11120EE 306002 Probability (機率)
Spring 2023

Instructor: 祁忠勇 (Chong-Yung Chi), Office: Room 966, Delta Building
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http://www.ee.nthu.edu.tw/cychi/

Units: 3
Lecture hours: **T5,T6,R5,R6**
Classroom: **Delta 217**
Course website: http://www1.ee.nthu.edu.tw/cychi/teaching/courses.php
Office hours: Monday and Wednesday 13:00-15:00

   Probability is essential in physical sciences, statistics, actuarial science, business and finance, operations research, electrical engineering (EE), and computer science (CS), where decision making/inferences in an uncertain or probabilistic environment are involved, such as insurance, meteorology, urban planning and pharmaceuticals. The goal for this undergraduate course is also to equip you with the foundation of probability for advanced subjects on random (or stochastic) processes, signal detection and estimation, and signal modeling, etc., that are core fundamentals in communications engineering and signal processing (EE), and queuing theory that is pervasive in networking (CS).

Outline:

1. Axioms of Probability. (ch 1)

2. Combinatorial Methods. (ch 2)

3. Conditional Probability and Independence. (ch 3)

4. Distribution Functions and Discrete Random Variables. (ch 4&5)

5. Continuous Random Variables and Special Continuous Distributions. (ch 6&7)

6. Bivariate/Multivariate Distributions. (ch 8&9)

7. Expectations and Variances. (ch 10)

8. Sums of Independent Random Variables and Limit Theorems. (ch 11)

Textbook:

Saeed Ghahramani, Fundamentals of Probability with Stochastic Processes, 4th Edition, CRC Press, Boca Raton, FL, 2019. (滄海書局 (04) 27088787-1188)

Reference:

Henry Stark, and John W. Woods, *Probability, Statistics, and Random Processes for Engineers*, 4th Edition, Pearson Education, 2012. (高立圖書 02-2290-0318 分機 222)

Grading:

- Mid-term exam: **40%**; written examination in class.
- Final exam: **40%**; written examination in class.
- Homework: **20%**;

1. Teaching assistant: Chien-Wei Huang (黃健瑋),

   e-mail:s110064501@gmail.com, Tel: X34033,

   Office: EECS Building 706, Office hours: 11:40~13:10 & 15:10~16:40 Tuesday.

2. Teaching assistant: Ting-Jie Huang(黃庭頡),

   e-mail: s235068263@gmail.com, Tel: X34033,

   Office: EECS Building 706, Office hours: 15:00~17:00 Wednesday, 10:00-11:00 Thursday.

3. Teaching assistant: Meng-Ying Chang(張孟穎)

   e-mail:murixe1285616@gapp.nthu.edu.tw, Tel: X34033,

   Office: EECS Building 706, Office hours: 15:10~16:10 Tuesday, 11:10-13:10 Thursday.

Remarks:

1. Course website: https://www.ee.nthu.edu.tw/cychi/teaching/courses.php

2. Homework assignments (pdf files) must be submitted on the required date. Late submission is not acceptable; plagiarism will get a serious penalty.

3. No make-up for any examination under any circumstances