

**JSC «Kazakh-British Technical University»
Faculty of Information Technology
Chair of Information Systems Management**

APPROVED BY

Dean of FIT

Suliev R. N. _____

«____» _____ 20__

SYLLABUS

Discipline: Programming Principles 2

Number of credits: 4 (2/0/2)

Term: Spring 20__

Instructor's full name:

| Personal Information about the Instructor | Time and place of classes | | Contact information |
|--|------------------------------|------------------------------|--|
| | Lessons | Office Hours | e-mail |
| Beisenbek M. Baisakov | According to the schedule | According to the schedule | b.baisakov@kbtu.kz |
| Askar K. Akshabayev | According to the schedule | According to the schedule | a.akshabaev@kbtu.kz |
| Bobur A. Mukhsimbayev | According to the schedule | According to the schedule | b.mukhsimbaev@kbtu.kz |

Course duration: 4 credits, 15 weeks (60 class hours)

Course prerequisites: Programming Principles I

Course Description:

Objective of this course is to teach students how to use basic programming principles for creating console and desktop applications. This course uses Python as the main programming language. The course will teach students how to use Python core libraries like IO, Pygame, Serialization, Forms, Database and etc. to create applications. Students who successfully pass this course may expect to acquire firm grasp on programming principles.

Course Goals, Learning Outcome(s) and Outline:

- Learn the fundamentals of Python
- Work with primitive types and expressions
- Work with non-primitive types (classes, structs, arrays and enums)
- Learn the difference between value types and reference types
- Control the flow of programs using conditional statements
- Use arrays and lists

- Work with files and directories
- Work with text
- Work with date and time
- Debug Python applications effectively
- Understand the problems with inheritance and how composition solves these problems
- Learn how to create Graphical User Interface Elements

Methodology:

Class discussion, class assignments, A/V presentation, real-life experience, classroom exercises, and self-study.

Materials:

Python documentation - <https://docs.python.org/>

Pygame documentation - <https://www.pygame.org/docs/>

COURSE CALENDAR

| | Class work | |
|----------|--|-------------------|
| | Topic | Seminars and TSIS |
| 1 | L1. Python fundamentals. <ol style="list-style-type: none"> 1. Python Intro 2. Python User Input 3. Python Get Started 4. Python Syntax 5. Python Comments 6. Python Variables 7. Python Data Types 8. Python Numbers 9. Python Casting 10. Python Strings 11. Python String Formatting 12. Python Booleans 13. Python Operators 14. Python If...Else 15. Python While Loops 16. Python For Loops 17. Python Arrays 18. Git | TSIS 1 |
| 2 | L2. Python collections. <ol style="list-style-type: none"> 1. Python Lists 2. Python Tuples 3. Python Sets | TSIS 2 |

| | | |
|-------|---|----------------|
| | <ul style="list-style-type: none"> 4. Python Dictionaries 5. Python Functions 6. Python Lambda 7. Python Classes and Objects. 8. Python Inheritance | |
| 3 | L3. <ul style="list-style-type: none"> 1. Python Iterators, Generators 2. Python Scope 3. Python Modules 4. Python Dates 5. Python Math 6. Python JSON <ul style="list-style-type: none"> a. JSON serialization. b. Serialization of class, c. Dictionary to JSON. | TSIS 3 |
| 4. | L4. Regex in Python Using Regex to search and match string patterns in text. | TSIS 4 |
| 5 | L5. Directories and files. <ul style="list-style-type: none"> 1. Python File Handling 2. Python Read Files 3. Python Write/Create Files 4. Python Delete Files 5. Working with directories | TSIS 5 |
| 6 | L6. Python builtin functions. Builtin function of python. | TSIS 6 |
| 7-8 | Midterm exam | |
| 9 | L7. Pygame. Intro, drawing | TSIS 7 |
| 10 | L8. Pygame. Event handling | TSIS 8 |
| 11 | L9. Pygame. Advanced topics | TSIS 9 |
| 12 | L10. Databases Saving data to database. Reading from database. Updating and deleting data in the database. | TSIS 10 |
| 13 | L11. Network layer. | TSIS 11 |
| 14-15 | Endterm (Project defense) | |
| 16 | Exam | |

COURSE ASSESSMENT PARAMETERS

| Type of activity | Final scores |
|-------------------|--------------|
| Midterm | 30% |
| TSIS | 0% |
| Endterm (Project) | 30% |
| Final exam | 40% |
| Total | 100% |

Criteria for evaluation of students during semester:

| | Assessment criteria | Weeks | | | | | | | | | | | | | | | | Total scores |
|----|---------------------|-------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|--------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | |
| 1. | Midterm | | | | | | | * | * | | | | | | | | | 30% |
| 2. | TSIS | * | * | * | * | * | * | | | * | * | * | * | * | | | | 0% |
| 3. | Endterm | | | | | | | | | | | | | | * | * | | 30% |
| 3. | Final exam | | | | | | | | | | | | | | | | * | 40% |
| | Total | | | | | | | | | | | | | | | | | 100% |

Academic Policy

KBTU standard academic policy is used.

- Cheating, duplication, falsification of data, plagiarism, and crib are not permitted under any circumstances!
- Attendance is mandatory.

Attention. Missing 20% attendance to lessons, students will be taken from discipline with filling in F (Fail) grade.

Students must participate fully in every class. While attendance is crucial, merely being in class does not constitute “participation”. Participation means reading the assigned materials, coming to class prepared to ask questions and engage in discussion.

- Students are expected to take an active role in learning.
- Written assignments (independent work) must be typewritten or written legibly and be handed in time specified. Late papers are not accepted!
- Students must arrive to class on time.
- Students are to take responsibility for making up any work missed.
- Make up tests in case of absence will not normally be allowed.
- Mobile phones must always be switched off in class.
- Students should always be appropriately dressed (in a formal/semi-formal style).
- Students should always show tolerance, consideration and mutual support towards other students.

