Course Name	Linear Algebra I		
Semester, Year	First Semester, 2019	Number of Credits	2 credits
Course level	1000	Course Number	027016

Instructor(s) (Institution)	Michele Torielli 大学院理学研究院
Course Objectives	This course covers basic knowledge on matrices, linear equations and the determinant. We show several kinds of operations on matrices, and properties of the determinant. We explain how to solve a system of linear equations by elementary row operations, and to compute inverse matrices. We also explain the relation between elementary operations and elementary matrices.
Course Goals	Students should have the following skills: - to master computations on matrices (sums, inverse matrices, rank, determinant etc...); - to solve systems of linear equations; - to understand the relation between elementary operations and elementary matrices; - to use the co-factor expansion of the determinant and Cramer's formula.
Course Schedule	1. Matrices -- Definitions, examples, addition, scalar multiplication, linear combinations, multiplication, square matrices, inverses and zero divisors, transposes, partitioning of matrices and direct sums. 2. System of linear equations -- Equivalent systems of equations, row operations on matrices, row echelon form, 3. System of linear equations -- Homogeneous systems of equation, rank, arbitrary systems of equations. 4. System of linear equations -- A general solution for arbitrary systems of equations, inverses of non singular matrices. 5. Determinants -- Definition, basic properties, practical evaluation and transposes of determinants. 6. Determinants -- Cofactors, cofactor matrix, expansions. 7. Determinants -- Cramer's formula, Vandelmonte's matrix, determinants and ranks.
Homework	Study at home at least two hours per week -- Check basic notions you learn in the course, and try to solve exercises assigned by the teacher.
Grading System	Students are graded accordingly to whether or not 1. he/she masters basic knowledge (definitions, theorems etc); 2. he/she can correctly answer questions; 3. he/she develops a unified understanding of the basic knowledge; 4. he/she is able to apply the knowledge achieved during the course to given problems.
Textbooks / Reading List	To be announced in the first class. To be announced in the first class.
Websites	https://sites.google.com/site/toriellimichelemaths/home/teaching/linear-algebra-i
Website of Laboratory	
Additional Information	