

編 號：2105521

授課老師：賴振耀

科目名稱：數值線性代數

英文譯名：Numerical Linear Algebra

學 分 數：3

修 別：選修

教學目標：

This course covers the mathematical theory behind numerical algorithms of solution of linear systems, various matrix factorizations and their applications. Students learn these algorithms through MATLAB or Python programming

授課大綱：

- Matrix Factorizations and Solutions of Linear Systems: LU, QR factorizations, symmetric positive matrices,
- Eigenpairs, Singular Value Decompositions and Applications
- Vector Norms and Least-Squares Solution to Linear Systems

參考書籍：

- William Ford, Numerical Linear Algebra with Applications: Using MATLAB, Academic Press, London, 2014. ➔
<http://www.sciencedirect.com/science/book/9780123944351>
- Tom Lyche, Numerical linear algebra and matrix factorizations. Springer International Publishing : Imprint: Springer, 2020. ➔
<https://doi.org/10.1007/978-3-030-36468-7>
- Cullen, *An Introduction to Numerical Linear Algebra*, PWS Pub. Co., 1994
- G. Strang, *Linear Algebra and Learning from Data*, Wellesley-Cambridge Press, 2019.

請尊重智慧財產權，不得非法影印教師指定之教科書籍

評量方式：

- (1) 作業(含程式作業)、課堂參與、討論：50%
- (2) 報告：20%
- (3) 考試：四次小考 30%