MTH 107—Finite Mathematics
(Spring 2018)

❑ *Course Description*

MTH 107 is a special topics course that satisfies the general education requirement for math at the University of Rhode Island. This course is designed for students who do NOT have precalculus or calculus requirements in their program of study. MTH 107 covers the following concepts of modern mathematics: Sets and Operations on Sets, Elements of Combinatorics, Probability and Statistics.

❑ *Instructor and contact information*

- Instructor: Juhyung Lee
- Email: juhyung@uri.edu
- Office: Lippitt Hall Room 202 A
- Office Hours: M, W, F 11am-12pm

❑ *Text Book and Calculators*

The required text for the class is: Mathematics: A Practical Odyssey (University of Rhode Island custom edition), by Johnson & Mowry. You may use a basic function calculator (+, -, ×, ÷, and root), but a graphing or scientific calculator (e.g. TI-89 or TI-34) is not permitted on exams.

❑ *Information about exams and grading*

Description	Points
Worksheet assignments	150 Points
In class quiz	100 Points
Exam I, II, III	300 Points
Final	200 Points
Total	750 Points

Scale (%)	Grade
93-100	A
90-93	A-
87-90	B+
83-87	B
80-83	B-
77-80	C+
73-77	C
70-73	C-
67-70	D+
60-67	D

❑ *Exams*

There are three exams and one final exam. Exams are currently scheduled as

- Exam I : 6-7:30pm, Monday, February 12
- Exam II : 6-7:30pm, Monday, March 5
- Exam III : 6-7:30pm, Monday, April 9
- Final Exam : TBA

The following policies apply to all exams, and no exceptions will be made.

- You must have a URI Photo ID with you to take an exam, and show it to the proctor as you hand in your exam
- No books, bags, papers, extra scrap paper, or anything else may be taken with you to your seat. If you bring any of these items with you, you must leave them at the front of the room.
- Sharing calculators is not permitted.
- No cellphones, MP3 players, or any electronic devices of any kind may be used or even accessible to you at any time during the exam. Any student found with any cell phone or electronic device for ANY REASON during an exam is cheating.
- You may not ask any questions during the exam; understanding the questions is a part of the exam. If you think there is a typo or error, do the best that you can with the given information.
- You may not leave the room then return during the exam. Remember to use the bathroom before the exam. If you leave the room for any reason, your exam will be collected.
- Once finished, you must hand your exam to a proctor (your instructor, if in the room) and show your URI Photo ID.
- You are advised to bring multiple pencils to the exams, just in case. Do NOT use a pen.

The following policies apply to all Make-up exams, and no exceptions will be made.

- Makeup exams may be scheduled in the event you are unable to attend the evening exams under the following conditions. Note in particular that if you must miss the exam because of a scheduling conflict, you must notify your instructor before, not after, the exam, and emergencies require you to contact your instructor within 24 hours.
- If your reason for missing the exam as scheduled is:
  (i) a University sanctioned event for which verifiable documentation can be provided (including another scheduled class), or
  (ii) a responsibility to an employer that cannot be rescheduled (with documentation from your employer), then you MUST INFORM YOUR INSTRUCTOR 48 HOURS IN ADVANCE OF THE EXAM AND PROVIDE DOCUMENTATION.

  Such events are scheduled in advance, so you must provide advanced notice to your instructor in order to have a makeup exam. Failure to provide this advanced notice will result in a grade of 0 for the exam. No exceptions. Makeup exams must be scheduled after the actual exam, and preferably before the class period when exams are to be handed back, but no later than two class days (excluding weekends and holidays) after the actual exam.

- If the reason for missing the exam as scheduled is due to:
  (i) illness (with verifiable documentation from a medical provider), or
  (ii) an emergency (with appropriate documentation), then you MUST INFORM YOUR INSTRUCTOR WITHIN 24 HOURS OF THE EXAM and provide documentation upon your return.

  Failure to notify your instructor within 24 hours will result in a 0 for the exam. No exceptions. Makeup exams may be scheduled no later than two class days (excluding weekends and holidays) after the actual exam, unless the illness or emergency precludes this, in which case the makeup exam will be given on a common date during the last few weeks of the semester.

- If your circumstances do not meet either of the above (no documentation, non-emergency excuse without sufficient notice, etc.), then you will receive a 0 for the missed exam. No exceptions.

❑ *Accommodations*

Any student with a documented disability should contact your instructor early in the semester so that he or she may work out reasonable accommodations with you to support your success in this course. Students should also contact Disability Services for Students: Office of Student Life, 330 Memorial Union, 874-2098. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

❑ *Sakai*

Your instructor will maintain your up to date grades on Sakai. Your instructor might place important course material in the Sakai course shell. You can access Sakai at the following web address: https://sakai.uri.edu/portal. Use your e-campus id or your 9-digit URI student number and your @mail.uri.edu email password.

❑ *Schedule*

This is a tentative calendar for MTH 107, Spring 2018. It is subject to change.

Date	Sections/Events/Exams	Practice Problems
Jan. 22 | Jan. 26	**First Day of Classes M. Jan. 22** (1.1)Deduction/Induction (1.2)Symbolic Logic	(1.1)1,3,5,7,21,22 (1.2)1,3,5,7,11,13,35,37
Jan. 29 | Feb. 2	(1.3)Truth Tables (1.4)Conditionals	(1.3)9,21,41,51,57 (1.4)1,7,11,18,21,33,37
Feb. 5 | Feb. 9	(1.5)Analyzing Arguments	(1.5)1,5,11,23
Feb. 12 | Feb. 16	**Exam I(Ch. 1): M. Feb. 12** (2.1)Sets & Set Operations (2.2)Venn Diagrams	(2.1)1,2,7,11-21(odd),29,31 (2.2)5,7,14
Feb. 19 | Feb. 23	**No Class: M. Feb. 19** (2.2)continued (2.3)Introduction to Combinatorics	(2.3)1-37(odd)
Feb.26 | Mar. 2	(2.4)Permutations, Combinations	(2.4)1-11(odd),13,14,20,22,25,27-31
Mar. 5 | Mar. 9	**Exam II(Ch. 2): M. Mar. 5** (3.2)Intro to Probability **Last day to drop: M. Mar. 5**	(3.2)3,5,7,17,19,66,69
Mar. 12 | Mar. 16	**No Classes (Spring Break)**	
Mar. 19 | Mar. 23	(3.3)Rules of Probability (3.4)Combinatorics & Prob.	(3.3)1,3,9,11,39,41,57,61 (3.4)1,3,23-29(odd),31
Mar. 26 | Mar. 30	(3.5)Expected Value	(3.5)13,14,17,19,35
Apr. 2 | Apr. 6	(3.6)Conditional Prob. (3.7)Independence	(3.6)1,5,7,15,17,21,23,29,30,41,43,45 (3.7)1,3,9,13,15,17,23
Apr. 9 | Apr. 13	**Exam III(Ch. 3): M. Apr. 9** (4.1)Data Distributions, Histograms, Frequency	(4.1)1,5,6,9,15
Apr. 16 | Apr. 20	(4.2)Mean, Median, Mode	(4.2)1,3,5,11,15,17
Apr. 23 | Apr. 27	(4.3)Standard Deviation (4.4)Normal Distribution	(4.3)1,3,7,9,17,19 (4.4)5-19(odd),25
Apr. 30	(4.4)continued **Last Day of Classes: M. Apr. 30**	

❑ *Learning Outcomes*

MSC Rubric Element:	**STEM Rubric Elements:**
A.1. Finds The Necessary Information A.2. Make a Plan For How To Solve The Problem B.1. Performs the Calculation Or Analysis B.2. Checks the Answer For Accuracy C.1. Explains The Steps Taken C.2. Articulates The Solution C.3. Presents The Problem And Solution In An Organized, Clear, and Concise Manner	1. Identifies facts, Vocabulary, definitions, terms, concepts, people 2. Recognizes concepts or tools relevant for application to a task 5. Analyzes: Applies concepts to address the task 6. Analyzes: Deconstructs and contextualizes 7. Analyzes: Evaluates and justifies

MTH 107 satisfies the MSC and STEM rubrics (full coverage) for general education.
At the end of the course the student should be able to:

1. Distinguish an argument from other forms of verbal expression recognizing their premises and conclusions.

   RUBRIC ELEMEMTS: Stem 1, Stem 6, Stem 7, A1, C1, C2, C3

2. Recognize valid and invalid, sound and unsound, syllogistic argument forms.

   RUBRIC ELEMEMTS: Stem 1, Stem 6, Stem 7, A1, C1, C2, C3

3. Detect contradictions and lack of consistency among the premises of an argument.

   RUBRIC ELEMEMTS: Stem 5, Stem 6, Stem7, C1, C2, C3

4. Represent propositions symbolically using variables and logic connectives.

   RUBRIC ELEMEMTS: Stem 1, Stem 2, A2, C2, C3

5. Give precise logical meanings of the logical connectives: NOT, AND, OR, ONLY IF, IF AND ONLY IF.

   RUBRIC ELEMEMTS: Stem 2, Stem 6, A2, C1, C2, C3

6. Parse a statement to detect the linguistic equivalent of parentheses.

   RUBRIC ELEMEMTS: Stem 5, A2

7. Build a Truth Table to evaluate a statement.

   RUBRIC ELEMEMTS: Stem 2, Stem 6, A2, B1, B2, C1, C2, C3

8. Use the concept of “set” and “member” to represent relationships between objects and ideas.

   RUBRIC ELEMEMTS: Stem 1, Stem 2, A1

9. Reproduce key definitions used in set theory: negation, intersection, union, subset, superset, equivalence, and their notations.

   RUBRIC ELEMEMTS: Stem 1, Stem 2, Stem 5, Stem 6, Stem 7, A1, A2, B1, B2, C1, C2, C3

10. Determine the number of items in a set by counting in new and different ways using factorials, combinations, and permutations.

    RUBRIC ELEMEMTS: Stem 1, Stem 2, Stem 5, Stem 6, Stem 7, B1, B2, C1, C2, C3

11. Use a Venn diagram to visually represent sets and facilitate counting.

    RUBRIC ELEMEMTS: Stem 1, Stem 2, Stem 5, Stem 6, Stem 7, A2, B1, B2, C1, C2, C3

12. Calculate any probability given the cardinality of the appropriate sets involved.

    RUBRIC ELEMEMTS: Stem 1, Stem 2, Stem 5, Stem 6, Stem 7, B1, B2, C1, C2, C3

13. Calculate simple, conditional, and joint probabilities by counting the members in the appropriate sets.

    RUBRIC ELEMEMTS: Stem 1, Stem 2, Stem 5, Stem 6, Stem 7, A2, B1, B2, C1, C2, C3

14. Apply rules of probability to real world situations like medical tests and casino games.

    RUBRIC ELEMEMTS: Stem 5, Stem 6, B1, B2, C1, C2, C3

15. Recognize simple random processes (like dice rolling etc...) and calculate their expected value.

    RUBRIC ELEMEMTS: Stem 1, Stem 2, Stem 5, Stem 6, A1, B1, B2, C1, C2, C3

16. Draw a histogram to represent a set of data.

    RUBRIC ELEMEMTS: Stem 1, Stem 2, Stem 5, Stem 6, A2, C1, C2, C3

17. Calculate the mean, median, mode, standard deviation, and variance of a data set which is either grouped or ungrouped.

    RUBRIC ELEMEMTS: Stem 1, Stem 2, Stem 5, Stem 6, Stem 7, B1, B2, C1, C2, C3

18. Determine z-scores and use a normal distribution table to solve problems involving data that is normally distributed.

    RUBRIC ELEMEMTS: Stem 1, Stem 2, Stem 5, Stem 6, Stem 7, B1, B2, C1, C2, C3