Guidlines for Qualifying Examination (QE)

- The examination covers *one compulsory subjects* plus *two of the elective subjects*:
- Compulsory course:
    - *MATH2003: Mathematical Analysis I*
- Each student is required to choose one of the following streams
    1. Mathematical Physics
    2. Numerical Analysis
    3. Probability and Statistics
- Elective courses for **Mathematical Physics** stream (Choose two of the following subjects):
    1. MATH1004: Geometry
    2. MATH3004: Partial Differential Equation
    3. MATH3027: Functional Analysis
- Elective courses for **Numerical Analysis** stream (Choose two of the following subjects):
    1. MATH1001: Linear Algebra I
    2. MATH2007 Numerical Analysis
    3. MATH4005 Numerical Methods for Differential Equations
- Elective courses for **Probability and Statistics** stream (Choose two of the following subjects):
    1. *MATH2005 Probability*
    2. *MATH2006 Applied Statistics*
    3. *MATH3002 Introduction to Stochastic Process*
- Students need to answer several questions from each course, worthing 40 points for each course with a total of 120 points
- The total time for the exam is 3 hours. Passing grade: ≥80

- **Timeline and general rules:**

➢ The QE will take place in *November* and *April*;

➢ Students submit their choice of subject exam *before their 2nd semester starts*;

➢ Course Instructors prepare the exam paper at the *beginning of every semester* for Exam Committee's review

➢ Exam Committee confirm every exam paper by the *beginning of November and April*;

➢ Course Instructor review exam paper of their subjects and Exam Committee confirm all the results by the *end of semester (December and May)*

References:

<u>*Mathematical Analysis I*</u>
Consult Prof. Guanghui Hu for more details.

<u>Geometry</u>
Consult Prof. Ieng Tak Leong for more details.

<u>Probability</u>
Consult Prof. Zhixiang Zhang for more details.

Applied Statistics
Consult Prof. Zhi Liu for more details.

Introduction to Stochastic Process
Consult Prof. Deng Ding for more details.

Numerical Methods for Differential Equations
"Numerical Solution of Differential Equations: Introduction to Finite Difference and Finite Element Methods" by Zhilin Li, Zhonghua Qiao, and Tao Tang.

Numerical analysis
"Numerical Analysis" (9th edition) Richard L. Burden, and J. Douglas Faires. Brooks/Cole Cengage Learning, 2011.

Linear algebra
X. Jin, W. Liu, X. Liu, and Z. Zhao, *An Introduction to Linear Algebra*, Science Press, Beijing; and Edition Diusion Press Sciences, Les Ulis, 2022, xii+221 pages. ISBN 978-7-03-072163-1.

PDE:
Walter Strauss, Partial differential equations an introduction

Functional Analysis:
Bryan P. Rynne and Martin A. Youngson, Linear Functional analysis