數學系課程核心教材內容

<table>
<tr><td colspan="4" rowspan="2">課程名稱：(中文) 線性代數 (經濟系、財經系、心理系)
(英文) Linear Algebra</td><td>開課單位</td><td>學士班</td></tr>
<tr><td>課程代碼</td><td>2101013</td></tr>
<tr><td>學分數</td><td>3</td><td>必/選修</td><td>必</td><td>開課年級</td><td>二</td></tr>
<tr><td colspan="6">教學目標：To introduce the major concepts, methods and applications in Linear Algebra.

課程概述：Learn the methods for solving linear system and the geometry meaning of the solution sets and related applications. Study the vector spaces and related topics. Understand the linear transformation, eigenvalue problems and their applications. We will use examples to explain the the theory in class.

先修科目或先備能力：Algebra, analytic geometry, and trigonometry.</td></tr>
<tr><td>建議參考書目</td><td colspan="5">1. “Elementary Linear Algebra (6th edition)”, by Ron Larson, Bruce H. Edwards, and David C. Falvo.
2. “Elementary Linear Algebra with Applications (9th edition)”, by Bernard Kolman and David Hill.
3. “Elementary Linear Algebra with Applications (9th edition)”, by Howard Anton and Chris Rorres.</td></tr>
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課程大綱

單元主題	內容綱要	上課週數
1. Systems of Linear Equations	Gaussian Elimination, Gauss-Jordan Elimination, Applications	1~2
2. Matrices	Basic Operations, Properties of Matrix Operations, Inverse, Elementary Matrices, Applications	2~3
3. Determinants	Determinant of a Matrix, Evaluation of a Determinant, Properties of Determinants, Eigenvalues, Applications	2~3
4. Vector Spaces	Definition of Vector Space and Subspace, Spanning Sets, Linear Independence, Basis and Dimension, Rank, coordinates, Change of Basis, Applications	4
5. Linear Transformations	Introduction, Kernel and Range, Matrices for Linear Transformation, Applications	2~3
6. Eigenvalues and Eigenvectors	Eigenvectors and Eigenvalues, Diagonalization, Applications	2~3