

**Software Engineering**

Track 1: Back-End Development  
 Track 2: Front-End Development  
 Track 3: Data Science and Machine Learning  
 Language: Kazakh / Russian / English  
 Admission year: 2022  
 Graduation year: 2025

**3 yrs  
 after school**

**Degree:**

Bachelor in Information and Communication Technology in the program  
 "6B06103-Software Engineering "



**Year 1**

1 semester	ECTS
IT Startup 1 (Ideation/Validation)	5
Principles of Programming and Algorithms	5
Applied Linear Algebra	3
Introduction to Web Development with HTML,CSS,Javascript	3
Kazakh(Russian) Language 1	5
Foreign Language 1	5
Human Rights and Civil Society/Sustainability: Principles and Practice/Data Analysis in Excel	5
Physical Training 1	4
<b>Total</b>	<b>35</b>

2 semester	ECTS
IT Startup 2 (Project Launch,MVP,Web Project)	5
Object -Oriented Programming and Data Structures	3
Discrete Mathematical Structures	3
Introduction to Back-End Development and Databases	5
Kazakh(Russian) Language 2	5
Foreign Language 2	5
Introduction to Entrepreneurship	3
Physical Training 2	4
<b>Total</b>	<b>33</b>

Summer semester	ECTS
Practice 1-Creation of internal corporate projects(Dual)	10
Philosophy	5
Culturology/Psycology	4
<b>Total</b>	<b>19</b>

**Year 2**

3 semester	ECTS
IT Startup 3 (Business Models,CustDev,Iteration)	5
Python for Data Analysis and Visualization	5
Advanced Back-End Development 2 and DevOps	5
Information Security in WEB applications/React LS/Fundamentals of Machine Learning	5
Leadership/Critical Thinking	3
Foreign Language 3	5
Entrepreneurship in Action 1	3
Minor course 1	5
<b>Total</b>	<b>36</b>

4 semester	ECTS
IT Startup 4 (Mobile App Project)	5
Front-End and Mobile Development(JS)	5
Microservices Architecture/Advanced Javascript/Data Mining and Machine Learning	5
Advanced Back-End Development 3/UI/UX Design/Big Data Fundamentals	5
Service Learning	3
Information Communication Technologies	5
Entrepreneurship in Action 2	3
Minor course 2	5
<b>Total</b>	<b>36</b>

Summer semester	ECTS
Practice 2-Creation of internal corporate projects (dual)	10
Modern History of Kazakhstan	5
Sociology/Political Science	4
<b>Total</b>	<b>19</b>

**Year 3**

5 semester	ECTS
Development of applications on Node JS/React Native/Natural Language Processing	5
Cloud, AWS and Kubernetes/Flutter -Mobile Development/Computer Vision and Deep Learning	5
Design of Life	3
Research Design	3
Economics	3
Marketing	3
Management	3
Minor course 3	5
<b>Total</b>	<b>30</b>

6 semester	ECTS
IT Startup Capstone Project (DS/ML Startup)	20
Writing and defence of diploma project / thesis	12
<b>Total</b>	<b>32</b>

General module	26
AlmaU module	65
Minor	15
Profile module	102
Internship, Thesis-Project	32
<b>Total</b>	<b>240</b>

**Total credits for 3 years of study**

**240**

**Track**

Back-End Development	ECTS
Information Security in WEB applications	5
Microservices Architecture	5
Advanced Back-End Development 3	5
Development of applications on Node JS	5
Cloud, AWS and Kubernetes	5
<b>Total</b>	<b>25</b>

Front-End Development	ECTS
React JS	5
Advanced JavaScript	5
UI/UX Design	5
React Native	5
Flutter - Mobile Development	5
<b>Total</b>	<b>25</b>

Data Science and Machine Learning	ECTS
Fundamentals of Machine Learning	5
Data Mining and Machine Learning	5
Big Data Fundamentals	5
Natural Language Processing	5
Computer Vision and Deep Learning	5
<b>Total</b>	<b>25</b>