 11.2, [11.3, 11.4], 11.5

material: [lecture slides](#), [M5 assignment](#)

suggested exercises:

G&T: ch. 8.5: R-8.2, R-8.5 - R-8.8, R-8.10, R-8.18 - R-8.20

ch. 11.6: R-11.1, R-11.4, R-11.5, R-11.12, R-11.21

M6 - Graphs

G: 5.1 except isomorphic graphs, planar graphs,

6.3 shortest-path problem,

[6.1 - 6.3 except proofs, and discussions about complexity],

6.4

G&T: 13.1-13.3, [13.4], 13.5, [13.6]

material: [lecture slides](#), [M6 assignment](#)

suggested exercises:

G: ch. 5.1: practice 1-4, exercise 1-4, 37-40

ch. 6.2: practice 7,10, exercise 2, 4, 26

ch. 6.3: practice 12, exercise 2-4

M7 - Matrix Algebra

G: 4.6

material: [lecture slides](#), [M7/M8 assignment](#)

suggested exercises:

G: the practises and exercises in ch. 4.6 except for boolean matrices.

M8 - Hash tables and Logic revisited

G: 4.5 hashing

G&T: 9.2

material: [lecture slides](#)