

**MATH 514-FINITE FIELDS AND APPLICATIONS -FALL-2021-2022**

**SABANCI UNIVERSITY**

Instructor: Nurdagül Anbar Meidl

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Office: FENS G047

Lectures: Monday: 11:40-14:30 in FENS L063

Zoom Link for lectures: https://sabanciuniv.zoom.us/j/9466340992

Office Hours: By appointment via Zoom meeting

**TEACHING METHOD**

Due to pandemic, lectures will be hybrid in the sense that lectures can be both physically and virtually (synchronized fashion) followed. All the lectures will be posted.

**TEXTBOOK**

We will not have a textbook. However, if you like, you can read the following book.

Introduction to Finite Fields and their Applications by Rudolf Lidl and Harald Niederreiter

**COURSE CONTENT**

Characterization of finite fields, roots of irreducible polynomials, traces, norms, and bases, representation of elements of finite fields. Order of polynomials, irreducible polynomials and their construction. Factorization of polynomials. Linear recurring sequences. Introduction to applications of finite fields; algebraic coding theory and cryptology.

### LEARNING OUTCOME

On completion of this course successfully, students should be able to:

Have a sound knowledge of construction of finite fields, bases, irreducible polynomials over finite fields

Use the results and constructions relevant to finite fields, vector spaces, and field extensions, covered in this course

Communicate logically coherent proofs, and problem solutions

Appreciate the applications of this theory

**GRADING**

3 Homework: %25+%25+%25

Final: %25

**EXAM POLICY**

There will be three homework during the semester and one final exam. Final exam will be in the form of a written exam, in-person, and on campus. Exam is closed book. This means that during the exam, the use of books, notes, electronic devices (including cell phones, smart watches, calculators, computers etc.), or any other kind of supporting learning material is NOT allowed. A student violating this rule will receive 0 points for that exam.

**MAKE-UP EXAMS**

If a student misses an exam, then s/he has to have a medical report by Sabanci Medline covering the exam date. Otherwise, it will be counted as “0”. With the valid excuse, contact the instructor immediately explaining your situation, an in-person or online oral makeup exam will be arranged.