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|  | **Department of Statistics**  Website : [www.stat.ubc.ca](http://www.stat.ubc.ca/) | 3182 Earth Sciences Bldg  2207 Main Mall  Vancouver, BC V6T 1Z4 | Telephone: (604)822-0570  Facsimile: (604) 822-6960 |

**STAT 302: Introduction to Probability**

**2020-2021, Term 2**

**Instructors: Professors Jiahua Chen and Micheal John Davis**

### Lecture days, times and location:

* First day of class: Jan 10, 2022, Last day of class: April 8, 2022.
* Section 201 (Jiahua Chen): T & TH, 2:00-3:30pm @ FRDM 153.
* Section 202 (Jack Davis): W & F, 9:00-10:30am @ SCRF 100.

**Course description:** Basic notions of probability, random variables, expectation and conditional expectation, discrete and continuous probability distributions, limit theorems. .

**Prerequisites:** One of MATH 200, 217, 226, 253 or 254**.**

**Textbook/course materials:**

A first course in probability (10th Ed.) by Sheldon Ross. Most earlier editions should also suffice.

**Topics:** Definition of rules of probability (chapter 2); Combinational analysis (chapter 1); Conditional probability, conditional independence (chapter 3); random variables and their distributions and expectations (chapters 4 and 5); bivariate and multivariate distributions, conditional expectations, moment generating functions (chapter 6 and 7). limiting theorems (chapter 8).

**Additional Information:** See course canvas**.**

**Computing:** R may be used in lectures in this course for demonstration but not essential.

* **Download and install R**: <https://cran.r-project.org/>
* **R-Studio**: <https://rstudio.com/products/rstudio/download/>
* **Add-on Packages:** R is an extensible system and many people share useful code they have developed as a package via CRAN and github. To install a package from CRAN, for example the [plyr](http://plyr.had.co.nz/) package for data aggregation, here is one way to do it in the R console (there are others).

install.packages("plyr", dependencies = TRUE)

* **Official manual for R**: <https://cran.r-project.org/doc/manuals/r-release/R-intro.pdf>

Do not be intimidated by the volume of this manual. Students can learn from examples given in classes and from each other.

**Jupyter**: This is a tool that allows instructor to prepare lectures with embedded R-codes for demonstration and slides with on-spot error correction functionality. Students will not be required to install this software. If interested, here is the link: <https://jupyter.org/install>