

Mathematical Statistics

MH7004

Introduction

This lecture

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Background

- **Since 09.2024:** Tenured Associate Professor at NTU
- **01.2019-08.2024:** Nanyang Assistant Professor at NTU
- **06.2015-12.2018:** Postdoc in Financial and Insurance Mathematics at ETH Zurich
- **02.2012-05.2015:** PhD in Mathematics, ETH Zurich (Columbia U.)
Supervisors: Prof. Marcel Nutz (Columbia University),
Prof. Martin Schweizer (ETH Zurich)
Thesis title: Knightian Uncertainty in Mathematical Finance
- **10.2006-10.2011:** Bachelor and Master in Mathematics at ETH

Research interests:

- Machine Learning Algorithms in Finance and Insurance
- Model Uncertainty in Financial Markets
- Financial and Insurance Mathematics
- Stochastic Analysis & Stochastic Optimal Control
- Stochastic Optimization and Applied Probability Theory

Who are you?

Who are you?

Schedule

🕒 **Lecture:** Friday 13:30-17:20 at MAS Exec Room 1

Teaching method

- 1 We shall have a lecture followed by a tutorial
- 2 No designated tutorials
- 3 Many examples throughout the lectures
- 4 No homework assignments, only recommended exercises

Learning subjects

- Part 0: Introduction
- Part I: Descriptive statistics
- Part II: Elements of Probability
- Part III: Random variables
- Part IV: Confidence interval
- Part V: Point Estimation
- Part VI: Maximum Likelihood Estimation
- Part VII: Bayesian Inference
- Part VIII: Hypothesis Testing
- Part IX: Regression
- Revision

Learning outcomes

Upon successful completion of the requirements for this course, students should have the knowledge and skills to:

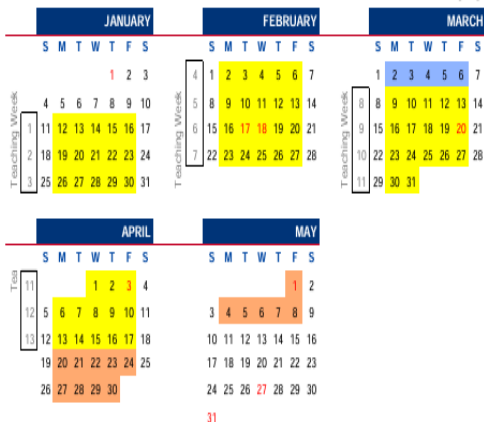
- 1 Demonstrate an understanding of probability theory
- 2 Demonstrate knowledge of, and properties of, statistical models in common use
- 3 Understand the basic principles underlying statistical inference (estimation and hypothesis testing)
- 4 Be able to construct tests and estimators, and derive their properties
- 5 Understand the difference between Frequentist and Bayesian approaches

Learning resources

- ❶ **Slides** will be available online via NTULearn and my homepage
- ❷ **Book:** Statistical Inference, 2nd Ed,
by George Casella and Roger L. Berger, 2001
(You can find it using google)
- ❸ **Consult** and **discuss** with your class mates
- ❹ My **email** address: ariel.neufeld@ntu.edu.sg

Semester Dates

2026



SINGAPORE PUBLIC HOLIDAYS

National Day	9 Aug 2025 (Sat)*
Deepavali	20 Oct 2025 (Mon)
Christmas Day	25 Dec 2025 (Thu)
New Year's Day	1 Jan 2026 (Thu)
Chinese New Year	17 - 18 Feb 2026 (Tue-Wed)
Hari Raya Puasa	20 Mar 2026 (Fri)
Good Friday	3 Apr 2026 (Fri)
Labour Day	1 May 2026 (Fri)
Hari Raya Haji	27 May 2026 (Wed)
Vesak Day	31 May 2026 (Sun)*

Public holiday dates are marked in red on the calendar.

Indicative assessment

- ① Individual Oral Exam (30 minutes each)

Date: T.B.A.

Questions

Questions?