MA 2621

PROBABILITY FOR APPLICATIONS

TERM C -2022

INSTRUCTOR: Buddika Peiris, PhD (e-mail : tbpeiris@wpi.edu)

OFFICE: SH 103 (phone: 508 831 5940)

OFFICE HOURS: M 10-11.30 am, R 10- 11.30 am, F 10-11 am (or by appointment)

LECTURES: **In-person, Fuller Upper, M, T, R, F : 9 am to 9.50 am.**
 All students have access to recorded Echo360 videos after each class.

SECTION CD 01
TA: Bhagavathula Vagmi
Discussion: SH 106, W, 9-9.50 pm, OFFICE HOUR: .

SECTION CD 02
TA: Abhishek Shivdeo
Discussion: SH 202, W, 9-9.50 pm, OFFICE HOUR: W, 1-2 pm .

SECTION CD 03
TA: Zihang Xu
Discussion: SH 202, W, 10-10.50 pm, OFFICE HOUR: R, 2-3 pm.

SECTION CD 04
TA: Shiya Wu
Discussion: SH 309, W, 10-10.50 pm, OFFICE HOUR: W, 2-3 pm.

SECTION CD 05
TA: Zihang Xu
Discussion: SH 202, W, 12-12.50 pm, OFFICE HOUR: T, R, 2-3 .

SECTION CD 06
TA: Aadiv Shah
Discussion: SH 306, W, 12-12.50 pm, OFFICE HOUR: R, 3-4 pm.

TEXTBOOKS:

- Elementary Probability for Applications (ISBN 978-0-521-86756-6) by Rick Durrett (2009)

- Introduction to Probability (-GNU Free Document License (FDL)) by Charles M.Grinstead and J.Laurie Snell, 2nd Ed. (2006)

   http://www.math.dartmouth.edu/~prob/prob/prob.pdf

ABSTRACT:

- Chapters 1, 2, 3, 5, 6 of Elementary Probability for Applications will be covered (some sections may not be covered).

- Basic probability theory: set algebra, marginal probability, conditional and total probability, Bayes' Rule, independence, and counting.

- Discrete random variables (Binomial, Geometric, and Poisson). Probability mass functions and moments (expectation and variance).

- Continuous random variables (Normal, uniform, exponential). Probability density functions and cumulative distribution functions. Derived and multivariate distributions.

- Limit theorems: Chebyshev's inequality, law of large numbers, and central limit theorem.

COURSE WEBSITE: https://canvas.wpi.edu/

The website is the main platform through which this course will be managed. It contains the syllabus (this document), and lecture notes, announcements, and other course materials. You are responsible for knowing the information in the materials that appear there.

HOMEWORKS:

There will be a homework assignment every week for your benefit and practice - they can also serve as a test of your level of materials being covered in class. Homework will help you to

- Gain a solid understanding of the course material.

- Be creative and think beyond the course material.

- Do better in the exams.

You can informally discuss some problems with your classmates, but the final work should be based on your own effort. Please feel free to see me if you have any question. All the HW submissions are online through Canvas.

QUIZZES:

Five ten minutes' **quiz**zes will be held on Mondays. One single-sided **handwritten** sheet is allowed for each quiz. No electronics are allowed during the quizzes except for a simple calculator.

EXAMS:

There will be 2 exams based on the material covered until the latest lecture before each. One double-sided **hand written** sheet is allowed for each exam. No electronics are allowed during the exams except for a simple calculator. Calculator apps on a smartphone, tablet, kindle, etc are not allowed. Sample exams will be posted online. No makeup exam will be given unless a student notify me with a legitimate excuse by writing prior to the exam. Makeup exam may be harder than the original exam.

Make sure you do not select classes with conflicting exam dates.

GRADING CRITERIA:

- HWs   (10%)
- Quizzes   (25%)
- Test-1   (30%)
- Test-2   (35%)

GRADING SCALE:

- A: 90-100   B: 80-89   C: 70-79   NR: below 70.

STUDENTS WITH APPROVED ACADEMIC ACCOMMODATIONS:

Students with approved academic accommodations should plan to submit their accommodation letters through the Office of Accessibility Services Student Portal. Should you have any questions about how accommodations can be implemented in this particular course, please contact me as soon as possible. Students who are not currently registered with the Office of Accessibility Services (OAS) but who would like to find out more information regarding requesting accommodations and what that entails should plan to contact them via email: AccessibilityServices@wpi.edu and/or via phone: (508) 831-4908. Please also contact me as early as possible in the term so I can address your specific needs.

ACADEMIC HONESTY:

The academic honesty policy can be accessed at: http://www.wpi.edu/Pubs/Policies/Honesty/Students/

TENTATIVE DATES:

Test Dates:

Test-1 R, Feb 10

Test-2 F, Mar 04

Quiz Dates:

Q-1 M, Jan 24,

Q-2 M, Jan 31,

Q-3 M, Feb 07,

Q-4 M, Feb 21,

Q-5 M, Feb 28.

HW Due Dates: All HWs are due in canvas at 5 pm.

HW-1   R, Jan 20,

HW-2   R Jan 27,

HW-3   R, Feb 03,

HW-4   R, Feb 17,

HW-5   W, Feb 23, (not a class day).

HW-6   R, Mar 03 .