

Basic Concepts in Mathematics I (数学通論 I)

Textbook and References

“Mathematical Proofs, A Transition to Advanced Mathematics, Third Edition” by Gary Chartrand, Albert D. Polimeni, Ping Zhang, Pearson New International Edition (ISBN13: 978-1292040646), available at ICU Bookstore

For other references, please refer to the list in BCMI homepage.

Schedule (*subject to change*)

DATE	TITLE	ASSIGNMENTS
April 11	1. Introduction to Logic, 2 Sets (2 periods) Recitation 1 (1 period), Chapter 2. Logic	Read Chapters 1, 2, 3 2.5, 16, 31, 40, 70, 3.45, 46, 63, 69, 73
April 18	3. Direct Proof and Proof by Contrapositive Recitation 2, Ch. 2+3. Logic, and Sets	Read Chapters 4, 5 4.3, 13, 19, 32, 37, 5.3, 19, 34, 40, 67
April 25	4. Existence and Proof by Contradiction, Math. Induction Rec. 3, Ch. 4+5 Direct Proof and Proof by Contrapositive	Read Chapters 6, 7 6.14, 20, 26, 40, 49, 7.1, 24, 26, 30, 45
May 2	5. Prove or Disprove, Equivalence Relations Rec. 4, Ch. 6+7 Existence and Math. Induction	Read Chapters 8, 9 8.16, 56, 70, 76, 78, 9.11, 25, 38, 51, 58
May 9	6. Functions Rec. 5, Ch. 8+9 Prove or Disprove, Equivalence Relations	Read Chapter 10 10.5, 22, 24, 26, 32, 35, 42, 54, 56, 61
May 16	7. Cardinality of Sets (i) Rec. 6, Ch. 10 Functions	Read Chapter 11 11.3, 7, 10, 12, 14, 16, 22, 26, 27, 33
May 23*	8. Cardinality of Sets (ii) Rec. 7, Ch. 11 Cardinalities of Sets	Extra Reading Extra Probs on Cardinalities of Sets
May 30	9. Proofs in Number Theory Rec. 8, Extra Problems on Cardinalities of Sets	Read Chapter 12 12.1, 9, 11, 15, 21, 30, 37, 38, 40, 65
June 6	10. Review Rec. 9, Ch. 12 Proofs in Number Theory	Preparation for Final <i>Remained Problems</i>
June 13	11. Review Old Final	Preparation for Final

All assignments are, in principle, due next Monday at 1:00 p.m. Please submit your homework to Report Box No.11 in front of Science Hall Office N201.

The BCM I final will be given during the term exam week. The schedule above is subject to change.

Grading Policy

1. Recitation — 30%: by assignment, volunteer welcome.
2. Homework — 20%: See above. The other homework will be announced later.
3. Final Examination — 50%

Home Page and Learning Support

1. <https://icu-hsuzuki.github.io/science/class/bcmm1/>
Schedule, references, old quizzes, old finals, old midterms and their solutions, and much more.
2. Moodle (<https://moodle.icu.ac.jp/27/course/view.php?id=1787>) will be used (Enrollment Key: bcm2018)
Handouts, slides, lecture videos in English, Forum for Questions and Comments, and other information.