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 12	1. Introduction to Logic, 2 Sets (2 periods)	Read Chapters 1, 2, 3
	Recitation 1 (1 period), Chapter 3. Sets	2.5, 16, 31, 40, 75, 3.45, 46, 63, 69, 73
April 19	3. Direct Proof and Proof by Contrapositive	Read Chapters 4, 5
	Recitation 2, Ch. 2+3. Logic, and Sets	4.3, 13, 19, 32, 37, 5.3, 19, 34, 40, 67
April 26	4. Existence and Proof by Contradiction, Math. Induction	Read Chapters 6, 7
	Rec. 3, Ch. 4+5 Direct Proof and Proof by Contrapositive	6.14, 20, 26, 40, 49, 7.1, 24, 26, 30, 45
May 10	5. Prove or Disprove, Equivalence Relations	Read Chapters 8, 9
	Rec. 4, Ch. 6+7 Existence and Math. Induction	8.16, 56, 70, 76, 78, 9.11, 25, 38, 51, 58
May 17	6. Functions	Read Chapter 10
	Rec. 5, Ch. 8+9 Prove or Disprove, Equivalence Relations	10.5, 22, 24, 26, 32, 35, 42, 54, 56, 61
May 24*	7. Cardinality of Sets (i)	Read Chapter 11
	Rec. 6, Ch. 10 Functions	11.3, 7, 10, 12, 14, 16, 22, 26, 27, 33
June 7	8. Cardinality of Sets (ii)	Extra Reading
	Rec. 7, Ch. 11 Cardinalities of Sets	Extra Probs on Cardinalities of Sets
June 14	9. Proofs in Number Theory	Read Chapter 12
	Rec. 8, Extra Problems on Cardinalities of Sets	12.1, 9, 11, 15, 21, 30, 37, 38, 40, 65
June 19	10. Review	Preparation for Final
	Rec. 9, Ch. 12 Proofs in Number Theory	*Remained Problems*

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.

No class on May 31 due to instructor's business trip and make-up on June 19.

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=1236) will be used (Enrollment Key: bcm2017)

   Handouts, slides, lecture videos in English, BBS for questions and communication, and other information.

3. Moodle page in 2015 (https://moodle.icu.ac.jp/27/course/view.php?id=205) allowing guest login without key; handtouts, slides, lecture videos in Japanese