COURSE DETAIL

NUMBER THEORY
Country France
Host Institution University of Bordeaux
Program(s) University of Bordeaux
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Mathematics
UCEAP Course Number 105
UCEAP Course Suffix
UCEAP Official Title NUMBER THEORY
UCEAP Transcript Title NUMBER THEORY
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description

This course covers number theory. Topics include integers on a ring: completely closed rings, quadratic bodies, norm, trace, discriminant in the case of extensions of bodies. Example of cyclotomic bodies of degree p-1; Dedekind rings: Noetherian property; application to integer elements, fractional ideals, fraction rings, localization, group of fractional ideals, norm of an ideal, multiplicativity; decomposition of ideals in an extension: prime ideal, discriminant and ramification, quadratic and cyclotomic bodies of degree p-1, quadratic reciprocity law; class group and unit theorem: networks, canonical folding, statement and proof of the finiteness of the class group, statement of the unit theorem, illustration in the case of quadratic bodies, Fermat cases (or other Diophantine equations); analytical opening (Riemann zeta function, Dirichlet L-functions, Dedekind zeta functions, link to counting prime numbers and ideals).

Language(s) of Instruction
French

Host Institution Course Number
4TMA807U

Host Institution Course Title
NUMBER THEORY

Host Institution Campus
UNIVERSITY OF BORDEAUX

Host Institution Faculty
SCIENCES AND TECHNOLOGIES

Host Institution Degree

Host Institution Department
MATHEMATICS

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