Statistical Computing
Course Syllabus

- **Course information:**
- Term: 2nd Semester 2024
- Time: R5R6R7
- Room: Room 834 of General Building III (綜合三館834)
- **Contact information and office hour:**
- Office: General Building III, room 819.
- Email: chengyus@stat.nthu.edu.tw
- Office hour: by appointment. Please inform the instructor at least one day in advance.
- **Grading:**
- Your grade will be determined by assignment (50%), a midterm exam (20%), a final exam/ presentation (25%), class participation (5%).

- **Outline:**
1. Introduction
2. Random number generation
3. Gibb sampling
4. Metropolis algorithm
5. Distribution and expectation
6. Monte Carlo simulations
7. Bayesian inference
8. Resampling method
9. Optimization and EM
10. Gaussian process and its applications
11. Introduction to SQL

- **Course pre-requisites:**
- Calculus, and Mathematical Statistics (graduate level)

- **Refereces:**
1. The Elements of Statistical Learning (2009), Hastie, Tibshirani and Friedman, Springer.
2. Bayesian Data Analysis (2004), Gelman, Carlin, Stern and Rubin, Chapman & Hall.
3. Convex Optimization (2004), S. Boyd and L. Vandenberghe, Cambridge University Press.
4. R For Data Science (2017), Wickham and Grolemund. https://r4ds.had.co.nz/