Hajiyeva Rena Javadkhan
Doctor of pedagogical sciences, professor,
head of the department of Information Technologies,
Western Caspian University, Republic of Azerbaijan

Hajiyev Ramzi Niyazi
Senior Instructor, Senior Instructor of the
Department of Information Technologies and Programming,
Baku State University, Republic of Azerbaijan

INTERDISCIPLINARY RELATIONS IN THE EDUCATIONAL PROCESS WAYS OF CREATION

The use of interdisciplinary relations in the teaching process has always been considered one of the most effective methods. From this point of view, the teaching of computer science in connection with other disciplines is a tool that creates a favorable basis for in-depth mastery of the basics of other sciences. It is impossible to deny that the science of Mathematics, Biology, Physics and other sciences currently have wider possibilities. For this purpose, elements of mathematics are used regularly in the teaching of science, various topics are selected and Python programming language, which is widely used in their realization, has been applied [1].

It is known that the syllabus of Mathematics subject should be analyzed in order to establish systematic relations with the subject of mathematics and relevant subjects should be chosen in the teaching of Information Technologies. Coordination technology can be divided into the following stages:

– selection of a main direction for teaching Information Technology;

– analysis of the mathematics and information technology syllabi, and selection of more suitable topics of study for the creation of relations.

For example, the subject of “Individual Functions” was selected from the Information Technology syllabus, and the subject of “The Integral. Newton-Leibnis formula” was selected from Mathematics syllabus. Both subjects have extensive

opportunities to explain the relationship in detail. Because, mathematics is more based on calculations as a science [2].

The mechanism of non–standard individual functions is demonstrated by theoretical data, and the application of individual functions is practically demonstrated with simple examples. The program code has been compiled for the calculation of integrals by the Trapezoidal rule.

For more effective establishment of relationship between subjects, the subject of the Trapezoidal rule is recalled and the main equations are studied, and then the integral equation is calculated using the main formula as follows:

$$S = \int_a^b f(x)dx \approx \frac{b-a}{n}\left[\frac{1}{2}f(x_0) + f(x_1) + f(x_2) + ... + f(x_{n-1}) + \frac{1}{2}f(x_n)\right]$$

As a programming language, not only Python, but also other popular languages (Java, C++, C#, etc.) can be used too. The main purpose in establishing a relationship is to give students the necessary knowledge to explain the subject of individual functions more broadly, and to instill practical skills by calculating the integral equations using individual functions on a personal.

In order to facilitate the calculation

$$h = \frac{b-a}{n}, \quad x_i = a + ih, \quad f_i = f(x_i)$$

considering the above, then assuming the following,

$$t = \frac{1}{2}(f_0 + f_n) = \frac{1}{2}(f(a) + f(b)), \quad r = f_1 + ... + f_{n-1}$$

then,

$$S = \int_a^b f(x)dx \approx h(r + t);$$

we arrive at the above equation.

It is known that n is the number of equal parts [a, b] is divided into. Basing on the above theoretical data and practical habits, and using the specified mathematical equations, the program code is developed to solve the given equation on a personal computer. Thus, we demonstrated one of the ways of establishing the relationship between Information Technology and Mathematics, which is organically related to one another, theoretically and practically [4].

References:

1. М.П Лапчик, И.Г.Семакин, Е.К.Хеннер Методика преподавания информатики, М:Издательский Центр «Академия», 2001.
2. И.А.Хахаев Практикум по алгоритмизации и программированию на Python. М:,Альт Линукс,2011.
3. Майк Макграт. Программирование на Python. М: Эксмо, 2015.
4. Python Crash Course, 2Nd Edition: A Hands-On, Project-Based Introduction To Programming Paperback, 2019.