

# MOHAMMAD RAFIQUUL ISLAM

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## EDUCATION

- FLORIDA STATE UNIVERSITY (FSU) TALLAHASSEE, FLORIDA, USA  
(**Currently Enrolled**)  
PhD in Financial Mathematics May, 2026 (Anticipated)
- YOUNGSTOWN STATE UNIVERSITY (YSU) YOUNGSTOWN, OHIO, USA  
Master of Science, Mathematics May, 2020  
Minor in Statistics, Data Analytics, and Actuarial Science
- UNIVERSITY OF DHAKA (DU) DHAKA, BANGLADESH  
Master of Science, Applied Mathematics March, 2016
- UNIVERSITY OF DHAKA (DU) DHAKA, BANGLADESH  
Bachelor of Science, Mathematics November, 2014  
Minor in Statistics and Physics.
- SOCIETY OF ACTUARIES (SOA) SCHAUMBURGH, IL, USA  
Probability: Exams P March, 2019  
Financial Mathematics: Exam FM March, 2019

## TEACHING EXPERIENCE

- DEPARTMENT OF MATHEMATICS  
FLORIDA STATE UNIVERSITY TALLAHASSEE, FLORIDA, USA

### Instructor of Record

*Introduction to Actuarial Mathematics I* Spring 2024

Introduction to Actuarial Mathematics I is a preliminary undergraduate actuarial science course offered by FSU mathematics department to prepare the students for their beginner level actuarial exams run by the Society of Actuaries (SOA). My work is to grade students' midterm tests in the same manner that SOA follows and provide feedback.

### Instructor of Record

*Precalculus and Algebra* Spring 2023

As an Instructor of Record for this course, I teach a class of 27 undergraduate students from different majors. I also proctor their lab classes where they take their quizzes and tests online and other application-based lab activities.

### Recitation Instructor

*Calculus and Analytic Geometry I* Fall 2022

As a recitation instructor for this course, I ran two poster presentation sessions of 30 students in each group where they presented mathematical problems and their solutions step by step to their peer classmates followed by a group activity where they solved another set of problems. I also graded their exam scripts and weekly posters.

## **Lecture & Lab TA**

*Precalculus and Algebra*

Fall 2021 to Summer 2022

As a lecture TA, my job was to facilitate the instructor during the class. This included helping students in class activities such as answering short questions that counted as class attendance, checking students' eligibility forms for taking this course, and others as needed by the instructor.

As a lab TA I worked in a computer lab where students take their weekly quizzes and midterm tests.

- DEPARTMENT OF MATHEMATICS AND STATISTICS  
YOUNGSTOWN STATE UNIVERSITY
- YOUNGSTOWN, OH, USA

## **Instructor**

Responsible for the preparation and delivery of all lectures, making question papers for all exams, and the grading of tests and homework assignments for the following courses:

- College Algebra Fall 2018
- Trigonometry Fall 2019

## **Teaching Assistant**

Spring 2019

Responsible for reviewing course assignments once a week with approximately 30 students, grading homework, administrating and grading course exams, and delivering lectures when the professor was absent for some reason.

## **Tutor**

Work as a tutor at the *Mathematics Assistance Center (MAC)* at YSU to help freshmen and sophomore students to understand the following courses:

- Statistical Literacy and Critical Reasoning
- Pre-calculus and Trigonometry
- College Algebra

- LAKELAND TOURS LLC D.B.A WORLDSTRIDES  
ENVISION EMI, LLC
- VIENNA, VIRGINIA, USA

## **Middle School Level**

Jun 2019 to July 2019

Summer camp advisor: Civil Engineering Strand, STEM Explore 2019

- Worked as an advisor of the civil engineering strand for the weekly summer camp for middle school students
- Was responsible for providing the best experience possible for all participants of the program through the facilitation of all educational curriculum
- Helped the scholars understand design thinking: Empathize, Define, Ideate, Prototype, and Test to build a Mars habitat using CAD software and physical 3D models

## **INDUSTRY EXPERIENCE**

- DELTA LIFE INSURANCE COMPANY LIMITED DHAKA, BANGLADESH  
Assistant Vice President, Actuarial and Reinsurance Department September 2017 to July 2018
  - Calculated all types of claims (death, surrender, and maturity) using excel spreadsheets
  - Processed approximately 500 claims each week and submitted corresponding statistical reports to the higher authority

- Worked in a team to develop a new short-term endowment assurance product which played an important role to increase the company's new business
  - Refurbished a without risk endowment product which was out of the sale
  - Priced insurance premiums based on different risk factors for bigger clients which impacted our life fund significantly
  - Calculated reserves for group endowment, term and premium back policies which was a vital part of the final valuation report
  - Liaised directly with the consulting actuary and provided all sorts of technical and documental supports during actuarial valuation
- SANDHANI LIFE INSURANCE COMPANY LIMITED DHAKA, BANGLADESH.  
Actuarial Trainee, Actuarial and Technical Department September 2016 to August 2017
    - Prepared monthly report for the insurance regulatory authority using raw data obtained from the IT server
    - Generated surrender factor using excel spreadsheets
    - Calculated group insurance liabilities using group valuation model provided by the actuary
    - Attended group business meetings to explain the benefit and features of our group insurance products

## PUBLICATIONS

- Mostafa, Fahad; Saha, Pritam; Islam, Mohammad Rafiqul, and Nguyen, Nguyet, "GJR-GARCH Volatility Modeling under NIG and ANN for Predicting Top Cryptocurrencies." *Journal of Risk and Financial Management* 14.9 (2021): 421.
- Islam, Mohammad Rafiqul, and Nguyet Nguyen. "Comparison of Financial Models for Stock Price Prediction." *Journal of Risk and Financial Management* 13.8 (2020): 181.

## PROJECTS

- *Option pricing techniques: A performance-based comparative study of the randomized quasi-Monte Carlo method and Fourier cosine method*  
Pricing financial derivatives such as options with desired accuracy can be hard due to the nature of the functions and complicated integrals required by the pricing techniques. In this paper we investigate the pricing methodology of the European style options using two advanced numerical methods, namely, Quasi-Monte Carlo and Fourier Cosine (COS). For the RQMC method, we use the random-start Halton sequence. We use the Black-Scholes-Merton model to measure the pricing quality of both of the methods. For the numerical results we compute the option price of the call option and we found a few reasons to prefer the RQMC method over the COS method to approximate the European style options.
- *Lending Club Data Analysis*  
In this project, we apply data analytic methods to predict loan status for the borrowers and lenders. Loans taken by the borrowers can be fully paid, default or charged off and these situations depend on hundreds of factors. In this paper we will primarily deal with few of those predictor variables and try to make prediction for loan status.
- *The Relationship Between Forced Sexual Activities And Suicidal Attempts Of The Victims*  
In this project, we apply data-analytic methods to further explore the relationship between forced sexual activities and suicidal behavior among adolescents in the United States. Our findings build

on existing literature that explores this relationship. The sample of the study was taken from the Youth Risk Behavior Surveillance System survey 2017. We used a chi-squared test to find the association of forced sexual activities and suicidal behavior, and we found a strong association. Then we used bivariate logistic regression analysis to ascertain the association of race, age, sex, and education with suicidal attempts after experiencing forced sexual activity (sexual assault). The results of the following paper provide greater insight into the relationship between forced sexual activities and suicide attempts by adolescents.

## CONFERENCES

- FSU Financial Mathematics Quant Symposium 2023
- 20<sup>th</sup> International Mathematics Conference 2017 hosted by Bangladesh Mathematical Society, Dhaka, Bangladesh
- 6<sup>th</sup> Annual Midwest Actuarial Student Conference hosted by the Society of Actuaries and the University of Wisconsin Milwaukee, WI, USA
- 1st SRU SAS Analytics Day hosted by Slippery Rock University and SAS Institute

## AWARDS

- Outstanding Graduate Student in Statistics Award for the 2019-2020 academic year.
- Society of Actuaries (SOA) travel grant to attend 6th Annual Midwest Actuarial Student Conference, University of Wisconsin, Milwaukee, WI (\$125.00)
- Graduate College Premiere Scholarship, Youngstown State University.
- MetLife Bangladesh Actuarial Study Program 2015.

## MEMBERSHIPS

- Bangladesh Mathematical Society: Life Member
- Society of Actuaries (SOA), USA: Student Member
- Society for Industrial and Applied Mathematics (SIAM), USA: Student Member
- American Mathematical Society-AMS: Student Member
- Royal Statistical Society (RSS): Student Member
- Graduate Student Council: FSU Mathematics Department
- Graduate Assistants United: General Member