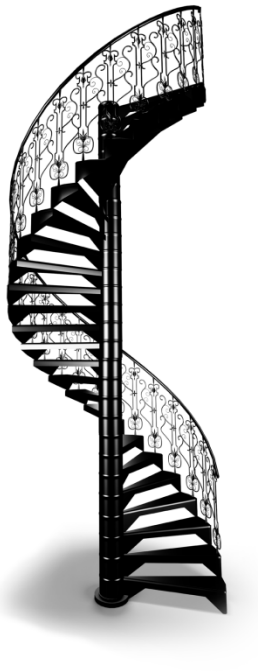
Department of Mathematics and Computer Science

MAE106: Discrete Mathematics with Probability

Fall 2018



Instructor Richard Kohar. Email: richard dot kohar AT rmc DOT ca.

Office: G341. Local: x 6093.

Description Elementary logic. Introduction to sets and operations on sets. Combinations and permutations. Discrete probability.

Textbooks *Basic Discrete Mathematics: Logic Set Theory & Probability*, Richard Kohar, World Scientific, 2016.

(Alternative text) *Finite Mathematics for the Managerial, Life and Social Sciences*, Soo T. Tan, Thomson, 2006.

Course Website https://kohar.ca/mae-106-discrete-mathematics-with-probability-fall-2018/

Participation Attendance is *mandatory* for all scheduled lectures.

Course Mark Your final grade will be based on quizzes, tests and a three-hour final examination. The marks breakdown is as follows:

Quizzes: 10% **Tests: 30%** **Final Exam: 60%**

You must obtain at least 45% on the final exam to be eligible to pass the course.

Problem Sets A problem set will be assigned each week. These assignments are designed to encourage you to keep up to date with the material. Although they will not be marked, students are expected to complete all problems.

Additional Assistance Help is always available. You can talk to me after class, or we can set up an appointment. You can also drop in to the Math Help Centre (currently located in Girouard 325). The Centre will be open during the following hours (holidays excepted):

Sundays:	1900-2200hrs
Mondays:	1130-1400hrs and 1900-2200hrs
Tuesdays:	1130-1400hrs and 1900-2200hrs
Wednesdays:	1130-1400hrs and 1900-2200hrs
Thursdays:	1130-1400hrs and 1900-2200hrs

Quizzes Normally, each problem set will be followed-up with a quiz in the following week. Each quiz will consist of questions similar to those on the assignment. Performance on the quizzes will serve as an indicator of student progress and will count for 10% of your final mark.

Tests We will have three one-period tests during the term. The first will be after we finish logic, the second after sets and counting techniques, and the third will deal with probability theory. The dates of these tests will be announced well in advance.

Any unauthorized absence from a quiz or exam may result in a mark of zero being awarded. Make-up quizzes or tests will not be given, so if you legitimately miss one, then your final

mark will be calculated using the other marks and a different weighting scheme. A three-hour final exam will be scheduled by the Registrar's Office during the "Fall" examination block.

Academic Integrity

Academic integrity violations, including plagiarism, cheating, and other violations of academic ethics, is a serious academic infraction for which penalties may range from a recorded caution to expulsion from the College. The RMC Academic Regulations Section 23 defines plagiarism as: "Using the work of others and attempting to present it as original thought, prose or work. This includes failure to appropriately acknowledge a source, misrepresentation of cited work, and misuse of quotation marks or attribution." It also includes "the failure to acknowledge that work has been submitted for credit elsewhere." All students should consult the published statements on Academic Misconduct contained in the Royal Military College of Canada Undergraduate Calendar, Section 23.

If you have any questions, feel free to contact me. If you are uncertain whether something you plan to do may result in a violation of academic integrity, the best policy is to check with a professor.

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Course Agenda

Topic	Sections	Reference	Approximate Duration
Intro, Review and Class Admin		Handouts	One week
Introduction to Logic	Propositions and Connectives Truth Tables Laws of Logic Conditional and Bi-conditional Connectives Arguments	Kohar Chap. 1 & 2	Three weeks
Sets and Counting	Sets and Set Operations Introduction to counting Permutations and Combinations	Kohar Chap. 3 & 5	Three weeks
Introduction to Probability	Experiments, Sample Space and Events Probability Functions and Rules of Probability Use of Counting Techniques in Probability Conditional Probability and Independent events	Kohar Chap. 8	Three weeks
Probability Distribution and Statistics	Random Variables Expected Value Variance & Standard deviation The Binomial Distribution The Normal Distribution	Kohar Chap. 9 &10	Three weeks