

GRADUATE CERTIFICATE IN COMPUTER SCIENCE

ITC 5001 PROGRAMMING FUNDAMENTALS

3 US CREDITS

The course is addressed to students, who are new to programming and are interested in understanding the relevant techniques. It provides the opportunity to develop the algorithmic way of thinking, to gain experience in programming concepts, and to apply them through a programming language. The course combines theoretical concepts with hands-on experience.

ITC 5002 DATA ANALYTICS WITH R

3 US CREDITS

The course is addressed to students, who would like to know how to manage data, create models that explain the data. The student will be acquainted with introductory statistics, data mining, and data management approaches. The course combines theoretical concepts with hands-on experience with R language.

ITC 5004 APPLIED MATHEMATICS

3 US CREDITS

A course to teach skills in calculus and linear algebra as well as their applications in data analysis problems.

Calculus: Functions, limits and continuity. Derivative of polynomials, and other well-known functions, e.g. exponential, logarithmic. Finding maxima and minima using derivatives. Sketching the graph of a function. Indefinite and definite integral. Integration techniques. Area as an integral. Functions of several variables. Partial derivatives.

Linear algebra: Matrices and matrix computations, vectors, linear systems of equations, determinants, inner product, eigenvalues and eigenvectors.

ITC 5103 DATABASES

3 US CREDITS

Prerequisites:

ITC 5001 PROGRAMMING FUNDAMENTALS

The course focuses on the functions of a database system and its role as the foundation of modern information systems. It exposes students to planning, collecting data, designing, implementing, maintaining and managing databases. Finally, exposes the connection of a programming language (e.g. Python) to a relational database. The course combines theoretical concepts with hands-on experience.