

Cryptology, Certificate

LACRYCERT

Cryptology is necessary everywhere in today's technological world. Want to learn how to protect personal, financial and sensitive public-sector information? Prepare for a career in national security, communication systems, electronic banking, internet commerce and just about any field that requires secure data.

Description

Cryptology is the art and science of making and breaking codes and ciphers. The certificate program in cryptology is designed to provide a strong foundation in the mathematical topics that are most applicable to modern cryptosystems. It also provides specialized knowledge required for understanding and working in the field of mathematical cryptology.

At a glance

- **College/School:** [The College of Liberal Arts and Sciences](#)
- **Location:** [Tempe](#)

Program requirements

[2024 - 2025 Certificate Map](#)

[Certificate Map \(Archives\)](#)

This certificate requires 18 credit hours. A grade of "C" (2.00 on a 4.00 scale) or better is required for all courses.

Required Courses -- 12 credit hours

[MAT 440: Group Theory](#) or [MAT 444: Intermediate Abstract Algebra](#) (3)

[MAT 445: Theory of Numbers](#) (3)

[MAT 447: Cryptography I](#) (3)

MAT 448: Cryptography II (3)

Electives (select two) -- 6 credit hours

MAT 415: Introduction to Combinatorics (3)

MAT 416: Graph Theory (3)

MAT 441: Ring Theory (3)

STP 421: Probability (3)

STP 427: Mathematical Statistics (3)

Students may substitute an approved cryptography-related internship for 3 credit hours of elective coursework.

Prerequisite courses may be needed in order to complete the requirements of this certificate.

Enrollment requirements

This program has additional admission requirements; students should see a college advisor for details. Applicants should be in good academic standing with a "B" or better (scale is 4.00 = "A") in MAT 300 Mathematical Structures or equivalent.

A student pursuing an undergraduate certificate must be enrolled as a degree-seeking student at ASU. Undergraduate certificates are not awarded prior to the award of an undergraduate degree. A student already holding an undergraduate degree may pursue an undergraduate certificate as a nondegree-seeking graduate student.

Program learning outcomes

Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Analyze security of contemporary cryptosystems, using results from theoretical mathematics.
- Apply appropriate concepts from their elective courses in the certificate to cryptology.

Career opportunities

A certificate in cryptology offers a wide variety of career possibilities. Some students pursuing this certificate are interested in areas such as government, business, financial, medical and educational industries. These industries require skill sets to secure data, and this program assists students in developing these skills.

Contact information

[Schedule an advisor appointment](#)

[School of Mathematical and Statistical Sciences](#) | WXL R 216

math@asu.edu | 480-965-7195