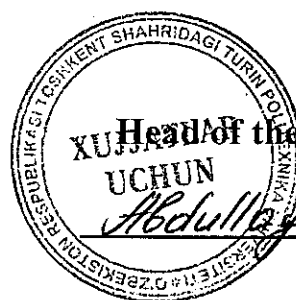


**TURIN POLYTECHNIC UNIVERSITY IN TASHKENT**



Approved by  
Head of the Academic Department

*Abdullayev F.*

**EDUCATIONAL PROGRAM**

**Academic year 2020-2021**

**«Computer science and information technologies»**

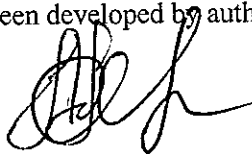
**For preparatory year students**



**Tashkent 2020**

Teaching syllabus has been developed by authors:

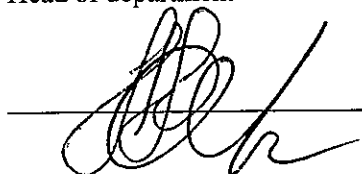
Nurilla Makhamatov



Teaching syllabus approved in the meeting by Department of Automatic Control and Computer Engineering

Protocol No. \_\_ Date \_\_:\_\_.\_\_\_\_

Head of department



N. Makhamatov

# «Computer science and information technologies»

## (Subject curriculum)

Lecture classes contest

### GENERAL REQUIREMENTS ON THE SUBJECT

According to the curriculum "Computer science and Information technologies" discipline is included into the «General mathematical and natural sciences» block of the program on preparation bachelors. The given working program has been written on the basis of the typical program for the discipline «Computer science and information technologies». At the present stage processes of designing and operation of practically all directions of the industry, power and construction are directly connected with the use of computing and computer technics. In this direction « Computer science and information technologies)) discipline gives basic knowledge and skills to the students training in technical directions. Particularly, it concerns the directions "Engineering technology" - (7000001), "Automobile engineering" - (7000002), "Energetics" -(7000003), « Industry and rural building engineering » - (7000004), "Architecture and industry design" - (7000005), "Information technologies in the industry and automatic control systems" - (7000006). The given working program is intended for 60 lecture hours, 20 laboratory hours and 50 practical/tutoring training hours. It covers such sections as the personal computer devices and functions, the methods of information representation on personal computers and information encoding problems. Further the bases of the algorithmization theory and programming are stated. As an example, studying of the most universal and modern algorithmic language C is recommended. In the working program the subject area of the lecture, practical and laboratory trainings covering contents of the above-stated sections and the distribution of allocated hours are presented.

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# «Computer science and information technologies»

## preparation module

### Section 1: General information

Module Title	Informatics	
Module code		
Credits		
Year	Year 1	
Study Formats and Hours	<b>Study Formats</b>	<b>Hours</b>
	Lectures	30
	Practice	16
	Laboratory	14
	Tutorial/Revision	16
	Self Study	130
	Total Hours	206

### Section 2: Academic Content

Aims	To enable students to: 1. Understand the basic principles and concepts of informatics; 2. Apply CS to practice problem solving.
Learning Outcomes	At the end of the module participants will be able: 1. Approach problems from multiple perspectives 2. Use CS in practice.
Pre-requisite	None
Other information	N.A.

### Section 3: Delivery of Subject and timetable

This is an introductory study to basic mathematics. Hence it will be taught to the students in the traditional mode weekly lectures and practice/laboratory/tutorials. The topics covered during the lessons will be as follows:

<b>№</b>	<b>Themes</b>	<b>Total number of hours</b>	<b>Lecture (hs)</b>	<b>Practice &amp; Tutorial (hs)</b>	<b>Laboratory (hs)</b>
1	<b>Computing systems: hardware and software</b> Introduction to Information Technology	2	2		
2	<b>The Binary system.</b> Number systems. Converting numbers. Representation of integer (unsigned) data. Operations: additions and subtractions	4	2	2	
3	<b>Boolean logic:</b> Boolean variables, operators. Boolean expressions and Truth Tables.	4	2	2	
4	<b>Algorithms.</b> The concept of algorithm. Representation of algorithms. Flow charts. Pseudo code.	6	2	2	
5	<b>Sequential execution.</b>	4	2	2	
6	<b>Realisation of conditional branches.</b>	4	2	2	
7	<b>Realisation of sequential algorithms.</b>	4	2	2	
8	<b>Realisation of nested and complex iterations.</b>	4	2	2	
9	<b>String Manipulation, Guess and Check</b>	4	2	2	
10	<b>Approximations, Bisection</b>	4	2		2
11	<b>Decomposition, Abstractions</b>	4	2		2
12	<b>Functions</b>	4	2		2
13	<b>Tuples</b>	4	2		2
14	<b>Lists</b>	4	2		4
15	<b>Testing, Debugging</b>	4	2		2
	<b>Total for the semester:</b>	206	30	16	14
	<b>Total for the year:</b>	206	30	16	14

*The timing/scheduling of topics may be varied depending on student feedback and progress.*

**Section 4: Subject Resources**

Textbooks required	<ol style="list-style-type: none"> <li>1. J. G. Brookshear, "Computer science: An overview", Addison-Wesley.</li> <li>2. How to program</li> <li>3. Boolean</li> <li>4. Gutttag, John. Introduction to Computation and Programming Using Python: With Application to Understanding Data Second Edition. MIT Press, 2016. ISBN: 9780262529624.</li> </ol>
Supplementary reading	<ol style="list-style-type: none"> <li>1. R. G. Dromey, "How to solve it by computer", Prentice Hall</li> <li>2. "The fundamentals of IT"</li> </ol>

**Section 5: Assessment/course work**

All assessment will comply with the TPU in Tashkent and Turin Polito University Assessment Rules and Regulations. There will be two midterms and one exam in each semester. Remember to take special note of the rules regarding plagiarism. Specific for this Subject are the following requirements per semester:

Item	Due dates	Weighting
Problem sets	During the laboratory works	30%
Midterms	The end of semester	30%
Final Examination	The end of semester	40%